MIGRATIONS SPONTANEES EN INDONESIE

SPONTANEOUS SETTLEMENTS IN INDONESIA

Muriel Charras Marc Pain (Eds.)

DEPARTEMEN TRANSMIGRASI ORSTOM CNRS

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. The withdrawal of the forest - *Le recul de la forêt*

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Peuplement et utilisation du sol en 1920-1930

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. Human groups - *Groupes humains*

3. Agricultural settlement and deforestation
Colonisation agricole et recul de la forêt

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. Settlement and farming systems - *Peuplement et systèmes de production*
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. Evolution of the population - *Evolution de la population*

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. Land use in 1969 - *Occupation du sol en 1969*
. Land use in 1986 - *Occupation du sol en 1986*

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DEPARTEMEN TRANSMIGRASI

INSTITUT FRANCAIS DE RECHERCHE SCIENTIFIQUE POUR LE DEVELOPPEMENT EN COOPERATION

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE

SPONTANEOUS SETTLEMENTS IN INDONESIA

Agricultural pioneers in Southern Sumatra

MIGRATIONS SPONTANEES EN INDONESIE

La colonisation agricole du sud de Sumatra

editors - *éditeurs scientifiques*

Muriel Charras

LASEMA - CNRS

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U P X Nanterre - ORSTOM

1993

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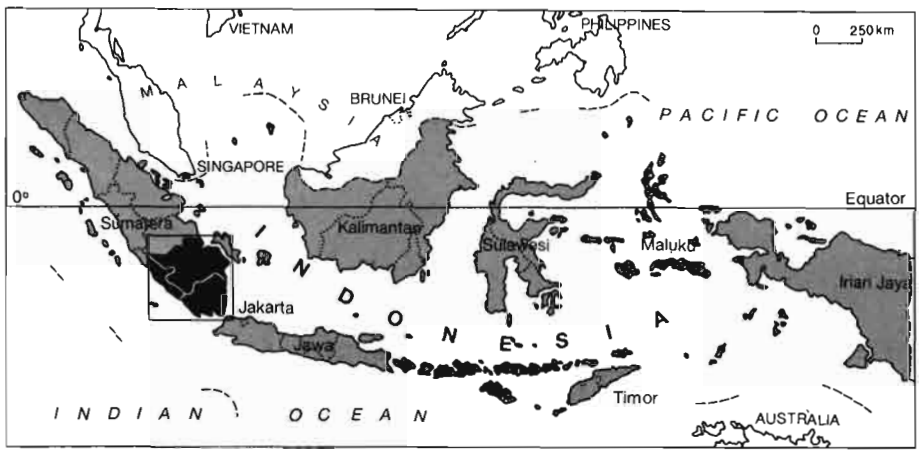

SKETCH OF LOCATION / *CROQUIS DE LOCALISATION*

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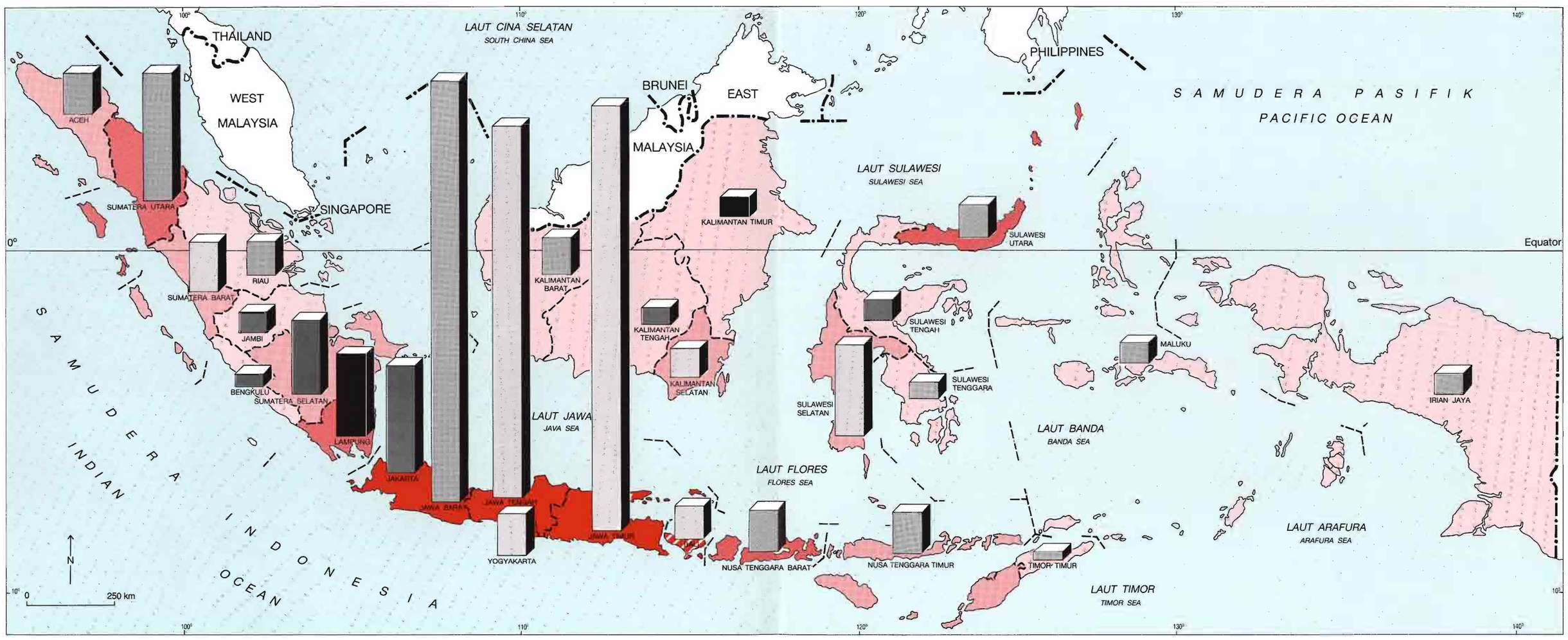
INDONESIA : BASIC DEMOGRAPHIC PARAMETERS

INDONESIE : PRINCIPALES DONNEES DEMOGRAPHIQUES

INDONESIA : BASIC DEMOGRAPHIC PARAMETERS *INDONÉSIE : PRINCIPALES DONNÉES DÉMOGRAPHIQUES*



M. PAIN / Jalizar 1990

total population by province
population totale par province

millions - *millions*

10
5
4
3
2
1
0

annual average growth (1980-1985)
taux de croissance annuel (1980-1985)

1,1-2,0

2,1-3,0

3,1-4,0

≥ 4,0

density (person/sq km)
densité (hab./km²)

0-49

50-99

100-199

1) 474 (Bali) 2) 650 < d < 1000

1) 2)

sources - *sources*

HUGO G.H., HULL T.H., HULL W.J., JONES G.W. (1987), *The Demographic Dimension in Indonesia Developement*, East Asian Social Science Monographs, Oxford University Press, Singapore- Table 2.2.

INTRODUCTION

Spontaneous agricultural settlement in Indonesia

Muriel Charras & Marc Pain

I. The demographic contrasts of a vast archipelago nation

The Indonesian Republic, with more than 13,000 islands spread over a sea area the size of the USA, is the largest archipelago nation in the world. In 1990, with 179 million inhabitants, it was the fifth most populous country in the world. Although, with an average population density of 93/km², Indonesia appears to be lightly populated, the rural population density on the island of Java is, with those of Bangladesh and the Vietnamese river deltas, the highest in the world.

The strong contrast between the population distribution and the dimension of the country, which sits astride the equator, produces a significant diversity of situations. In the first place, there are three major climatic regimes. Humid tropical, with a short and often unpredictable dry season, which covers the majority of Sumatra, Kalimantan (the Indonesian part of Borneo), Sulawesi (formerly the Island of Celebes), the Moluccas and Irian Jaya (the Indonesian part of Papua). Semi-humid tropical, denoted by a longer dry season and found in Java, Bali and Lombok. And finally semi-arid, characterised by a longer dry season than wet season, which sweeps across the small islands of the eastern archipelago (also known as the Sunda Islands).

A myriad of tiny islets contrasts with islands which are the size of a small continent. On some, rice fields are crowded together and even the smallest plot is cultivated. Others, still covered by vast forests, are inhabited by hunter-gatherers or, more frequently, are used extensively by swidden cultivators. To this diversity should be added the incredible cultural richness created by 300 ethnic groups living together.

The extreme imbalance of the population distribution is one of the essential geographic characteristics of this country. On the one hand, Java, Madura and Bali cover only 7% of the nation's territory, but contain nearly two-thirds of its population and have rural densities varying between 500 and 2,000 people per km². In the remaining 90% of the country, the population is very unevenly dispersed. Here, the average population density is only 39/km², although in places, pockets of higher density are found. The average population density of Kalimantan is 14/km² overall, while that of its southern province, South Kalimantan, gets to 60/km². In the northern and south-western peninsulas of Sulawesi, it reaches or is greater than 100/km². Finally, in Sumatra, the density in two provinces, the north (133/km²) and Lampung (177/km²), is more than twice the island's average. A more detailed analysis at the level of the administrative regions, *kabupaten*, would strengthen the patchwork impression provided by the population distribution map of the archipelago (Table 1; Insert map No. 1, p 10).

More than two-thirds of the area of Java (68%) is developed, compared to less than a quarter (21.5%) for Indonesia as a whole, 25% for Sumatra, 37% for Sulawesi, 15% for Kalimantan and less than 10% for Irian Jaya [1]. In truth, Indonesia possesses a huge real estate reserve.

This disparity in land population and development brings two groups of territories, now usually known as "inner" Indonesia (Java, Bali, and sometimes Lombok)

Chapter translated from French by F. Vaissière & K. Luckcuck

La colonisation agricole spontanée en Indonésie

Muriel Charras & Marc Pain

1. Les contrastes démographiques d'un immense archipel-Etat

La République d'Indonésie est le plus vaste archipel-Etat du monde avec plus de 13 000 îles, réparties dans un espace maritime de la taille des Etats-Unis. Avec 179 millions habitants en 1990, ce pays est au cinquième rang de la population mondiale. Avec une densité moyenne de 93 habitants au km², l'Indonésie apparaît peu peuplée. L'île de Java détient, cependant, le record des plus fortes densités rurales du monde avec le Bangladesh et les deltas vietnamiens.

Le fort contraste dans la répartition de la population et l'étalement du territoire, à cheval sur l'équateur, engendrent une très grande diversité. Il existe trois grands types de climat. Le climat tropical très humide, à courte saison sèche, souvent imprévisible, s'étend sur une grande partie de Sumatra, Kalimantan (partie indonésienne de Bornéo), Sulawesi (anciennes Célèbes), les Moluques et l'Irian Jaya (partie indonésienne de la Papouasie). Le climat tropical semi-humide, caractérisé par une saison sèche plus marquée, qui couvre Java, Bali et Lombok. Enfin, le climat semi-aride où la saison séche est plus longue que la saison des pluies, et qui balaye les petites îles de l'archipel oriental (appelées aussi les Petites îles de la Sonde).

Une poussière de petites îles s'oppose aux îles de la taille d'un continent. Dans certaines, les riziculteurs s'entassent et les moindres parcelles sont cultivées. D'autres encore couvertes de forêts sont toujours parcourues par les chasseurs-cueilleurs ou, plus fréquemment, sont utilisés de façon extensive par les essarteurs. A ceci il convient d'ajouter une formidable richesse culturelle où quelques 300 groupes ethniques cohabitent.

L'extrême déséquilibre dans la répartition de la population est une caractéristique géographique essentielle de ce pays. D'un côté, Java, Madura et Bali, représentant 7% du territoire, regroupent près des deux tiers de la population nationale et ont des densités rurales qui oscillent entre 500 et 2000 habitants/km². Dans le reste du pays, soit 90% du territoire, la population est très inégalement répartie, avec une densité moyenne n'atteignant que 39 hab./km², bien qu'il existe des niches de peuplement plus dense. Si Kalimantan a une moyenne de 14 hab./km², sa province méridionale, Kalimantan Selatan atteint 60 hab./km². A Sulawesi, la péninsule nord et celle du sud-ouest dépassent ou frôlent la centaine d'habitants au km². A Sumatra enfin, deux provinces dépassent de deux fois la moyenne insulaire: le nord (133) et le Lampung (177 hab./km²). Une analyse plus fine, à l'échelle des départements, kabupaten, *renforcerait l'impression de patchwork que donne la carte des densités de l'archipel (Tab. 1; carte n° 1, p.10).*

Alors que Java utilise plus des deux tiers de sa surface (68%), l'Indonésie dans son ensemble en exploite moins du quart (21,5%); Sumatra 25%, Sulawesi 37%, Kalimantan 15% et l'Irian Jaya moins de 10% (1). L'Indonésie dispose, dans l'absolu, d'une vaste réserve foncière.

Cette disparité dans le peuplement et dans la mise en valeur de l'espace oppose deux ensembles que l'on a aujourd'hui l'habitude de nommer l'Indonésie "intérieure" (Java, Bali, parfois Lombok) et l'Indonésie "extérieure" (les autres îles). Ces notions furent d'abord employées par le pouvoir colonial pour différencier deux types d'administration des territoires. Ensuite, elles furent reprises par C. Geertz (1963) pour opposer deux grands

Table 1. POPULATION DISTRIBUTION AND GROWTH BY ISLAND
DISTRIBUTION ET CROISSANCE DE LA POPULATION PAR ÎLE

Island	% of area	Population 1990 million	Density 1985 people/km²	Population growth 1971-80 %	1980-90 %
Java, Madura	6.9	107.6	755	2.0	1.6
Sumatra	24.5	36.6	69	3.3	2.7
Kalimantan	28.1	9.1	14	2.9	3.0
Sulawesi	9.9	12.5	61	2.2	1.9
Irian Jaya	22.0	1.6	3	2.6	3.4
Bali	0.3	2.8	476	1.7	1.2
Maluku	4.3	1.9	22	2.9	2.7
Nusa TenggaraW	1.0	3.4	52	2.3	2.1
Nusa Tenggara E	2.4	3.3	148	1.9	1.8
East Timor	0.8	0.7	64		3.0
INDONESIA	100	179.3	85	2.3	2.0

Note: The surface area of each major island includes that of the smaller surrounding islands in the same administrative region. Bureau of Statistics (BPS), Jakarta, 1986 and provisional figures for 1990.

and "outer" Indonesia (the other islands), into contrast. Without going into a detailed analysis of these two concepts, it can be said that they were initially used by the colonial powers to distinguish two types of territorial administration, and were subsequently used again by C. Geertz (1963) to compare two major agricultural systems (irrigated rice farming versus clearing and its derivatives) which, he claimed, were the product of two ways of thinking. Only the geographic comparison is discussed here.

In the context of these basic statistics and an established setting of rural over-population in Java and Bali, emigration from the populated zones towards the more unoccupied areas remains low. The sea is most definitely an obstacle in such an extensive archipelago. For many people, and most especially for farmers, the sea represents a psychological barrier to moving. The distant lands are unfamiliar and located in a different environment, the habits and customs of the people are unknown, transport is expensive, and the move can become an exile without hope of return. Up to the middle of the 1980s, maritime passenger transport was poorly developed, irregular, and even dangerous. Finally, it should be noted that certain restrictions on movement that had been implemented by the colonial powers were adopted by the various Indonesian governments who always sought to control and organise migration [2].

However, since 1970, migratory movements have increased and become more widespread. In 1980, there were 3.7 million Javanese-born people settled in the outer islands (4% of the Javanese population for that year), twice as many as 10 years earlier. The dominant migratory movement from Java has been towards Sumatra (77% in 1985), in particular to Lampung. Excluding migration to the mining enclaves (Aceh, Riau and East Kalimantan), it has been most notably directed to rural areas. Conversely, migration to Java has been directed almost exclusively towards the towns, mainly to greater Jakarta.

2. Planned agricultural settlement

■ "Kolonisatie": 1905-1941

The uneven population distribution in the archipelago and the economic problems of rural life in the heavily populated areas were the main reasons for devising and establishing a programme for the agricultural settlement of the outer islands. From its creation by the colonial powers in 1905, under the name of *"kolonisatie"* (*"kolonisasi"*, in Indonesian), until 1941, this programme was responsible for relocating 229,905 people, primarily to the southern half of Sumatra (89%), but also to the present province of South Kalimantan (3,107 people, or 1.35% of those relocated) and to Sulawesi (23,600 or 13.3%, mainly to the south-western peninsula). The programme only applied to people coming from Java and Madura. During this period, the majority of the land allocated, usually 0.75 ha per family, was suitable for irrigation [3].

This programme was completely separate from the private plantations set up on the outer islands and operated

systèmes agricoles (la riziculture irriguée d'un côté, l'essart et ses formes d'évolution de l'autre) assujettis, selon lui, à deux types de mentalités. Seule l'opposition strictement géographique sera retenue ici.

Face à ces chiffres bruts et malgré un contexte ancien de surpopulation rurale à Java et Bali, l'émigration des zones peuplées vers les régions relativement vides est restée faible. Dans le cas d'un archipel très étendu, la mer est très certainement un obstacle. Pour beaucoup, et plus particulièrement pour les paysans, la mer constitue un frein psychologique au mouvement. Les terres "au-delà" paraissent lointaines, leur environnement naturel différent et les us et coutumes des sociétés d'accueil restent inconnus. Jusqu'au milieu des années 80, les transports maritimes de passagers étaient peu développés, irréguliers, et même dangereux. Le départ pouvait paraître comme un exil. Enfin, il faut ajouter que le pouvoir colonial a imposé des restrictions à la mobilité, politique reprise ensuite par les gouvernements indonésiens qui ont toujours voulu contrôler et organiser les migrations (2).

Cependant, depuis 1970, les mouvements migratoires s'accélèrent et se diversifient. En 1980, on comptait 3,7 millions de personnes nées à Java et installées dans les îles extérieures (4 % de la population de Java cette même année), soit deux fois plus que dans la décennie précédente. Les migrations hors de Java sont dominées par celles se dirigeant sur Sumatra (77% en 1985) et particulièrement sur le Lampung. Mis à part les migrations vers les enclaves minières (Aceh, Riau, Kalimatan-Est), elles se dirigent plus particulièrement vers les zones rurales. Par contre, les migrations vers Java se font presqu'exclusivement vers les villes, Jakarta et sa grande banlieue constituant le premier pôle d'attraction.

2. La colonisation agricole planifiée

■ "Kolonisatie": 1905-1941

Cette inégale distribution de la population dans l'archipel et les difficultés économiques du monde rural dans les régions très peuplées ont été les principales raisons de la conception et de la création d'un programme de colonisation agricole des îles extérieures. Commencé par le pouvoir colonial en 1905 sous le nom de kolonisatie *(en indonésien,* kolonisasi*), ce programme a entrainé jusqu'en 1941, le déplacement de 229 905 personnes, installées principalement dans la moitié sud de Sumatra (89%), mais aussi dans l'actuelle province de Kalimantan Sud (3 107 personnes soit 1.35% du programme) et à Sulawesi (23 600, soit 10,3%, pour l'essentiel dans le sud-ouest). Le programme ne concernait que les gens originaires de Java et de Madura. Pendant cette période, la plupart des terres agricoles attribuées, en général 0,75 ha par famille, ont pu bénéficier d'infrastructures pour l'irrigation (3).*

Ce programme était clairement différencié du développement des plantations privées dans les îles extérieures qui, elles, fonctionnaient avec des ouvriers sous contrat à durée déterminée et qui étaient censés rentrer ensuite dans leur région d'origine. Ils n'avaient plus le droit de s'inscrire comme candidat à la kolonisatie *(4). Le peuplement de l'actuelle province de Sumatra Nord, où aucune colonisation agricole organisée n'a été réalisée, est le résultat du développement de ces plantations privées (5).*

■ "Transmigrasi"

Vue par le Président Sukarno comme l'unique solution à la surpopulation de Java, le programme reprend tout de suite après l'Indépendance, sous le nom de Transmigration, Transmigrasi *en indonésien. Les nouveaux villages sont d'abord créés sur les sites pressentis par les Hollandais avant la deuxième guerre mondiale, et dans les régions les plus proches de Java, en raison des coûts et des difficultés économiques qui ne cesseront d'augmenter.*

De 1950 à 1968, 403 747 personnes ont été déplacées dont 84% à Sumatra, 10% à Kalimantan et 4% à Sulawesi. A partir de 1953, les Balinais peuvent être candidats. En 1966, l'Irian Jaya, nouvellement intégré au territoire national (1962) devient province d'accueil. Si le gouvernement indonésien se veut plus généreux avec les migrants que ses prédécesseurs en leur octroyant deux hectares de terre par famille, force est de constater que la préparation rudimentaire des sites et la mauvaise gestion contraignent les colons à trouver seuls les moyens de leur survie.

Avec le temps, et surtout à partir de 1974, grâce à l'intervention de la Banque Mondiale et à l'amélioration des finances nationales, les infrastructures des nouvelles implantations vont se perfectionner d'année en année. La Transmigration devient le plus important programme de colonisation agricole organisée dans le monde si l'on considère la population déplacée (4,7 millions de personnes depuis 1970 dont la moitié entre 1985 et 1988), l'importance des investissements (11 663 US $ par famille en 1984, environ 6% du budget national dévolu au programme chaque année), les problèmes logistiques à résoudre et sans doute encore, la distance parcourue par les migrants.

Le programme s'accélère très nettement au début des années 80 et se poursuit jusqu'en 1988 qui marque une rupture. Toute création nouvelle est alors suspendue en raison, entre autres, des coupes budgétaires sévères instaurées pour soutenir l'économie nationale ébranlée

by contract workers who were supposed to return to their region of origin and who did not have the right to make application under *"kolonisatie"* [4]. The populating of the present province of North Sumatra, where no planned agricultural settlement took place [5], is due entirely to these private plantations.

■ "Transmigrasi"

Perceived by President Sukarno as being the only solution to the over-population of Java, the programme was relaunched immediately after Independence under the name of Transmigration, called *Transmigrasi* in Indonesian. Due to the costs and economic difficulties which kept on increasing, new villages were at first built in the locations already determined by the Dutch before the Second World War and in those areas closest to Java.

A total of 403,747 people were relocated between 1950 and 1968, 84% of which went to Sumatra, 10% to Kalimantan and 4% to Sulawesi. From 1953 on, the Balinese became eligible for the programme, and in 1966, Irian Jaya, recently annexed to the nation (1962), became a receiving province. If the Indonesian Government considered itself more generous than its predecessors in allocating 2 hectares of land to each migrant family, it must be pointed out that rough preparation of the sites and poor management made it necessary for the settlers to operate without assistance.

With the passage of time and, above all, the assistance of the World Bank and the recovery in the nation's financial situation from 1974 onwards, the infrastructure for new settlements improved from year to year. Transmigration became the most significant organised agricultural settlement programme in the world if the population resettled (4.7 million people since 1970, half of which being between 1985 and 1988), the level of investment (reaching $US 11,663 per family in 1984, about 6% of the national budget being allocated to the programme each year), the logistic problems that had to be resolved and unquestionably, once again, the distance covered by the settlers, are taken into account.

There was a very clear speeding up of the programme from the beginning of the 1980s until 1988 when all new development was suspended as a result of, amongst other things, the severe budgetary cuts implemented in order to shore up the national economy which had been shaken by the second oil crisis (Table 2).

Since 1972, the transfer and settlement of migrants other than military personnel, whose movements came under their own ministry [6], could only be authorised by the Ministry of Transmigration [7]. The Transmigration organised the whole activity from the choice and preparation of sites, and the selection of prospective families (based on the need to reduce population and the economic and geographic conditions in the departure regions), to the building and the administrative control of new villages for a minimum of five years, depending on their level of economic development. After this, the transmigrants' villages reverted to control by the local territorial administration, and the families of transmigrants were required, amongst other things, to pay their local taxes including land tax.

Without going into the different categories of transmigrants [8], the general rule was that a prospective family registered in the first place at the local Transmigration office. It would then be chosen by Jakarta for a specific

Table 2. NUMBER AND DESTINATION OF TRANSMIGRANTS, 1970-1988.
VOLUME ET DESTINATION DES TRANSMIGRANTS 1970-1988

Periods	Sumatra	Kalimantan	Sulawesi NTB, Maluku	Irian Jaya	Total
1970/1979	55000	17000	20400	2100	94500
1980/1984	227100	70600	51700	16600	366000
1985/1988	188960	72022	32310	10110	303402
1970/1988	471060	159622	104410	28810	763902
%	61.7	20.9	13.7	3.8	100

Notes: From 1983 onwards, family numbers only were included in the statistics. The number of individual transmigrants was derived on the basis of 4.6 people per family. From 1986, migrants arriving spontaneously in the Transmigration centres were included in the official statistics. This not only inflates the true figures but also makes data extraction difficult. In 1986, there were 687,000 spontaneous settlers (World Bank, 1986:171).

par le second choc pétrolier (Tab. 2).

Depuis 1972, seul le Ministère de la Transmigration (6), est habilité pour procéder au transfert et à l'installation de migrants autre que militaires, qui eux sont encadrés par leur ministère de tutelle (7). La Transmigration organise le mouvement depuis le choix et la préparation des sites, la sélection des familles candidates (en fonction des besoins d'allégement démographique et des conditions économiques et géographiques des régions de départ), jusqu'à l'implantation et la gestion administrative des nouveaux villages pendant un minimum de cinq ans, selon le niveau de leur développement économique. Au delà de cette période, les villages de transmigrants passent sous l'administration territoriale locale, et les familles de transmigrants devront, entre autres, payer les impôts locaux y compris la taxe foncière.

Indépendamment des différentes catégories de transmigrants (8), la règle générale veut qu'une famille candidate se fasse d'abord enregistrer au bureau local de la Transmigration. Elle sera ensuite sélectionnée pour une destination fixée par Jakarta. Elle y sera amenée et recevra au moins deux hectares de terre en pleine propriété. La grande majorité des familles aura une maison construite en bois avec un toit de tôle et percevra une allocation de nourriture (riz, poisson séché, huile de cuisson) pendant la première année, des outils agricoles en propre ou à partager avec d'autres familles, des ustensiles ou objets à usage domestique (matériel de cuisine, moustiquaire...).

Les transmigrants ont dans leur nouveau village une école primaire, un dispensaire, des emplacements prévus pour les lieux de culte et le marché. Des pistes d'accès les relient aux axes principaux de communication. Ils auront un jeune conseiller agricole qu'ils partageront avec d'autres villages de la Transmigration, et, souvent, ils bénéficieront assez rapidement du programme de distribution-crédit de bovins.

Le plus souvent, le transmigrant est libre de choisir ses cultures. Il reproduit le système agricole de son lieu d'origine et se consacre aux cultures vivrières, riziculture irriguée si les infrastructures ont été créées, sinon riz en culture sèche, maïs, manioc, arachides, soja ou autres haricots. Il reçoit quelques plants de cocotier, caféier, giroflier et d'arbres fruitiers, mais généralement, juste assez pour les planter dans son jardin d'un quart d'hectare (Charras, 1982).

■ *Problèmes et perspectives*

Sans parler des erreurs de choix des sites, de gestion, des ajustements de sa politique (9), la Transmigration se trouve aujourd'hui confrontée à un problème majeur de disponibilité en terre. En effet, les sites aménageables sont octroyés au Ministère de la Transmigration par le gouvernement provincial après que ce dernier en ait fait l'inventaire (potentialité agricole, statut foncier ...). Le plus souvent, ces terres sont partiellement délaissées par les populations locales parce que moins fertiles, moins utiles dans le cadre de leur système agricole, ou encore trop isolées.

Jusqu'à la fin des années 70, le Ministère de la Transmigration pouvait espérer trouver de grands espaces, aménageables en partie par des systèmes d'irrigation mis en oeuvre par le Ministère des Travaux Publics. Depuis le milieu des années 80, les vastes espaces d'un seul tenant deviennent rares. Une terre trop fractionnée, avec des enclaves appartenant aux autochtones, est lourde à gérer tant du point de vue d'éventuels dédommagements, qui conduisent de toute façon à un certain ressentiment des populations locales, que du point de vue de l'organisation du nouveau village et de son finage. Ces espaces sont d'autant moins disponibles que, depuis le milieu des années 80, il devient plus rentable pour les gouvernements provinciaux des îles extérieures, de louer ou de vendre ces terres aux projets de plantations privées.

Les sites suffisamment vastes et disponibles, actuellement accessibles, se trouvent sur les côtes marécageuses de Sumatra, de Kalimantan. Les aménagements y sont très importants et, sans compter le coût social de l'adaptation des colons à un environnement lacustre, onéreux pour un rendement qui reste longtemps trop faible.

Pour les villages de la Transmigration basés sur la culture vivrière non-irriguée, le niveau économique des colons reste très bas s'il n'y a pas un apport massif d'engrais, ou en l'absence d'intégration à un marché régional, voire inter-régional. Même si les paysans disposaient de moyens financiers, les engrais ne sont en général pas disponibles, régulièrement et au bon moment, dans la région d'implantation où les réseaux de distribution ne sont pas encore développés. D'autre part, leurs productions vivrières ne trouvent pas longtemps preneur sur un marché local très vite saturé. Seuls les surplus de riz peuvent être écoulés dans la mesure où ils sont collectés par l'agence nationale BULOG, toujours présente même dans les lieux les plus reculés.

La mise en place d'un programme de plantations commerciales a été tenté soit en association avec le Ministère des Plantations (les projets PIR) soit indépendamment de lui (sauf pour l'encadrement) et combiné aux cultures vivrières (Batumarta à Sumatra-Sud et Sitiung à Sumatra-Ouest).

Dans le premier cas, des difficultés sont survenues à la suite des divergences d'objectifs et d'intérêts entre les deux institutions, comme au temps de la kolonisatie *et des grandes plantations privées. La Transmigration a jusqu'ici, basé son programme sur la terre donnée en pleine propriété gratuitement. Par contre, les programmes PIR du Ministère des Plantations n'offrent qu'un contrat d'usage aux petits planteurs recrutés, ou demandent le remboursement des coûts d'installation. Les transmigrants refusent souvent de rembourser leurs dettes, entraînant avec eux les petits planteurs locaux directement recrutés.*

Dans le deuxième cas, les expériences ont apporté

destination. The family would be transported to this destination and would receive clear title to at least two hectares of land and a house of wooden construction with an iron roof. The family would also receive food rations (rice, dried fish, cooking oil) during the first year, farm implements for their own use or to be shared with other families, and utensils or other household items (cooking utensils, mosquito net, ...).

Transmigrants found their new village equipped with a primary school, a dispensary, facilities for places of worship and the market, and tracks that had already been opened up to the main axes of communication. There would also be a young agricultural adviser whom they shared with other Transmigration villages, and often, they fairly quickly took advantage of the cattle distribution and credit programme.

Most often, the transmigrant was free to chose his own crops. He copied the agricultural systems of his place of origin and devoted himself to food crops, irrigated rice growing if the necessary facilities had been established or dry rice growing if they had not, corn, cassava, peanuts, soya or other beans. He received several coconut, coffee, clove and fruit tree plants, but generally, just sufficient for planting in his quarter-hectare garden (Charras, 1982).

■ Problems and possibilities

Putting aside errors of site selection, management, and policy changes [9], the Transmigration is today confronted by a serious problem of land availability. In effect, the land where the villages have been established was granted to the Ministry of Transmigration by the provincial government following its classification (agricultural potential, fundamental condition, ...). In most cases, this land has been partly abandoned by the local inhabitants because of its lower fertility, lower utility in the framework of their agricultural system, or even because it is too isolated.

Up until the end of the 1970s, the Ministry of Transmigration still hoped to find large areas where a portion could be put under irrigation by the Ministry of Public Works. Since the middle of the 1980s, large tracts of land which are neither too isolated nor too close to native communities have become rare, even if only non-irrigated farming methods are considered. Land that is too fragmented, with small enclosed lots belonging to the local inhabitants, is difficult to manage just as much from the point of view of possible compensation, which in any case engenders a certain resentment on the part of local populations, as from the point of view of organising the new village and its surroundings. These areas have become even less available as, since the middle of the 1980s, it has become more profitable for the provincial governments of the outer islands to rent or sell these areas for private plantation projects.

The only large areas which are still accessible today are on the marshy coasts of Sumatra, Kalimantan and Irian Jaya. Very significant and difficult improvements are necessary in these areas for a return which remains too low for too long, without counting the social cost to the settlers of adapting to a waterside environment.

For the Transmigration villages dependent on non-irrigated vegetable crops, the economic level of the settlers remains very low unless there is massive application of fertilizer and access to a regional or even inter-regional market. Even if the farmers had the financial means, fertilizer is not generally available regularly and when needed, in a settlement area where the distribution network has not as yet been developed. On the other hand, the vegetable production does not sell for long on a local market that is very quickly saturated. Only the surplus rice production can be disposed of to the extent that it is collected by the national agency BULOG which can be found even in the most out of the way places.

The setting up of a programme of commercial plantations has been attempted either in collaboration with the Ministry of Plantations (the PIR projects), or independent of it (except for the framework) and combined with vegetable crops (Batumarta in South Sumatra, and Sitiung in West Sumatra). In the first case, difficulties arise from the divergence in aims and interests between the two institutions, as was the case at the time of *"kolonisatie"* and the large private plantations. Up until now, the Transmigration has built its programme on the free distribution of land with full title. On the other hand, the PIR programmes of the Ministry of Plantations only offer the small growers they recruit a land-use contract, or require reimbursement of the establishment costs. Transmigrants often refuse to repay their debts, thus influencing the small directly recruited planters to do the same. In the second case, experiments have brought about an undoubted improvement in household economies. These projects, which use up large tracts of land as the lots allocated range from 3.5 to 5 hectares per family, cannot be repeated due to the problem of land availability.

One of the major complaints levelled at the Transmigration programme is its lack of coordination with regional development. Although this objective has been listed among its aims since 1975, the Transmigration has essentially remained a settlement programme, absorbing on average 31% of the development budget of the receiving provinces, and between 40% and 50% of those who received the greatest number of transmigrants (Babcok, 1986:180). Although these provinces have undergone an unquestionable improvement in their road networks and

une incontestable amélioration de l'économie familiale. Ces projets, très gourmands en espace puisque les parcelles distribuées sont de 3,5 à 5 hectares par famille, ne peuvent être multipliés en raison du manque de terres disponibles.

L'une des critiques faites au programme de la Transmigration est l'absence de liaison avec le développement régional. Bien que cet objectif soit pris en compte depuis 1975, la Transmigration est restée essentiellement un programme de peuplement, absorbant en moyenne 31% du budget de développement des provinces d'accueil, entre 40 et 50% pour celles qui reçoivent le plus de transmigrants (Babcok, 1986: 180). Si ces provinces ont connu une amélioration incontestable de leur réseau routier et des infrastructures sociales (éducation et santé), elles ont été, par contre, peu soutenues dans le développement des secteurs industriel, agricole (sauf pour la riziculture irriguée) et tertiaire.

L'enclavement des implantations retarde le démarrage économique des villages et leur effet "dynamisant" sur l'économie régionale. Dans les meilleurs cas, il faut compter une dizaine d'années pour que les villages de la Transmigration commencent à avoir une vie économique décente (Luwu à Sulawesi-Sud, Batumarta à Sumatra-Sud). Dans le Lampung, il a fallu attendre le milieu des années 80, soit trente cinq ans après le début de la deuxième vague d'implantations organisées, et l'apport considérable de migrants spontanés, pour constater un certain développement régional , induit par un effet de masse et l'achèvement d'importantes infrastructures.

En 1983, l'Indonésie a connu un fort ralentissement de son économie avec la baisse des prix du pétrole. En conséquence, le gouvernement a réduit les budgets de développement, dont celui de la Transmigration (40% en 1987), et a entamé un processus de désengagement de l'Etat dans de nombreux secteurs de la vie nationale où il intervenait.

En outre, en 1986, le programme de la Transmigration en Indonésie fut l'objet d'une campagne internationale de critiques menée par le groupe "Friends of the Earth". Un dossier de la revue "The ecologist" dénonçait les atteintes à l'environnement et la "javanisation" des provinces extérieures, principalement dans la province de culture mélanésienne de l'Irian Jaya où il était prévu d'installer environ 130 000 familles avant la fin du VIe plan (1989).

C'est dans ce contexte (problèmes de disponibilité foncière, restriction budgétaire, critique internationale) que la Banque Mondiale et le Ministère de la Transmigration, décidèrent de se tourner vers la colonisation agricole spontanée, un mouvement déjà bien en place, mais dont les processus et l'ampleur sont encore largement ignorés.

3. La colonisation agricole spontanée

La colonisation agricole spontanée correspond à la mise en valeur de nouvelles terres par des immigrants qui arrivent et s'installent sur leur propre initiative. Dans le cas indonésien, elle peut se définir par opposition à la Transmigration comme toute action de mise en valeur de terres qui ne soit pas organisée par une quelconque institution et dont les acteurs sont des étrangers à la région d'accueil. Il faudrait ajouter aux migrants de l'Indonésie intérieure, habituellement pris en charge par la Transmigration, les groupes ethniques qui effectuent une migration inter-insulaire (les Bugis ailleurs qu'à Sulawesi-Sud, les Banjar hors de Kalimantan-Sud) et ceux, plus difficiles à circonscrire, venus d'une autre région d'une même île.

La colonisation agricole spontanée se différencie du processus de mise en valeur progressive des périphéries d'un noyau autochtone de peuplement ancien qui se fait, soit sous l'effet de la pression démographique, soit avec l'introduction d'une nouvelle culture ou par l'acquisition d'une nouvelle technique. Par exemple, une partie d'un village fonde une nouvelle communauté à quelques kilomètres de là pour se rapprocher de ses champs. Dans ce cas, le nouveau village appartient au même contexte culturel, au même réseau social que celui du village d'origine et les techniques agricoles mises en oeuvre restent identiques. C'est un processus endogène.

La colonisation agricole spontanée est un phénomène ancien en Indonésie qui a accompagné ou précédé le développement des premières formations étatiques côtières sur l'ensemble de l'archipel. Les côtes de Kalimantan en sont une bonne illustration. La population dite "malaise", orang melayu, *est issue d'un brassage entre populations locales de l'intérieur et de populations venues par la mer, non pas seulement pour commercer, mais aussi, pour ouvrir des plantations: poivre, à la fin du XVIème siècle, puis hévéa sur le Barito, au nord de Banjarmasin.*

C'est également le cas de la mise en valeur de l'est de Java par les populations venant du centre de l'île, de Madura et de Bali, avant l'intervention hollandaise. C'est encore l'occupation des versants orientaux de la chaîne des Barisan jusqu'à la côte par les Minangkabau du centre-ouest de Sumatra. Et, plus près dans le temps et toujours en action, ce sont les premiers aménagements des côtes marécageuses de Sumatra et de Kalimantan, plus particulièrement des deltas, à l'initiative des Bugis et des Banjar, bien avant les travaux entrepris par la Transmigration.

La colonisation agricole spontanée des îles extérieures par les migrants de l'Indonésie intérieure n'attire l'attention que lorsqu'elle atteint une certaine ampleur au sein d'une région. Souvent, ces faits étonnent, voire même soulèvent un certain scepticisme, car Javanais et Balinais sont présentés comme des sédentaires, irrémédiablement attachés à leur rizière. Dès 1957, on parle des Javanais

social infrastructure (education and health), they have, conversely, received little support for the development of their industrial, agricultural (except for irrigated rice growing) and service sectors.

The closed nature of the settlements slows down the economic start-up of the villages and their stimulating effects on the regional economy. In the best cases, about ten years are needed before the Transmigration's villages begin to have a satisfactory economic life (Luwu in South Sulawesi, and Batumarta in South Sumatra). It was only in the middle of the 1980s, 35 years after the beginning of the second wave of organised settlements and following a massive influx of spontaneous migrants, that a certain regional "development", brought about by a mass settlement effect and the completion of major infrastructure works, could be observed in Lampung.

With the fall in oil prices in 1983, the Indonesian economy underwent a significant slowing down. The government cut development budgets, including that of the Transmigration (40% in 1987), and set about separating the state from a number of sectors of national life in which it had previously been involved.

In 1986, the Transmigration programme in Indonesia was the target of an international campaign of criticism lead by the group "Friends of the Earth". An article on the Transmigration in the magazine "The Ecologist", condemned the environmental damage and the "javanisation" of the outer provinces, especially in the Melanesian province of Irian Jaya where it had been planned to settle some 130,000 families before the end of the VIth plan (1989).

It was against this background (problems of real estate availability, budgetary restrictions, and international criticism), that the World Bank and the MOT decided to move to spontaneous agricultural settlement, a process that was already well established, but whose mechanisms and scope were still almost unknown.

3. Spontaneous agricultural settlement

Spontaneous agricultural settlement is defined as the agricultural development of new areas by immigrants who arrive and settle of their own accord. In the Indonesian situation it could be defined, in contrast to the Transmigration, as all land development activity in a rural setting that is not institutionally organised, and whose participants are not native to the receiving region. To those groups coming from inner Indonesia and usually supported by the Transmigration, must be added others which undertake an inter-island migration (for example, the Bugis other than in South Sulawesi, and the Banjar outside South Kalimantan), and those, less easily and less precisely defined, coming from another region on the same island.

Spontaneous agricultural settlement is quite different from the process of progressive development on the periphery of an existing nuclear native settlement, which takes place as the result either of population pressure, or of the introduction of a new crop or the implementation of a new technique. For example, part of an existing village establishes a new community a few kilometres away so as to be closer to its fields. In this case, the new village is part of the same cultural setting and social network as the original village and its agricultural methods remain unchanged. This is a purely endogenous process.

In Indonesia, spontaneous agricultural settlement is a long established phenomenon. It accompanied or preceded the creation of the first coastal states throughout the whole archipelago. One good example is the Kalimantan coast where the population, described as "Malay", *orang melayu,* is derived from a mixture of local people coming from the hinterland and others who arrived by sea, not only to trade, but also to open up land (pepper, at the end of the 16th century then rubber on the Barito to the north of Banjarmasin).

A further example, which began prior to the arrival of the Dutch, is the development of the eastern part of Java by groups coming from the centre of the island, from Madura and from Bali. Yet another is the agricultural settlement, by the Minangkabau from the central-western part of Sumatra, of the area going from the eastern slopes of the Barisan Range to the coast. Finally, and of a more recent and still active nature, is the initial development of the marshy coast of Sumatra and Kalimantan, most especially the delta regions, undertaken by the Bugis and the Banjar well before that undertaken for the Transmigration.

On the outer islands, spontaneous agricultural settlement by people from central Indonesia attracted attention whenever it reached a certain level in a single region. Beginning in 1957, mention is made of the Javanese in Lampung (Kampto Utomo, whose works were published in 1975), and, at the beginning of the 1970s, development by the Madurese in South Kalimantan (P. Guinness, 1977) and by the Balinese in central Sulawesi (G. Davis, 1976 and M. Charras, 1982) was observed. In the first two cases, these were movements which followed one after the other and which spread out from the organised settlements. In the last case, the activity, undertaken by a community that had been in exile since the beginning of the century (for political reasons and for infringement of statute law), was subsequently taken over by the Transmigration at the request of the first settlers.

à Lampung (Kampto Utomo, dont les travaux ont été publiés en 1975). Au début des années 70, on remarque les aménagements des Madurais à Kalimantan Sud (P. Guinness, SODETEG, 1977) et ceux des Balinais dans le centre de Sulawesi (G.Davis, 1976 et M. Charras, 1982). Dans les deux premiers cas, il s'agissait de mouvements qui se sont faits dans la foulée et par essaimage des implantations organisées. Dans le dernier, le mouvement fut induit par une communauté en exil depuis le début du siècle (pour des raisons politiques ou par suite de transgression de la loi coutumière), récupéré ensuite par la Transmigration à la demande des premiers pionniers.

Enfin, le formidable processus de peuplement du Lampung, qui est passé de 376 000 à 6 millions d'habitants entre 1930 et 1990, l'impressionnante évolution de la mise en valeur des terres et de l'organisation de l'espace, étudiés par l'équipe française de l'ORSTOM (Pain, 1989), a révélé une dynamique régionale où les migrants spontanés jouent un rôle clef.

■ Le migrant et le colon spontané

La définition du migrant et du colon spontané méritent d'être précisée dans la mesure où le Ministère de la Transmigration a détourné de leur sens les termes appropriés, en voulant récupérer le mouvement. Les termes de spontan *(spontané),* swakarsa *(terme d'origine Sanskrit voulant dire "qui agit librement sans pression d'aucune sorte), et* sisipan *(qui s'insère dans) doivent être suivis des qualificatifs* murni *(pure),* alami *(naturel) pour retrouver un peu de leur sens (Harjono, 1978:15-24) (10).*

Le migrant spontané est une personne qui choisit sa destination et le moment de son départ en dehors de toute intervention institutionnalisée. Un colon spontané est une personne qui trouve de la terre, un travail agricole, ou un travail non-agricole mais en milieu rural, en dehors des villages gérés par la Transmigration, ou, à l'heure actuelle, de tout autre programme officiel. Le migrant spontané peut avoir été recruté par une personne, un sponsor, *qui organise le voyage et lui procure travail ou terre. Ce "parrain"peut être de la région d'accueil mais aussi un ancien colon de même origine que le migrant.*

Alors qu'un transmigrant ne peut être qu'originaire de l'île de Java, Bali et Lombok, un colon spontané peut appartenir à tous les groupes ethniques qui composent l'Indonésie, à condition qu'il s'installe dans une région occupée par un autre groupe ethnique.

Certains migrants spontanés choisissent le moment de leur départ et leur destination, mais celle-ci peut-être un village administré par la Transmigration où ils ont de la famille ou des connaissances. S'ils veulent obtenir des terres de réserve ou des lots abandonnés par certains transmigrants, ils doivent avoir été enregistrés, avant leur départ, par le bureau de la Transmigration. Ces migrants deviennent officiellement des transmigrants spontanés, Transmigran Spontan *ou* Swakarsa, *avec le qualificatif* murni *car ils ne sont pas programmés. Ils ont été intégrés aux statistiques générales à partir de 1986, permettant ainsi à la Transmigration d'atteindre les quotas fixés pour le IVe Plan Quinquennal.*

Presque tous les villages accueillent des migrants spontanés, même si le site est réputé difficile et la situation économique mauvaise. D'après l'étude "Inventory study on Transmigration sites" réalisée en 1987 (Ministère de la Transmigration, 1987), ils représentaient 10% du total des transmigrants et venaient ainsi contrebalancer la défection des familles officiellement installées qui, selon cette même étude, atteignaient 8%.

Ce mouvement est encouragé dans la région de départ par les bureaux de la Transmigration qui facilitent les procédures d'enregistrement, et par le gouvernement provincial qui octroie parfois une petite subvention. En 1989, à Bali, une centaine de familles, sur les 800 enregistrées, avaient reçu du gouvernement provincial 150 000 Rp. La même année, à Lombok, presque toutes les familles migrantes enregistrées (434 sur 474) avaient pu recevoir 100 000 Rp. Une enquête réalisée par le bureau de la Transmigration, auprès de tous les chefs de village de Lombok, révélait que cette année là, 1 987 familles avaient quitté l'île sans se faire enregistrer pour une destination déclarée dans une région de Transmigration. Ils n'étaient munis que d'une lettre de changement de résidence ou de voyage (11).

Les migrants qui s'installent dans un village qui n'est plus administré par la Transmigration peuvent être considérés comme des colons spontanés. Ils dépendront de l'administration locale. Les chefs de village demandent au nouveau venu le laissez-passer de voyage (surat jalan) *à leur arrivée. Lorsque le changement de résidence est demandé, habituellement après quelques mois, tous n'exigent pas la lettre de changement de résidence* (surat pindah) *délivrée par le chef de village d'origine, préférant juger au cas par cas. Le village d'accueil signalera le nouveau venu (non pas celui en visite) à son administration de tutelle, sur les feuilles de collecte statistique (qui doivent être normalement remplies mensuellement) dans la colonne des immigrants* (pendatang). *Le chef de village et les villageois ont toute liberté pour encourager ou non un nouveau venu à s'installer.*

■ Le mouvement spontané et l'Etat

Dès 1972, la charte de la Transmigration reconnaît l'importance du mouvement de colonisation agricole spontané comme objectif ultime de la Transmigration

Finally, the amazing process of settlement in Lampung, whose population went from 376,000 to 6 million between 1930 and 1990, and the impressive growth in land development and regional management, studied by the French team from ORSTOM (Pain, 1989), disclosed a regional activity in which spontaneous migrants played a key role.

■ Spontaneous migrant and settler

The definitions of a migrant and a spontaneous settler are worth explaining inasmuch as the Ministry of Transmigration has corrupted the meaning of the appropriate terms in an attempt to take over the movement. The terms *spontan* (spontaneous migrant), *swakarsa* (a term of Sanskrit origin meaning "who acts freely and without any external coercion") and *sisipan* (who fits into), should be followed by *murni* (pure) or *alami* (natural), so as to recover a little of their true meaning (Harjono, 1978:15-24) [10].

The spontaneous migrant is someone who choses his destination and the moment for his departure without the intervention of any institution. A spontaneous settler is someone who finds land and agricultural employment, or non-agricultural employment but in a rural setting, outside the villages managed by the Transmigration or, at the present time, any other formal organising programme. The spontaneous migrant may have been recruited by an individual, a *sponsor*, who organises his voyage and finds work or land for him. This may be a person from the receiving region but may also be an established settler from the same region of origin.

Whereas a transmigrant can only be someone from the islands of Java, Bali and Lombok, the migrant and spontaneous settler can come from any of the ethnic groups that make up Indonesia, provided that he settles in a region populated by a different ethnic group.

Certain spontaneous migrants select their departure time and their destination, but the latter may be a village administered by the Transmigration where they already have family or friends. If they wish to have any hope of obtaining reserve land or lots abandoned by certain transmigrants, they must have been registered, before they left, by the Transmigration office. These migrants officially become spontaneous transmigrants, *T. Spontan* or *T. Swakarsa* qualified by *murni*, as they were not part of any programme. They have been included in the overall statistics since 1986, thus allowing the Transmigration to reach the quotas fixed for the IVth Five Year Plan.

Almost all villages accept spontaneous migrants, even if the location is known to be difficult and the economic situation is poor. According to the report "Inventory study on Transmigration sites" carried out in 1987 (Ministry of Transmigration, 1987), they accounted for 10% of the total programmed transmigrants and thus managed to counterbalance the drop-out rate of transmigrants which, according to the same study, had climbed to 8%.

This movement was encouraged by the Transmigration offices in the departure region, who made registration procedures easy, and by the provincial government who sometimes granted a limited amount of aid. In 1989, about one hundred out of the 800 registered families in Bali received 150,000 Rps from the provincial government. In Lombok, for the same year, almost all the registered migrant families (434 out of 474) had been able to obtain 100,000 Rps. A survey of all village chiefs in Lombok, carried out by the Transmigration office, revealed that, during that year, 1,987 families had left the island for a Transmigration region (declared destination) without registering. All they took with them was a change of residence letter or a travel letter [11].

Migrants settling in a village which is no longer administered by the Transmigration may be considered as spontaneous settlers and will have to deal with the local administration. Village chiefs request a new arrival's travel permit (*surat jalan*) when he arrives. Whenever a change of address is requested, usually after a few months, not all chiefs require the change of address letter (*surat pindah*) issued by the chief of the village of origin, preferring to judge each case on its own merit. The receiving village will notify settled arrivals (not visiting arrivals) to its overseeing administration, on the statistics collection sheets (which should normally be filled out monthly) under the heading immigrants (*pendatang*). The village chief and the villagers have every liberty in encouraging or discouraging the settlement of a new arrival.

■ The spontaneous movement and the State

From 1972, the Transmigration's charter recognised the importance of the spontaneous agricultural settlement movement as organised Transmigration's ultimate objective, while adding that this movement should be "*teratur dan besar-besaran*", that is "organised and expanded".

In 1978, the report "The promotion of unassisted Transmigration in Indonesia" by J. Harjono, did not bring about any change in the programme. It already emphasised the incompatibility between the notions of spontaneous and organised settler and, amongst other proposals, suggested that the provincial government be responsible for determining the receiving zones (through the Planning Agency, BAPPEDA) and for resolving the problems of a

organisée tout en ajoutant que ce mouvement doit être teratur dan besar-besaran, *"organisé et amplifié".*

En 1978, le rapport de J. Harjono, "The promotion of unassisted Transmigration in Indonesia", ne provoque aucun ajustement du programme. L'auteur soulignait déjà l'incompatibilité des notions de "spontané" et d'"organisé", et proposait, entre autres, que le gouvernement provincial se charge de déterminer des zones d'accueil (via l'Agence au Plan, BAPPEDA) et de régler en priorité les problèmes d'accès à la terre du migrant une fois sur place (via le Bureau du Cadastre, Agraria, BPN).

En 1988, un décret organise la Transmigrasi Swakarsa, *(KEP.82/MEN/1988), faisant intervenir financièrement le transmigrant par sa participation aux frais d'installation, autorisant et encourageant le concours d'institutions privées ou publiques (dont le Ministère des Plantations), laissant à la Transmigration la sélection et l'orientation du migrant. Le colon* Swakarsa *devenait ainsi une catégorie de la colonisation agricole organisée et planifiée.*

C'est dire que pour l'instant, le Ministère de la Transmigration n'est pas directement concerné par le vrai mouvement de colonisation agricole spontanée. La Direction des Swakarsa, *s'occupe de transmigrants sélectionnés, installés dans des régions choisies suivant des programmes spécifiques (PIR ou autres). Le centre de recherche du ministère, le PUSLITBANG, a cependant mené plusieurs études sur les transmigrants spontanés (Transmigration, 1980c, 1981a, 1982) et sur les migrants spontanés indépendants à Kalimantan-Sud (1978).*

En 1989/1990, plusieurs séminaires ont été organisés autour d'un concept développé par le gouvernement provincial de Sumatra-Sud. Largement inspiré par les initiatives d'implantations spontanées, il va devenir la base du programme TRANSABANGDEP, Transmigrasi Swakarsa Pengembangan Desa Potensial, *"Transmigration spontanée et développement des villages potentiels". Le principe est d'adjoindre aux villages autochtones des petites unités de transmigrants (de 50 à 150 familles) afin d'atteindre le statut administratif de "village" qui, selon la "loi villageoise" de 1979, doit avoir au minimum 500 familles ou 2 000 âmes.*

Dans l'optique d'une décentralisation, l'implication des gouvernements locaux des provinces de départ et d'accueil est demandée. La Transmigration sélectionne les migrants et prépare les sites d'implantation, préalablement choisis par le gouvernement provincial d'accueil. Les autorités de la province de départ s'occupent du déplacement (transport, allocation). Le candidat migrant doit participer à hauteur de 5% du coût total. Même s'il ne s'agit pas toujours de vrais migrants spontanés, ce nouveau concept s'appuie sur un processus existant. C'est peut être le début d'un développement local intégré. Les premières installations de ce type étaient expérimentées en 1990 à Sumatra-Sud et à Kalimantan-Est et Ouest.

L'attitude de la Transmigration sur le site de destination est claire. Tout migrant arrivant sans avoir été préalablement inscrit au bureau de la Transmigration de son lieu d'origine, donc non muni de sa carte d'enregistrement (kartu seleksi *ou* P6), *est considéré en situation irrégulière. Il ne sera pas autorisé à s'installer dans un village administré par la Transmigration.*

D'autres institutions interviennent parfois dans le processus d'installation des colons spontanés, notamment lorsqu'ils défrichent des zones interdites. Les colons sont alors confrontés au Ministère des Forêts qui gère les réserves naturelles, les forêts protégées (hutan lindung) *ou encore les forêts d'exploitation qui sont réservées aux concessions forestières. L'attitude du ministère est plus sévère avec les colons étrangers à la région, jugés en situation illégale, qu'avec les populations locales qui utilisent traditionnellement ces espaces. Le déménagement et la réinstallation des défricheurs est confié au Bureau de la Population et de l'Environnement, le BKLH. Les populations locales sont sommées de rejoindre leur village d'origine tandis que, la plupart du temps, on propose aux colons de l'Indonésie intérieure de rejoindre un centre de Transmigration.*

La conservation de l'environnement, présentée officiellement comme une priorité gouvernementale, est devenue un problème particulièrement sensible. Ces institutions ont une perception de plus en plus négative du mouvement de colonisation spontanée. Récemment, dans les provinces du Lampung (1989/1990) et de Sumatra-Sud (1990) des actions d'éclat, avec destruction par le feu des maisons et des plantations dans les zones de montagne, ont été menées par l'administration territoriale, aidée par l'armée.

D'une manière générale, dans les autres régions d'accueil, là où les terres sont libres, l'administration locale (du village à la province en passant par le département) et l'Agence de Planification régionale, BAPPEDA, reconnaissent volontiers le mouvement spontané comme un élément dynamique dans l'économie locale. Cet apport de population donne droit à une augmentation des subsides de développement octroyés par le gouvernement central et permet ainsi d'étendre les infrastructures sociales pour tous.

migrant's access to land (through the Titles Office, Agraria, BPN) following his arrival.

In 1988, legislation regulated the *Transmigrasi Swakarsa* (KEP.82/MEN/1988), requiring the transmigrant to be financially involved through a contribution to his installation costs, authorising and encouraging the support of private and public institutions (including the Ministry of Plantations), and leaving the responsibility for the selection and direction of the migrant to the Transmigration. The *swakarsa* thus became a category of organised and planned settler.

This meant that, for the moment, the MOT was not directly involved in the true spontaneous agricultural settlement movement. The Department of *Swakarsas* was responsible for the selected transmigrants who were established in regions chosen according to the criteria of specific programmes (PIR or other). The MOT's research centre, PUSLITBANG, nevertheless carried out several studies on spontaneous transmigrants (Transmigration, 1980c, 1981a, 1982), and on independent spontaneous migrants in South Kalimantan (1978).

In 1989/90, several conferences were organised based on "Spontaneous transmigration and development of potential villages", a concept developed by the provincial government of South Sumatra and prompted mainly by the initiatives of spontaneous settlements which were to become the basis of the programme called TRANSABANGDEP, *Transmigrasi Swakarsa Pengembangan Desa Potensial*. Its principle was to attach small units of transmigrants (from 50 to 150 families) to indigenous villages which did not have the minimum 500 families or 2000 people needed to attain the administrative status of "village" as required by the "village law" of 1979.

With a view to a decentralisation, the involvement of the provincial governments in the departure and receiving areas was requested. The Transmigration selected the migrants and prepared the receiving sites that had been chosen in advance by the government of the host province. The provincial authorities in the departure region looked after the travel arrangements. The potential migrant had to contribute up to a maximum of 5% of the total cost. Even if this new concept did not always involve real spontaneous migrants, it relied on an existing process and could be a first step towards a local integrated development. The first settlements of this type were tested in 1990 in South Sumatra and in East and West Kalimantan.

The attitude of the Transmigration in the destination areas was straightforward. Any migrant arriving without having made the prerequisite registration at the Transmigration in his place of origin, and not carrying his registration card (*kartu seleksi* or P6), was deemed to be unauthorized. He would not be permitted to remain in a village administered by the Transmigration.

Other institutions sometimes became involved in the spontaneous settlers' establishment process. The Ministry of Forests, in particular, which managed natural reserves, protected forests (*hutan lindung*) or even commercial forests reserved for holders of forestry concessions, became involved whenever settlers moved in and began clearing unauthorized zones. Its attitude was more severe with settlers from outside the region, who were considered as illegal, than with the local people who had traditionally used these areas. The removing and resettling of these clearers was the responsibility of the Office of Population and the Environment, the BKLH. Local inhabitants were required to return to their village of origin, whereas, most of the time, settlers from inner Indonesia were requested to become attached to a Transmigration centre.

As environmental protection was given official status as a government priority and became a particularly sensitive issue, these institutions took a more and more negative view of the spontaneous movements. Recently, in the provinces of Lampung (1989/90) and South Sumatra (1990), disturbances involving the burning of villages and plantations have been carried out by the territorial administration with the assistance of the army.

As a general rule in the other receiving regions, where migrant inflows were less significant than in South Sumatra, the local administration (from the village through the intermediate levels up to the provincial level) and the regional Planning Agency, BAPPEDA, willingly recognised the spontaneous movement as a dynamic element in the local economy. This influx of population gave them the right to an increase in development subsidies granted by the central government, and thus enabled them to enlarge the social infrastructure for everybody.

4. Framework of the study

■ The background to the programme

The atlas of Lampung province [12], produced by the ORSTOM team within the Ministry of Transmigration, is the starting point for the new programme built around the theme of spontaneous migrations. Its aim is to better understand the elements of both population movements

4. Le cadre de l'étude

■ Les bases du programme

L'atlas de la province du Lampung (12), réalisé par l'équipe ORSTOM au sein du Ministère de la Transmigration, est à l'origine du nouveau programme thématique centré sur les migrations spontanées. L'objectif de l'étude est de mieux comprendre les composantes des mouvements de population et des formes de mise en valeur spontanées qui concourent à l'extension du domaine agricole des îles d'Indonésie situées à la périphérie de Java.

Le gouvernement indonésien réduit actuellement le programme de Transmigration entièrement subventionné. Malgré une attitude et des définitions quelquefois ambigües, son but revient finalement, et cette tendance ne pourra que s'amplifier, à promouvoir et à mieux encadrer les migrations individuelles qui s'effectuent sans le support de l'Etat.

Tout en préservant le dynamisme du mouvement spontané, il s'agit de mettre au point une politique et des moyens d'incitation adéquats pour l'orienter, et pour assurer, en même temps, la protection de l'environnement et l'intégration des nouveaux venus dans l'espace socio-économique régional. Par suite d'une double contrainte, d'une part la raréfaction de grandes étendues disponibles d'un seul tenant, d'autre part le manque de terres se prêtant de façon continue aux cultures vivrières, les responsables prévoient de diversifier les systèmes de production des colons potentiels en encourageant les cultures commerciales, l'exploitation de la forêt, la pêche et le développement des services.

On sait encore peu de choses sur les migrants spontanés. Placés dans des situations précaires, ils font souvent preuve de plus de dynamisme que les transmigrants des programmes officiels de peuplement, trop souvent attentistes et dépendants de l'aide administrative. Ils acquièrent leurs terres après entente préalable avec les propriétaires du sol, et ont ainsi de bons contacts avec les populations locales. Mais nombreux sont ceux qui n'ont pas pu ou qui ont négligé de régulariser leur situation foncière.

Certains ont adopté les systèmes de production locaux bien adaptés aux conditions régionales, en particulier ceux qui se sont consacrés aux cultures commerciales. Mais la recherche de bons sols sur les fortes pentes a parfois infligé de graves dommages à l'environnement. D'autres, toujours en quête de terres libres, pratiquent une forme d'agriculture itinérante dans des régions reculées. L'isolement des pionniers est un obstacle majeur à la commercialisation de leur production et à l'accès aux services ou aux équipement collectifs. Cependant, du fait des pressions démographiques qui s'exercent au coeur de l'archipel, du développement des migrations inter-îles dans le sillage de la Transmigration et de l'amélioration considérable des moyens de communication, le nombre des spontans *ne devrait que croître.*

L'analyse des processus d'émergence d'une nouvelle géographie de l'espace indonésien, la connaissance et l'évaluation des transformations liées aux migrations spontanées apparaissent essentielles pour guider les choix du gouvernement en matière d'aménagement. Il devenait indispensable de consacrer à ce thème une série d'études spécifiques. C'est le sens de la demande indonésienne, appuyée par la Banque Mondiale.

CADRE INSTITUTIONNEL ET FINANCEMENT

L'étude a été menée dans le cadre d'un accord de coopération bi-latérale entre la France et l'Indonésie. A la suite d'une convention ORSTOM / CNRS - Ministère de la Transmigration et d'un contrat signé avec INDECO (13), bureau d'études local, une équipe d'une dizaine de chercheurs s'est engagée sur ce sujet d'extrême actualité.

Le montage financier est original. Il permet de ne pas grever la dette indonésienne par le biais d'un double financement. La première moitié du budget est gratuite: elle correspond à la prise en charge d'experts par le gouvernement français (24 hommes-mois ORSTOM pour le responsable du programme, 7 hommes-mois CNRS pour le co-responsable). L'autre moitié du budget est couverte par un prêt de la Banque Mondiale accordé au Ministère de la Transmigration.

L'étude devait durer une année mais compte-tenu du temps nécessaire à la mise en place administrative du projet, les travaux se sont finalement étendus sur deux ans avec, bien entendu, le même budget de fonctionnement, ce qui n'a pas été sans poser quelques problèmes.

Au-delà des rapports techniques qui ont été remis en juillet 1991 au Ministère de la Transmigration, et avec l'autorisation officielle de ce dernier, les chercheurs ont décidé de publier un ouvrage collectif qui réunisse à la fois les qualités scientifiques attendues par les spécialistes et la facilité de lecture pour un public moins averti.

La publication de cet ouvrage a reçu le soutien de différents organismes. Nous remercierons en premier lieu le Ministère français des Affaires Etrangères dont la contribution fut décisive et renouvelée, ainsi que le service des éditions de l'ORSTOM (DIST) qui a accepté de financer une publication non prévue . Nous sommes également reconnaissants aux entreprises françaises, TOTAL Indonésie, la Fondation du Crédit Lyonnais (Paris) et sa représentation à Jakarta, la compagnie aérienne AIR FRANCE , sans le concours desquelles

and forms of spontaneous development, which act together to expand the area under agriculture on the Indonesian islands which lie around the periphery of Java.

The Indonesian Government is at present reducing the totally-subsidised Transmigration programme. In spite of an attitude and definitions which are sometimes ambiguous, its ultimate aim is, and this tendency will only become more pronounced, to promote and better organise the individual migrations which take place without any state assistance.

This consists of putting in place a policy and the necessary means of motivation, in order to direct the spontaneous movement, while still maintaining its dynamism, and to ensure, at the same time, the protection of the environment and the integration of the new arrivals into the regional socio-economic area. In consequence of a twofold constraint, on one the hand the reduced availability of large uninterrupted areas of land, and on the other hand the absence of land that can be put under continuous vegetable cultivation, those responsible are planning to diversify the production systems available to potential settlers by encouraging commercial crops, forestry development, fishing and the establishment of service industries.

As yet, little is known about spontaneous migrants. Put into precarious situations, they often demonstrate greater dynamism than the transmigrants from the official settlement programmes, who too often adopt a wait-and-see policy and depend on the administration's assistance. Their land is acquired subsequent to a preliminary agreement with the landowners, thus generating good contacts with the local people. There are many, however, who have not been able to legalise, or have overlooked legalising, their land ownership position.

Some of them, in particular those who have gone in for commercial crops, have adopted the local production methods which are well suited to the conditions of the region. The search for fertile soil on steep slopes has, however, sometimes resulted in severe damage to the environment. Others, still seeking free land, practise a type of itinerant agriculture in the remote regions. The settlers' isolation is a major obstacle to the marketing of their produce and to their access to services and collective farm equipment. Nevertheless, as a result of demographic pressures which are being felt in the centre of the archipelago, of the development of inter-island migrations in the wake of the Transmigration, and of the considerable improvement in systems of communication, the number of "spontans" should continue to increase.

An analysis of the processes of emergence of a new geography on the Indonesian territory, and an understanding and evaluation of the transformations linked to spontaneous migrations, appear essential for guiding government decision making related to development. It was becoming imperative that a series of specific studies be devoted to this theme. The Indonesian request, supported by the World Bank, answers this need.

INSTITUTIONAL SETTING AND FINANCE

The study was carried out under a bilateral cooperation arrangement between France and Indonesia. As the result of an agreement between ORSTOM/CNRS and the Ministry of Transmigration, and a contract with INDECO [13], a local firm of consultants, a team of about ten researchers undertook this extremely topical subject.

The financial arrangements were quite original, and were such as not to burden the Indonesian debt through the expedient of double financing. The first half of the budget, the cost of specialists, was underwritten by the French Government (24 man-months for the team-leader by ORSTOM, and 7 man-months for the team co-leader by CNRS). The other half of the budget was supplied from a loan granted to the Ministry of Transmigration by the World Bank.

The study should have lasted one year but, in view of the time needed for the administrative set-up of the project, the work finally stretched out over two years with, of course, the same operating budget, which in itself created a number of problems.

In addition to the technical reports which were handed over to the Ministry of Transmigration in July 1991, and with the official authorisation of this body, the researchers decided to publish a collective work which combined both the scientific substance expected by the specialists and the ease of reading needed by a less informed public.

The publication of this work received the support of a number of different organisations. We would like most of all to thank the French Ministry of Foreign Affairs whose contribution was both critical and renewed, as well as the publication service of ORSTOM (DIST) who agreed to finance an unscheduled publication. We are equally most grateful to the French companies, TOTAL Indonesia, the Crédit Lyonnais Foundation and its representative office in Jakarta, and the airline AIR FRANCE, without whose assistance the printing would not have been possible. Finally, it is worth pointing out that the researchers contributed directly to the financing of their own project.

l'impression n'aurait pas pu avoir lieu. Il n'est pas inutile de souligner enfin que les chercheurs ont participé directement au financement de leur projet.

LE CHOIX DE LA PROVINCE DE SUMATRA-SUD

Bien que les migrations y soient moins spectaculaires qu'au Lampung, la province de Sumatra-Sud (Sumatera-Selatan*) a été choisie parce qu'elle est la deuxième province d'accueil d'Indonésie. Elle offre par ailleurs une variété de milieux agro-écologiques représentative de Sumatra: une large bande côtière marécageuse, une vaste plaine peu fertile, des piedmonts et des vallées relativement riches, une chaîne de montagne portant des sols volcaniques aux larges possibilités. Elle a été le lieu d'une colonisation agricole organisée depuis le début du siècle par le pouvoir colonial, puis par la République d'Indonésie. Aujourd'hui, la question des* spontans *défraie régulièrement la presse locale tant elle est d'actualité.*

Par ailleurs, les récents travaux effectués sur les mutations démographiques et économiques de la province de Lampung permettaient de placer l'analyse de la province de Sumatra-Sud dans une continuité spatiale et temporelle. A l'échelle régionale, presque toute la partie méridionale de l'île de Sumatra a été prise en considération. En incluant aux provinces de Lampung et de Sumatra-Sud les départements limitrophes de Bengkulu, l'ensemble étudié couvre plus de 150 000 km2, peuplés d'au moins 12 millions d'habitants.

QUESTIONS CLES ET AXES DE RECHERCHE

Dans la mesure où aucune étude n'avait encore pris pour objet le mouvement de colonisation agricole spontanée en tant que tel, il fallait tenter de répondre à des questions à la fois simples et primordiales. Qui sont les migrants? Où vont-ils? Quelle est l'importance numérique du mouvement? Comment vivent les pionniers et comment s'intègrent-ils dans la région d'accueil? Quel est leur poids sur le plan local et régional?

Pour répondre à ces questions, la recherche s'est developpée sur trois thèmes:

1) les processus migratoires, depuis la décision de partir jusqu'à l'installation dans la région, en prenant en compte les données sociales, démographiques et économiques, en insistant sur les sources d'information disponibles sur la destination, les moyens financiers mis en oeuvre, les aspirations des colons et les étapes de la migration. Eléments qui doivent mettre en valeur l'existence ou l'absence de chaînes migratoires (même origine, même destination, même travail).

2) les modalités d'implantation, de la maison sur la parcelle de défrichement au nouveau village, y compris les problèmes d'accès à la terre et aux infrastructures socio-économiques, et les choix de systèmes agricoles. Eléments qui permettent de déterminer des étapes et des stratégies de pénétration ou d'intégration dans la région d'accueil.

3) enfin, les conséquences sur les populations d'accueil, le développement régional, l'évolution des paysages et la préservation de l'environnement.

■ *Méthodes et moyens*

Compte tenu de la nouveauté du sujet en Indonésie, des caractéristiques du mouvement, et du peu de temps de la recherche disponible pour l'étude sensu stricto, *ce travail doit être considéré comme une recherche exploratoire. Elle a été menée à partir de trois sources principales: une recherche bibliographique, une analyse cartographique (en partie basée sur des images SPOT) et des enquêtes de terrain.*

LA RECHERCHE BIBLIOGRAPHIQUE

La travail bibliographique préliminaire était destiné non seulement à étayer l' étude, mais était également conçu comme support à de futures recherches. Dans cette optique, chaque document a été localisé, indexé et annoté dans une base de données informatisée (D base IV). Le peu de recherches ciblées sur la colonisation agricole spontanée a obligé à traiter un grand nombre de documents (plus de 800) pour ne glaner en fin de compte que de modestes informations.

Menée principalement dans les différents centres de documentation de Jakarta et dans la province d'accueil, ce travail bibliographique n'est pas encore complet. Un recueil de 500 documents répertoriés sera publié séparément en coopération avec le LIPI qui a apporté son aide à cette tâche. Seuls les documents principaux sont repris dans la bibliographie du présent ouvrage.

L'APPROCHE CARTOGRAPHIQUE

Les cartes thématiques hors-textes réalisées pour l'étude forment un tout et expriment plusieurs choix.

Tout comme pour l'atlas du Lampung, il convient de remarquer d'emblée que les cartes n'ont pas l'ambition de faire l'inventaire exhaustif des phénomènes migratoires et de leurs conséquences dans le sud de l'île de Sumatra. Il ne s'agit pas d'un atlas régional.

A la suite de cartes de présentation générale, à l'échelle du millionnième, l'idée-force est de montrer les

SELECTION OF THE PROVINCE OF SOUTH SUMATRA

Although migrations to the province of South Sumatra (*Sumatera Selatan*) were less spectacular than those to Lampung, the former was selected on the grounds of being Indonesia's second largest receiving province. It offers, amongst other things, a variety of agro-ecological settings which are typical of Sumatra, namely, a broad marshy coastal strip, a vast marginally fertile plain, relatively rich alluvial plains and valleys, and a mountain range containing volcanic soils of high potential. It has been used since the beginning of the century as a location for organised agricultural settlement, first by the colonial authorities and later by the Indonesian Republic. Today, the question of "spontans" is so topical that it appears regularly in the local newspapers.

Moreover recent work carried out on both agricultural and regional population transformations in Lampung, allow the analysis of the province of South Sumatra to be situated on a spatial and temporal continuum. At the regional level, a significant part of Southern Sumatra was taken into account, by sometimes including the southern portion of Bengkulu, a territory covering more than 150,000 km^2 and having a population in excess of 12 million, with the provinces of Lampung and South Sumatra.

KEY QUESTIONS AND AXES OF RESEARCH

To the extent that no study had as yet examined the subject of the spontaneous agricultural settlement movement as such, it was necessary to try and find answers to simple but essential questions. Who are these migrants ? Where are they going to ? Numerically, what is the size of the movement ? How do the settlers live and how do they become integrated into the receiving region ? How much influence do they have in the local and regional context ?

In order to examine these questions, research was conducted on three issues :

1) *the migratory processes*, from the decision to leave up to settlement in the region, taking into consideration the social, demographic and economic parameters, and paying particular attention to the available sources of information on the destination, the financial means used, the aspirations of the settlers, and the stages in the migration. These elements should show up the existence or absence of migratory chains (same origin, same destination, same occupation).

2) *the methods of establishment*, from the dwelling on the cleared lot to the new village, including problems of access to land and to the socio-ecomomic infrastructure, and the choice of agricultural methods. These factors allow the stages and strategies of insertion and integration into the receiving region to be determined.

3) finally, *the consequences* on the receiving communities, on the evolution of the landscape, on regional development, and on the conservation of the environment.

■ Ways and means

Taking into consideration the newness of the topic in Indonesia, the characteristics of the movement, and the limited amount of research time available for the study *sensu stricto*, this work was considered as a preliminary investigation. It was carried out with reference to three principal sources, a bibliographical research, a cartographical analysis (partly based on SPOT satellite images), and field surveys.

THE BIBLIOGRAPHICAL RESEARCH

The preliminary bibliographic effort was not only designed to support this study but was also foreseen as a basis for future research. With this in view, each document was classified, indexed and annotated in a computerised database (Dbase IV). In the end, the small amount of previous research directed towards spontaneous agricultural settlement made it necessary to process a significant number of documents (more than 800) in order to glean a modest amount of information.

Carried out mainly in the different documentation centres in Jakarta and the receiving province, this bibliographic effort is still to be completed. A collection of 500 itemised documents will be published separately in conjunction with the LIPI who assisted with this task. Only the key documents have been retained in the bibliography of this publication.

THE CARTOGRAPHICAL APPROACH

Together, the separate thematic maps presented in the study make up a whole, and offer users a number of options.

As was the case for the atlas of Lampung, it is immediately acknowledged that the maps make no claim to being an exhaustive inventory of migratory phenomena

mutations induites par les phénomènes migratoires au travers d'études à échelles emboitées, allant du particulier au général, des pays à l'ensemble régional, et vice-versa. Chaque exemple particulier, étudié à l'échelle du 1: 250 000, est replacé dans un contexte plus large à l'échelle du 2: 000 000 ou du 3 : 000 000. Ce mouvement de va et vient conduit à raisonner en gardant toujours en mémoire la référence à l'échelle. S'il paraît indispensable de s'appuyer constamment sur l'analyse des paysages, et donc sur le niveau local, il est non moins indispensable de ne pas perdre de vue la dimension des phénomènes et leur insertion, à une échelle plus générale, dans l'espace indonésien.

A l'intérieur d'une région grande comme le quart de la France, le souci d'individualiser milieux et sociétés a conduit à différencier les mises en valeur des rivages et des marais et celles des plaines et des montagnes. La conquête de terres nouvelles a donc été illustrée par deux séries d'études cartographiques, l'une consacrée au delta de la rivière Musi, l'autre aux plaines de Belitang et aux montagnes voisines de la chaîne des Barisan .

L'utilisation des données fournies par SPOT, de 1986 à 1988, a été, dans la limite des prises de vue disponibles, systématique, sans pour autant mettre en oeuvre des techniques très spécialisées, ni un matériel informatique lourd qui, d'ailleurs, faisait défaut. Il faut préciser que les analyses n'ont été possible que parce qu'elles s'appuyaient sur des images d'une excellente qualité et sur la connaissance de terrain acquise au cours des travaux conduits pendant plusieurs années dans la province du Lampung.

La volonté de considérer la carte comme un outil au service du développement mérite d'être soulignée. Point des connaissances sur un sujet donné et catalyseur d'où doivent émerger les questions-clés, les cartes doivent être disponibles rapidement et demeurer accessibles au plus grand nombre. Deux remarques peuvent être faites à ce sujet.

D'une part, les autorités politiques et les responsables de l'aménagement n'imposent pas généralement que, sur les documents nécessaires à leur réflexion, la précision géodésique et la vérification systématique sur le terrain de toutes les données soient érigées en règle absolue. Le voudrait-on que, dans le cas présent, la constante mobilité des pionniers rendrait quasiment impossible cette rigueur que l'on pourrait vouloir défendre au nom du label scientifique. Sans renier à aucun moment l'exigence de qualité qu'impose le produit final, le choix essentiel consiste à ne pas se retrancher derrière les faiblesses des documents existants pour ne rien entreprendre ou le recours obligé à des enquêtes exhaustives qui exigent des investissements en temps et en argent souvent incompatibles avec les moyens des programmes de recherche.

Ont donc été privilégiées l'idée ou la tendance plutôt que l'inventaire jamais achevé. Une représentation incomplète, ou même approximative, a été préférée à l'absence de représentation. Peut-on ne pas signaler, par exemple, les milliers de familles installées dans les clairières de défrichement qui s'éparpillent dans les forêts montagnardes sous prétexte qu'on ne peut pas toutes les recenser? Même si les localisations, basées sur des enquêtes de terrain partielles et les interprétations des images satellite, demeurent incertaines, le fait est trop significatif pour ne pas être signalé.

En l'absence d'informations détaillées ou d'une parfaite identification des éléments contenus sur les images, le phénomène a été généralisé ou traduit par un figuré synthétique. L'important est d'informer l'utilisateur des méthodes employées et des faiblesses pouvant affecter la carte qui, on le rappellera, est un produit élaboré à un moment donné, une étape, un document par essence évolutif et perfectible.

D'autre part, la richesse de l'information ou la complexité des faits présentés dans les cartes thématiques en rendent parfois la lecture difficile pour le profane. Aussi, un complément indispensable aux cartes d'analyse apparaît-il dans la reprise des phénomènes cartographiés sous une forme simplifiée. Des schémas, des croquis de synthèse, des portions de cartes particulièrement parlantes, des figures de détail mettant en relief des phénomènes essentiels viennent illustrer en abondance textes et commentaires afin de rendre plus immédiats et directement utilisables les résultats d'un travail de recherche fondamentale. La démarche consiste à passer de l'étude scientifique au document de référence pour la gestion du développement, de la recherche à l'action.

LES ENQUETES DE TERRAIN

La dispersion des colons spontanés, leur isolement fréquent par rapport aux routes ont obligé les chercheurs à être très mobiles et à avoir un large champ d'investigation. Conçue sur une période d'une année, les enquêtes de terrain devaient s'effectuer en saison sèche (qui, dans la région choisie, s'étend entre le mois de mai et le mois d'août), au moment où les routes et pistes étaient praticables. Chaque chercheur devait collecter non seulement les données relatives à sa spécialité mais aussi celles qui pouvaient aider à la compréhension des conditions locales plus générales afin de donner des indications aux collègues ne passant pas forcément aux mêmes endroits. Les enquêtes systématiques et les interviews libres devaient être panachés. Il était demandé de fournir des notes de terrain utilisables par les différents membres de l'équipe. Ce système de travail collectif, bien que pouvant être amélioré, a pu fonctionner grâce à la qualité de certains carnets de terrain.

En raison de la spécificité de l'étude, le choix des sites a été fait au fur et à mesure du déroulement des enquêtes. Les recherches devaient se concentrer sur un département, kabupaten, *de l'intérieur et un département de la côte marécageuse pour éviter de multiplier les*

and their consequences in the southern part of the island of Sumatra. It is not a question of being a regional atlas.

Following the general presentation maps on a scale of 1:1,000,000, the key idea was to demonstrate the changes induced by migratory phenomena using a set of overlaying maps, going from the particular to the general, from the village to the whole region, and vice versa. Each particular example, examined on a scale of 1:250,000, is put back into a broader context on a scale of 1:2,000,000 or 1:3,000,000. This two-way movement means that any conclusions drawn must be done so with the scale reference in mind. While it seems essential to constantly come back to an analysis of the landscapes, and hence to a local level, it is just as essential not to lose sight of the scale of the phenomena and their significance at a more general level in the Indonesian territory.

Within a region which is a quarter of the size of France, the concern for the particular requirements of environments and societies has resulted in the development of coasts and marshes being differentiated from that of plains and mountains. As a result, the conquest of new areas has been illustrated by two series of cartographical studies, one devoted to the delta of the Musi River, the other to the plains of Belitang and the mountains adjacent to the Barisan Range.

To the extent that they were available, data supplied by SPOT from 1986 to 1988, were used systematically without, for all that, developing very specialised methods or a large computerised system which were, nevertheless, the alternatives. It must be added that analyses were only possible because they were based on photographs of an excellent quality, and on field knowledge acquired from several years of research carried out in the province of Lampung.

The decision to consider maps as tools for assisting development deserves to be emphasised. A focal point of knowledge on a particular subject and a catalyst for formulating key questions, maps should be made available rapidly and remain accessible to the maximum number of people. Two comments can be made on this subject.

First, political officials and those responsible for development, do not generally require that geodesic precision and systematic field verification of all data be established as hard-and-fast rules for their background documents. Even if it were desirable, the constant mobility of settlers in the present case would make this level of rigour, that it would be desirable to defend in the name of science, virtually impossible. Without at any time going back on the need for quality demanded by the final product, the basic decision consisted in not taking refuge behind either the weaknesses in available documents as a reason for doing nothing, or the forced resort to exhaustive surveys which demand investments of time and money which are incompatible with the means of research programmes.

An idea or a direction has therefore been given preference over the never-completed survey. An incomplete or even approximate note has been favoured over the lack of same. Is it possible, for example, not to point out the thousands of families established in the cleared glades dotted throughout the mountain forest, under the pretext that they can not all be compiled ? Even if the sites, based on partial field surveys and interpretations of satellite photographs remain uncertain, the fact is too significant not to be reported.

In the absence of detailed data or of a positive identification of the elements contained in the photographs, the phenomenon has been generalised or converted to a synthetic representation. The key point is to advise the user of the methods employed and of the weaknesses likely to affect the map which, as noted below, is a product created at a specific point in time, a stage, a document by nature evolutionary and perfectible.

On the other hand, the wealth of information or the complexity of the facts presented in the thematic maps, sometimes makes their reading difficult for the layman. In addition, an essential supplement to the analytical maps should appear when the mapped phenomena are reproduced in a simplified form. Layouts, synthetic sketches, particularly relevant portions of maps, and detailed figures which put essential phenomena into perspective, have been used extensively to illustrate texts and commentaries in order to make the results of a labour of fundamental research more tangible and directly applicable. The approach consists in moving from the scientific study to the reference document in order to manage development, from research to action.

FIELD SURVEYS

The dispersion of the spontaneous migrants, and their frequent isolation from road networks, made it necessary for researchers to be extremely mobile and to cover a large area of investigation. Conceived over a period of a year, the field studies were due to be carried out during the dry season (which, in the selected region, runs from the month of May to the month of August), at a time when roads and tracks were practicable. Each researcher was to collect not only data that were relevant to his own particular field, but also those of assistance in the understanding of more general local conditions in order to provide information to colleagues who did not necessarily go to the same places. Systematic surveys and unrestricted interviews were to be

démarches administratives. A l'intérieur des terres, le choix du kabupaten, *s'est effectué à partir de l'étude des données démographiques et sur une première analyse des documents SPOT, démarches confirmées par des interviews auprès des autorités administratives au niveau de la province et auprès des universitaires locaux. Ensuite, les informations ont été recueillies auprès de l'administration du département, puis du canton,* kecamatan, *qui orientait les investigations vers certains villages. Les dernières informations sont venues des migrants eux-mêmes, amenant parfois les chercheurs à dépasser les limites du* kabupaten. *Enfin, une reconnaissance rapide dans le reste de la province a été entreprise afin de repérer la récurrence ou l'originalité des phénomènes observés.*

Ces conditions de terrain et la méthode inductive mise en oeuvre ont des implications importantes quant aux résultats. Même si un grand nombre d'individus (plus de huit cents) a pu être interrogé, chacun d'eux l'a été à des niveaux et sur des thèmes différents. Seule une image qualitative peut être donnée. Dans ces conditions, il serait inapproprié, voire hasardeux, d'en tirer des données quantitatives représentatives pour l'ensemble de la province, et encore moins pour l'ensemble de l'Indonésie.

Il est très difficile d'évaluer le nombre de migrants dans un kecamatan, *encore plus de dire si le mouvement de colonisation agricole spontané est dominé par les migrants d'une certaine région d'origine. Les données disponibles auprès des autorités villageoises sur l'origine des populations ne paraissent pas toujours suffisamment fiables pour être utilisées dans tous les cas. En outre, la durée du séjour dans les communautés choisies, rarement plus de cinq jours, n'a pas permis d'approfondir certains thèmes comme le développement de la vie sociale parmi les migrants, les rapports inter-ethniques ou inter-religieux, ou encore l'évolution sociale des populations d'accueil. Il faut ajouter, enfin, le temps restreint pour le traitement des données et pour l'enrichissement de l'analyse historique des processus.*

Au stade actuel de la recherche sur les mouvements de mise en valeur spontanée, l'étude s'attache à présenter les phénomènes observés dans un contexte particulier, celui du sud de Sumatra. Les tendances générales qui s'en dégagent ne peuvent être érigées en principes mais pourront servir de bases et d' hypothèses de recherche à des études plus approfondies sur un phénomène largement répandu en Asie du sud-est .

Notes de l'introduction

(1) Ces pourcentages ont été établis à partir des données du dernier recensement agricole de 1983. Ils comprennent les terres agricoles, les surfaces dévolues à la pisciculture et l'espace habité. Ne sont pas comprises les terres en friches et les forêts.

(2) Les migrations traditionnelles furent réorientées vers les activités favorisées par le pouvoir colonial, essentiellement le développement des plantations dans l'est et l'ouest de Java et dans le nord de Sumatra. Le flux migratoire vers les villes portuaires était relativement contrôlé.

Dans les années 1970, le gouvernement tentait, sans succès, de limiter la croissance de Jakarta en la déclarant ville fermée. Actuellement un indonésien n'est pas sensé circuler hors de sa province sans un laissez-passez délivré par l'administration de son village de résidence et doit, dans les 48 heures signaler sa présence à l'administration du village ou du quartier urbain d'accueil provisoire.

(3) Se référer à K. Pelzer (1945:160-268) qui donne avec détail toutes les installations, les modalités et les ajustements du programme, à J. Harjono (1977:16-21) qui fait une bonne synthèse et à O. Sevin (1989:72-90) qui analyse les conditions d'implantation à cette époque dans la région qui reçoit 76% du mouvement, le pays Lampung.

(4) Après quelques années d'expérience, le programme de kolonisatie *inscrivait parmi ses dix commandements de la bonne sélection de candidat "qu'il ne soit pas ancien ouvrier de plantation; dans 90% des cas ils provoquent des troubles dans la colonie" ("Don't select former plantation labourers; in 90 per cent of all the cases they are the cause of discontent in the colonies".) (Pelzer, 1945:210).*

(5) En 1930, il y avait 590 000 javanais dans la province de Sumatra-Est (Oostkust van Sumatra, Residentie).

(6) Le Ministère des Affaires Sociales, le Bureau de la Reconstruction Nationale et d'autres institutions privées (dont le Parti Communiste avant 1965) pouvaient mettre sur pied leur propre programme d'implantation. Les échecs et le désarroi dans lequel les migrants étaient laissés ont mis fin à ces expériences.

L'armée est seule autorisée à créer ses propres villages où les terres sont offertes à ses retraités. Ces implantations se développent rarement en tant qu'unité agricole, les maisons sont souvent désertées et les terres revendues après quelques années à des paysans locaux ou à des migrants.

(7) Ce ministère a été couplé à divers moments avec celui de la Main-d'oeuvre, des Coopératives.

(8) Les différentes catégories de transmigrants correspondent plutôt au budget disponible ou à un programme en cours à un moment donné, indépendamment des qualités du candidat. (Harjono, 1977:28-30 et 1978:15-24).

(9) Se référer à J. Harjono (1977, 1978b, 1978c, 1986b), P. Guinness (1977), Babcock (1986), World Bank (1988).

(10) Ce problème de terminologie a été un handicap constant avec nos interlocuteurs indonésiens, non seulement avec le MOT mais aussi avec les chercheurs. Sur le terrain, avec les personnes peu au fait des catégories de la Transmigration, c'est le terme spontan *qui revenait le plus souvent*

mixed. Field notes for use by other members of the team were required. Although this collective system of operation could be improved, it succeeded in operating due to the quality of some of the field note books.

On grounds of the specific nature of the study, site selection was carried out as the surveys progressed. Research was to be concentrated in one inland administrative region, *kabupaten*, and in another on the marshy coast so as to minimise the necessary administrative procedures. Inland, the choice of *kabupaten* was carried out by studying demographic data and by an initial analysis of SPOT documents, steps which were backed up by interviews with provincial administrative authorities and local academics. Following this, information was collected from the local government of the *kabupaten*, and of the district, *kecamatan*, who directed the study towards certain villages. The last data came from the migrants themselves, sometimes requiring the researchers to go outside the borders of the *kabupaten*. Finally, a quick examination of the remainder of the province was undertaken in order to spot whether the observed phenomena were recurrent or not.

These field conditions and the inductive reasoning applied have significant implications as regards the results. Even though it had been possible to question a large number of individuals (more than eight hundred), it had been done at different levels and on different subjects for each of them. Only a qualitative picture can be presented. Under these conditions, it would be inappropriate, even dangerous, to extract from this any representative quantitative data for the entire province, and even more so for the whole of Indonesia.

It is difficult to determine the number of migrants in a *kecamatan*, and even more so to indicate whether the spontaneous agricultural settlement movement is dominated by migrants coming from a particular region. Data available from village authorities concerning the origin of the inhabitants did not always appear to be sufficiently reliable to be used in every case. Furthermore, the time spent in the selected communities, rarely more than five days, did not permit a detailed study of certain subjects such as, the development of social life amongst the migrants, inter-ethnic or inter-religious relations, or even the social changes in the host population. Finally, to these must be added the limited time available for processing the data and for refining the historical analysis of the processes.

Given the present state of research on spontaneous development movements, the study limits itself to presenting the observed phenomena in the specific context of Southern Sumatra. Any overall tendencies which flow from it cannot be established as principles, but may be used as research bases and assumptions in more detailed reports on a phenomenon which is broadly scattered throughout South-East Asia.

Notes to introduction

(1) These percentages were determined using data from the last agricultural census in 1983. Agricultural land, areas reserved for fish breeding and settled zones are included. Land lying fallow and forest are not included.

(2) Traditional migration patterns were redirected towards those activities favoured by the colonial powers, principally the development of plantations in Eastern and Western Java and in the northern part of Sumatra. The migratory flow towards harbour towns was more or less controlled. During the 1960s and 1970s, the government unsuccessfully tried to limit the growth of Jakarta by declaring it a closed city. At present, an Indonesian is not supposed to travel outside his province without a pass issued by the administration of his village of residence and should, within 48 hours, notify his presence to the administration of the village or the city sector where he is temporarily resident.

(3) See K. Pelzer (1945:160-268), who indicates in some detail all locations, modes and variations of the programme, J. Harjono (1977:16-21), who provides a good synthesis, and O. Sevin (1989:72-90), who analyses the settlement conditions of this period in Lampung, towards where 76% of the population movement was directed.

(4) After a few years of experience, the "kolonisatie" *programme listed among its ten commandments for good candidate selection, "Don't select former plantation labourers; in 90% of all the cases they are the cause of discontent in the colonies", (Pelzer, 1945:210).*

(5) In 1930, there were 590,000 Javanese in the province of East Sumatra (Oostkust van Sumatra, Residentie).

(6) Prior to the establishment of the Ministry of Social Affairs, the Office of National Reconstruction and other private institutions (including the Communist Party before 1965) could set up their own settlement programmes. The failures and the disarray in which the migrants were left, put an end to these experiments. Only the army was authorised to build its own villages in which land was offered to its pensioners. These villages rarely developed into agricultural settlements, the houses often being deserted and the land being resold after a few tears to local farmers or migrants.

(7) This ministry has been attached at various times to other ministries, those of Labour and of the Cooperatives.

(8) The different categories of transmigrant at any one time, were more a question of the current availability of budget or programme (Harjono, 1977:28-30 and 1978:15-24).

(9) See again J. Harjono (1977,1978b, 1978c, 1986b.), and also P. Guinness (1977), Babcock (1986), World Bank (1988).

(10) This problem of terminology was a constant handicap in our relations with the Indonesians, not only with the MOT but also with the researchers. In the field, speaking to people who were not familiar with the categories of the Transmigration, the term spontan *was most often used for migrants which fell outside the Transmigration's control.*

(11) In Bali, a survey of the same kind was carried out but was curtailed due to lack of specific finance. Spontaneous migrants registered by the Transmigration in Bali have continued to rise, going from 291 families in 1984 to 804 families in 1989. This data was collected during a survey at the offices of the Transmigration in Bali (Denpasar) and in Lombok (Mataram) in April 1990. Provincial statistics also indicate a very clear rate of increase in population outflow, the number of people born in Bali but resident in another province having risen from 34,000 in 1971 to 118,000 in 1980 (BPS, 1984).

(12) Transmigration and spontaneous migrations in Indonesia-Propinsi Lampung-Sumatera. *M. Pain, editor; D. Benoit, P. Levang, M. Pain, O. Sevin; ORSTOM-Departemen Transmigrasi, Jakarta-Paris, 1989, 444 pages, 86 figures, 61 tables, 20 separate sheets.*

(13) "Spontaneous Transmigration Project", November 1989-March 1991.

Notes de l'introduction (suite)

pour les migrants qui n'étaient pas gérés par la Transmigration.

(11) A Bali, une enquête du même type a été menée mais fut arrêtée faute de financement spécifique. Les migrants spontanés enregistrés à Bali par la Transmigration, n'ont cessé d'augmenter: 291 familles en 1984, 804 familles en 1989. Certains villages d'accueil de Sulawesi ont demandé d'arrêter les arrivées mais, d'après le bureau de la Transmigration de Bali (Denpasar), les familles partent quand même. Les statistiques provinciales signalent aussi une très nette accélération de l'émigration. En 1971, on comptait 34 000 personnes nées à Bali mais résidant dans une autre province, contre 118 000 en 1980 (BPS, 1984).

(12) Transmigration et migrations spontanées en Indonésie - Propinsi Lampung-Sumatera. *M. Pain, éditeur scientifique; D. Benoit, P. Levang, M. Pain, O. Sevin; ORSTOM - Departemen Transmigrasi, Jakarta-Paris, 1989, 444 pages, 86 figures, 61 tableaux, 20 planches cartographiques hors-texte.*

(13) "Spontaneous Transmigration Project", november 1989 - juin 1991.

FIRST BOOK

MAJOR CHANGES IN SOUTHERN SUMATRA

Chapter 1

Overpopulated Java and the open spaces of Sumatra

Muriel Charras & Marc Pain

The demographic imbalance of the huge Indonesian archipelago is long-established and well-known. The proximity of the two islands of Java and Sumatra makes these contrasts even more noticeable, since they are separated only by the few kilometres' width of the Sunda Straits. Although the population gap is tending to decrease, partly thanks to a systematic, and occasionally voluntary population policy, the average population density of Java (735 inhab./km²) is over ten times greater than that of Sumatra (69 inhab./km²).

This contrast was far more striking at the end of the last century. The Lampung districts, the closest province to Java, only contained two or three inhabitants/km², whereas Java itself contained more than 200 per km². For a long time, Southern Sumatra remained seriously underpopulated, indeed almost empty in some places, whereas strong demographic pressure hampered the development of rural Java.

The impression of underpopulation, emphasized by the overall figures, should nevertheless be modified by a detailed spatial analysis, where "empty" and "full" areas may be identified in the context of general underpopulation.

Chapter translated from French by Caroline Wheeler

1. "Full" and "empty" areas in an underpopulated region

■ Tardy development of the Lampung Districts

When the Lampung Districts were forcibly pacified in the middle of the 19th century, after a period of troubles ending in 1857 with the implementation of a colonial administrative system, they contained only about 80,000 inhabitants. Administrators' reports, including H. Zollinger's remarkable work (1846), show the districts as practically empty, and almost entirely covered by forest.

Until then, the region was known only for its trade relations with the Sultanate of Banten. The sultan maintained a kind of suzerainty over Lampung and partly controlled the pepper trade which represented the wealth of the local population. The United Dutch East India Company, the V.O.C., wishing to put an end, at all costs, to their regular disputes with the sultan, and obtain an unchallenged monopoly of the pepper trade, annexed Lampung in 1853. The change of overlord did not lead to any real European presence in Lampung, and occupation was limited to the construction of a few forts in strategic places, the most important of which was the one overlooking the river port of Menggala, the main collection centre on the Tulang Bawang river.

After the death of Raden Intang, a local chief and the main opponent of colonial power, and the arrival of a talented administrator, Du Bois, in the middle of the 19th

century, hitherto almost unexplored districts began to be exploited (Sevin 1989: 36-42).

At the beginning of the 20th century, two monographs (Broesma 1916 and Collet 1925), the first good topographical maps, and regular population censuses (1905, 1917, 1920, 1930) gave an accurate picture of Lampung, still characterized by underpopulation and the exploitation of the forest's natural resources, which played a major role in day to day life. "The interior of the country is uncultivated and inhabited by wild animals, chiefly by tigers, elephants, rhinoceros, monkeys, and wild pigs, cats and goats. The rivers are infested by crocodiles" wrote Edwin M. Loeb in "*Sumatra, its history and people*" (1935).

The population was very unevenly distributed in several groups, as shown by an extremely detailed map, drawn by Van Royen, presenting the 62 marga recorded in 1930. These documents, in association with the maps showing occupancy drawn at the time (See separate sheet No. 2), show that the three groups, Pesisir, Abung and Pubian, forming the basis of the population of Lampung, occupied fairly well-defined territories in an almost uncleared region.

The villages of the Pesisir, the border people, were strung out along the coast from the South of the province of Bengkulu (which then included the Western part of the present province of Lampung) to the shores of Semangka and Telukbetung bays, and, further on, formed a crown of remarkable regularity at the foot of the Gunung Raja Basa volcano overlooking the Sunda Straits, at the very tip of Sumatra.

The Pubians lived in the central South, in an area extending from Tegineneng, North of Tanjungkarang, to the edge of Talang Padang in the West, and the Abung, living along the rivers and in clearings dotted about the interfluves, occupied a vast territory in the centre of the province. After a migration occurring at the end of the 19th century, there were also Abung villages on the Northern edge of the basalt plateau of Sukadana, and the Southern edge contained villages belonging to a Pesisir sub-group, the Meninting.

In the North of the Districts, on a level with Menggala, contact was established with people of South-Sumatran origin, the Mesuji and Komering groups. Although the Orang Menggala and Tulang Bawang, originally from Lampung, and the inhabitants of villages established on the Way Kiri, the Southern branch of the Tulang Bawang river, were previously under the suzerainty of the Sultanate of Banten, those who lived on the Northern branch, the Way Kanan, and further North, on the Mesuji and its tributaries, were subinfeudated to the Sultanate of Palembang. At the height of the pepper trade, the centre of Menggala was frequented by traders from Palembang and by Bugis seafarers from the East of the Javanese Mediterranean. It is significant to note that, on recent maps, the two villages situated near the present market and the old trading centre, to the North of the dozen or so villages making up the Menggala area, bear the names of "Bugis" and "Palembang" (JANTOP topographic maps, 1969).

The analysis of the distribution of the 450-odd hamlets and villages recorded on maps produced at the time shows a regional organization governed by coasts and rivers.

Although the whole of the swampy, insalubrious East coast was deserted, the shores had long been inhabited, especially along the Sunda Straits. In the middle of the 19th century, when the first population censuses were carried out for the colony, the Telukbetoeng (Telukbetung) and Semangka areas already contained a third of the population of the Districts (Zollinger 1846, VII : 132).

Elsewhere, the population lived along the river banks. The people identified themselves with their river and bore its name: *Orang* Mesuji, *orang* Seputih, *orang* Sekampung (men of the Mesuji river, the Seputih river ...). In Abung territory, the interfluves were sporadically inhabited, and occupation was less linear than elsewhere, although the main villages were aligned along the high banks of the main watercourses.

Ancient tracks, such as those linking Teloekbetoeng to Kotaagoeng, or going round the Sukadana volcano, along the line of springs at the foot of the basalt plateau, ensured contact between a series of established villages, whose imposing wooden houses built on piles still exist today.

The population nevertheless remained scattered and sparse, with no real overall unity. The prevailing impression is - except for the Southern shores - that of a few clearings and modest islands of population surrounded by immense, still uninhabited forests, with no trace of even the smallest village.

■ The Palembang *residentie* : a controlled region

At the same period, the Palembang *residentie* showed a denser occupancy and a geographic unity conferred by a great river whose extensive catchment basin roughly defined the administrative boundaries.

Although maps showing Dutch expansion at the beginning of the 19 th century (Collet 1925) only mention Lampung as a narrow coastal fringe along the Telukbetung and Semangka bays, the colonists' field of action, starting from Palembang, already covered the greater part of the future *residentie*. Its influence increased during the first half of the century.

It is not as easy to locate the population as it is in Lampung, which, in the wake of an early agricultural colonization policy implemented at the beginning of the century, benefitted from more detailed studies, performed on a territory three times smaller than that of the Palembang *residentie*.

Authors generally make a distinction between the Malay populations, the Melayu, settled in the coastal plains, and those living in the interior, in the heart of the Barisan range. The latter are a complex mosaic of groups, the main families being the Rejang and the Pasemah (Jaspan 1964). Settled in the highlands, around lakes and in mountain valleys, they are nevertheless linked to populations situated further down the long valleys whose name they bear : thus, on the Ogan river, the people upstream are the Ogan Ulu, and the people downstream, the Ogan Ilir. The same applies to the Musi, the Komering or the Lematang. The law of succession opposes the matrilinear system, sometimes also adopted by the Malay population, and the patrilinear system of the Pasemah. But the high mobility of all the groups, from Bengkulu to the North of Lampung, makes it unadvisable to generalize.

In fact, the region's unity and its relative cohesion are the result of the majestic branching of an immense river, the Musi, and a rich history. The Musi basin is one of the greatest complexes of natural waterways in Indonesia. 58,000 km^2 are fed by three great rivers - the Musi, the Ogan and the Komering - navigable without any major obstacles for more than 250 km into the interior. They converge on the river port of Palembang, situated between dry land and marshes, about 80 km from the sea. In early times this network represented a formidable means of exchange between the sea and the interior, with, on the one hand, the fascinating megalithic culture and ancient irrigation systems in the valleys of the Pasemah, and on the other, the existence of the centre of the State of Srivijaya on the site of Palembang, hailed as the greatest trading port in South-East Asia from the 5th century onwards (Wolters 1967: 247-253).

Although no geo-historical studies were undertaken at the time, the dynamism of trade in the Musi basin was observed as early as the 17th century, and was noticeable until the arrival of the Dutch at the beginning of the 19th (Miksic 1985: 423-454). From the interior came gold, ivory, rhinoceros horns, rattan, wood, benzoin, damar and rice, in exchange for imported products such as iron, textiles (embroidered in Palembang, *songket*), and salt. At the beginning of the 17th century, the soverains of Palembang and Jambi organized pepper collection by sending royal representatives into the interior with textiles and salt for barter. The craftsmen of Palembang supplied not only the city and the Musi network but also other basins situated further North - Jambi and the Batang Hari network - and, in the South, that of Tulang Bawang (Menggala), an outlying, intermediate region where the power of Palembang was in competition with that of the Sultanate of Banten (Andaya 1989: 27).

One of Palembang's advantages was the extent of its network, and thus of its area of influence, which enabled large supplies of goods to be collected, whether or not they were rare. The interior provided a supply of available manpower to help with the defence of Palembang, should the enemy arrive by sea or by land. Texts engraved on copper or silver plates, *piagem*, dating from the 18th century, fixed the terms of exchange between the different peoples of the interior and the sultan of Palembang. On one of them, we may read that the Pasemah group had to ensure the protection of Palembang against certain groups from the interior : Semendo, Kikim, Kisam and Mekekau. To defend the sultan of Palembang against the Dutch in 1821, the people of Pasemah helped to build a fort, although they were not paid for it, and had to provide their own food. The same kind of exchange rules probably also existed between Palembang and the Lebong, around Lubuk Linggau (Miksic 1985: 444-445).

The first contacts with Dutch traders in Palembang date from 1643. In 1824 the Sultanate fell under the authority of colonial power, then, from 1837 to 1866, the interior was occupied, from Lahat to Baturaja. Praetorius' report on Palembang in 1832 (Blume, 1943) emphasized the strong decline in the traditional trade between the city and its hinterland. By putting an end to the traditional income from sea trade, the sultan was unable to maintain his network of control over exchanges with his agents placed on all the waterways. The sultan's authority, which maintained a certain political balance throughout the territory, could no longer be relied on, and the highland populations, such as the Pasemah, came down to pillage the lowlands. However, Palembang remained an active centre for craftsmanship and its trade on the Musi, thanks to the boats built in the harbour (Jaspan 1975: 5-8).

Maps produced between 1920 and 1930 (See separate sheet, No. 2), at a time when this region had not yet been affected by organized attempts to populate it, show heavy occupation of the province of South Sumatra : at the meeting point between dry land and swamp, particularly on the anticline situated West of Palembang and continuing towards the East, along the rivers of the plain fanning out into the valleys of the Pasemah, those converging on Muaradua and around Lake Ranau. This type of occupation contrasts with that of Lampung at the same period, where the population was more scattered along rivers with basins independent from each other, and where the piedmont and mountain valleys still remained almost uninhabited.

However, the overall population density remained low, about 10 inhabitants/km². Although the central plains, the Palembang hinterland, and the Baturaja and Lahat piedmont were inhabited, large areas were still untouched by any signs of farming or forest clearance, especially in the interfluves and upstream from certain administrative districts such as Moesi Hoeloe and Rawas. Apart from a few villages along the delta, downstream from Palembang, the vast marshes stretching from the mouth of the Tulang Bawang to Lampung, and continuing North along the shores of the Bangka Straits to join those of the Batang Hari in Jambi, meant that a quarter of the *residentie* was completely uninhabited.

■ Population and urban centres from 1920-1930

After the submission of the Sultan of Palembang to the Dutch administration, the setting up of military and administrative posts in the second half of the 19th century in strategic centres for trade and transshipment from the highlands (Muara Rumpit, Tebing Tinggi, Lahat and Baturaja) marked the beginning of a network of towns governed by Palembang. Controllers were then placed in other trading centres (e.g., in the South-East, Pagaralam, Muara Enim, Muaradua and Banding Agung). The Chinese population emphasized the urban nature of these centres, and is also a reliable indicator of commercial activity. After 1900, other towns, such as Lubuk Linggau or Martapura, emerged as roads, railways and population programmes developed (Rutz 1987: 55).

In Lampung, only a few centres stood from the other villages. In 1930, the Districts had no "*assitent standplaast*", whereas the Palembang *residentie* had two (Lahat and Baturaja).

At the beginning of the century, the small towns of Lampung were either those that had developed with the pepper trade, or were centres of colonial power grafted onto ancient networks (Kalianda, Kota Agung, Sukadana), or, classically, linked to the development of means of communication. Kota Bumi, on the site of three former villages on the edge of the Way Rarem, owes its fortune to the arrival of the railway.

Only Palembang could be considered as a real metropolis, with more than 100,000 inhabitants, nearly 2,000 Europeans and about 20,000 Asians, 15,000 of whom were Chinese. Teluk Betung, and its twin town of Tanjung Karang remained modest in size, since there were only 25,000 inhabitants in 1930. Menggala, the main centre for pepper collection, which had long been the economic capital of Lampung, situated in the heart of Abung country on a river providing direct access to the Java Sea, had only 14,000 inhabitants. The main town of the neighbouring province, Bengkulu, scarcely reached this figure. The minor centres at this time rarely exceeded a thousand inhabitants (Table 3.B).

The data of the 1920 and 1930 censuses enable the dynamism of towns and different provinces to be measured. Although the total growth of Palembang remained more moderate than that of Teluk Betung, its European population practically doubled between the two censuses, whereas that of Teluk Betung increased very little, thus showing Palembang's role as a regional capital in the colony. However, Teluk Betung's commercial importance appeared to be strengthened by the large-scale arrival of the Chinese, even if not all of them were in trade. Their numbers more than doubled during the decade.

As the harbour in the Bay of Lampung appeared to develop vigorously, so Menggala seemed to decline, not only because the pepper which made its fortune was no longer so highly-prized as before, but also because the region's geography changed with the setting up of new infrastructures. This marked the decline of the centre, too far away from the road and the railway, whereas the small towns of the piedmont developed with the coming of major land routes. Thanks to the railway, Kota Bumi stole Menggala's role as the major pepper collection and trading centre, just as Baturaja, situated further North in the foothills of the *Orang Ogan*, and benefitting from the same advantages (road and railhead), underwent a spectacular boom at the beginning of this century. The population of Menggala only increased by 25% between 1920 and 1930, and the number of Europeans registered decreased from 10 to 8. Although starting from more modest figures, Baturaja more than doubled its population. The total number of Chinese traders also doubled, and the total number of Europeans increased from 39 to 45 (Table 3.B).

The comparative development of the population of the provinces points to the major upheavals soon to occur. Although the population of Jambi remained stable, and that of the Bengkulu, Riau and Palembang *residenties* increased by 25-30% between 1920 and 1930, that of Lampung increased by 55%. The mean population density increased from 5 inhabitants/km² in 1905 to 8 inhabitants/km² in 1920 and 12 inhabitants/km² in 1930. For the same period, that of the Palembang *residentie* increased only from 8 to 10 inhabitants/km². The Lampung Districts, more than elsewhere, were already recording the arrival of inhabitants, either of their own accord or by order of the State, in a region which was to become the primary destination of migrants from Java throughout the 20th century (Table 3.A).

Table 3. POPULATION AND URBAN CENTRES 1905 - 1930 *POPULATION ET CENTRES URBAINS 1905 - 1930*

A. POPULATION OF REGIONS ***POPULATION DES REGIONS***

		Natives *Autochtones*	Europeans *Européens*	Chinese *Chinois*	Other Asians *Autres asiatiques*	Total
Riau	1905	93.315	221		18.680	112.216
en	1917	177.602	419		21.628	199.649
Onderheden	1920	199.615	481		23.026	223.122
	1930	257.439	613	39.084	1.089	298.225
Palembang	1905	783.259	678		12.417	796.354
	1917	746.475	1.400		12.673	760.548
	1920	810.353	1.710		15.941	828.004
	1930	1.064.117	3.797	26.076	4.735	1.098.725
Djambi	1905	Djambi included in Palembang residentie until 1906				
	1917	203.116	190		3.959	207.265
	1920	228.975	246		4.123	233.344
	1930	234.533	495	8.843	1.401	245.272
Bengkoeloe	1905	201.515	358		2.396	204.265
	1917	226.062	484		3.299	229.845
	1920	253.639	660		2.841	257.140
	1930	316.312	771	5.716	324	323.123
Lampungsche	1905	155.080	146		1.292	156.518
Disticten	1917	168.256	458		2.858	171.572
	1920	229.608	600		3.695	233.903
	1930	351.378	888	8.838	459	361.563

B. POPULATION OF ADMINISTRATIVE CENTERS ***POPULATION DES CENTRES ADMINISTRATIFS***

		Natives *Autochtones*	Europeans *Européens*	Chinese *Chinois*	Other Asians *Autres asiatiques*	Total
Palembang	1920	60.720	998	8.987	3.021	73.726
	1930	86.882	1.895	15.492	3.876	108.145
Djambi	1920	8.871	132	1.847	461	11.311
	1930	15.787	271	5.159	854	22.071
Teluk Betung	1920	12.811	336	1.726	107	14.980
	1930	20.518	421	3.921	310	25.170
Bengkoeloe	1920	8.384	215	956	47	9.602
	1930	11.766	246	1.343	63	13.418
Menggala	1920	11.242	10	49	10	11.311
	1930	14.024	8	115	27	14.174
Batoeraja	1920	1.031	39	281	8	1.359
	1930	2.376	45	514	20	2.955

Sources : - 1905 : population count ; 1917 : administrative data ; 1920 : census ; 1930 : census
- Anonyme (1922) - Vitkomsten der in demaand november 1920 getrouden volkstelling Nederlansch. Indië. Deel II : takellen - Ruygrok & cs. Batavia, 327 p. (data for 1905 and 1920)
- Anonyme (1935) - Volstelling 1930 Deel IV : Inheemsche berokling van Sumatra. Departement van economische zaken, Batavia, 231 p. (data for 1920 and 1930)

2. Sumatra, the migrants' main destination

After Java, Sumatra was the main target of colonial investment : agro-industry, road and rail infrastructure, and population transfer all united at the beginning of the century to engineer the shift from a traditional economy to a colonial-type market economy.

The great plantations of Sumatra, established at the end of the 19th century, already represented in 1930 almost the same surface area as those of Java : 453 and 479 thousand hectares, respectively (Furnivall 1944/1977: 313). They were mainly concentrated in the North of Sumatra (72%), around Medan. These lands were developed with the help of Chinese populations, subsequently replaced by workmen recruited in Java. The East coast, *Oostkust*, had then a population of 590,000 Javanese. The government kept a close watch on the return of contract workers, but a few escaped their surveillance, and others returned to their former workplace after a short stay in Java. The South of the island, with only 72,000 hectares of large plantations, was more particularly intended for the resettlement of landless peasants from Java.

From the beginning of the 20th century onwards, the network of main communication routes was set up. Roads usable in all weathers were opened, a start was made on the future Transumatran Highway and its link roads, and three railways were built (Medan in the North, Padang in the West, and Palembang and Teluk Betung in the South) with labour brought from Java. The region was also chosen for the implementation of organized settlement programmes, aimed at relieving Java of its surplus population. The first settlements were carried out in the South of Lampung, in 1905. Since then, the southern part of Sumatra has been, and still is the main State-funded settlement area.

■ Southern Sumatra, the centre of the official settlement policy

After a trial period, with serious problems in the initial projects, in Gedongtatan and, especially, Wonosobo, and financial difficulties ending in the bankruptcy of the *Lampongsche Volksbank*, the official agricultural colonization project prospered and developed, unhampered by the coming of independence. The major schemes of the colonial period were initiated after the 1930 crisis, as a result of carefully prepared studies (Pelzer 1945 : 186-231). In the Lampung Districts, the first colonists arrived in 1935, in the Sukadana region, which was to receive 83,000 families and be provided with an irrigated area of 58,000-64,000 ha. In 1940, 47,000 people had settled there. The town of Metro was built at the centre of the plains reclaimed from forest land. In the Palembang *residentie*, the development of Belitang, followed by that of Tugumulyo, began in 1937. Based, like the initial project, on irrigated rice growing, this scheme was designed to receive 20,000 families, the last of whom were to be settled in 1951.

Other regions of Indonesia also benefitted from the agricultural colonization programme, such as the Celebes (Sulawesi) or Borneo, but none were the subject of such massive investment as Sumatra. As a result of the major Metro and Belitang schemes, plus those of Jambi and Bengkuku, the island of Sumatra received, in 1940, nine out of ten colonist families. Seven out of ten lived in Lampung. More than 200,000 people had been transferred (Table 4).

The settlement programme was resumed after independence, using, initially, projects already planned by the colonial administration, and based, among other things, on the continuity of the *bawon* system set up with the first settlers. From 1950 to 1969, some 373,000 people were transferred, 84% of whom were settled in Southern Sumatra.

With the implementation of five-year plans (*REPELITA*) in 1969, Transmigration became a national priority, not only on paper but in reality : 210,000 people agreed to move during the first plan, 340,000 during the second, 1,860,000 during the third and 2,255,000 during the fourth [1].

Table 4. PLANNED SETTLEMENTS (Indonesia, Sumatra)
MIGRATIONS ORGANISEES (Indonésie, Sumatra)

period	persons resettled Sumatra	Indonesia	Sum/Ind %
a) Up to 1940	203 200	229 900	88,4
b) 1950-1969 Pra Pelita	313 600	373 100	84,1
c) 1969-1974 Repelita I	121 111	210 184	57,6
d) 1974-1979 Repelita II	199 151	340 804	58,4
e) 1979-1984 Repelita III	1 149 710	1 860 930	61,8
f) 1984-1989 Repelita IV	469 793 * 922 605 **		
Sub total	1 392 398	2 255 255	61,7
Total	3 379 170	5 270173	64,1

Sources : a,b,c,d,e, Hugo et al, 1987 : 182.
f, up to March 1989, Departemen Transmigrasi
*Transmigrasi Umum and PIR, **Transmigrasi Swakarsa

This programme, whose scope makes it unique in the world, contributed greatly to changing the geographical face of Indonesia, especially in the provinces of Southern Sumatra, which have always been the primary destination of Transmigrants. During the first five-year plan, the percentage of people settled in Sumatra was 57.6%, showing a noticeable desire to vary destinations compared with earlier periods. However, although Sumatra's position may have declined in relative terms, in absolute terms the figures display considerable growth, in conjunction with the considerable increase in the total number of people opting for Transmigration. More than a million migrants were directed to Sumatra during the two following plans (Table 4, e,f).

The recent shift of national priorities to Kalimantan and Irian Jaya does not yet seem to have really affected established trends. However, we shall see that changes are noticeable within Sumatra itself.

■ Official migration as an incentive to spontaneous migration

According to recent estimates and studies (ORSTOM, 1989), Southern Sumatra also appears to be the principal destination for spontaneous migrants. It is not easy to measure the flow of spontaneous migration from Inner Indonesia towards the rural areas of the "outer" islands on account of the variables used in population censuses. Ethnic data have not been mentioned since 1930.

However, it is possible to get some idea of the provinces' ethnic composition from figures relating to the language spoken within families [2]. The World Bank (1986) used this criterion to evaluate excess migrant population in receiving provinces. The results revealed 5,300,000 migrants, of Javanese, Sundanese, Madurese and Balinese origin, who moved of their own accord into the rural areas of the "outer provinces", without any assistance from Transmigration. Over the same period, the government settled only 925,000 people. After subtracting from the spontaneous flow the provinces of North Sumatra and Lampung, where migration is long-established and considerable, it may be estimated that over 800,000 people from inner Indonesia settled of their own accord in rural areas of other provinces of Outer Indonesia.

It is in Lampung that spontaneous migrants and their descendants are the most numerous (2,813,000 people), followed by North Sumatra (1,642,000), although villages set up by Transmigration are insignificant here, but on account of large communities settled before the war at the time when the large plantations were being developed (Table 5). In Lampung, the flow of migrants was encouraged by organized resettlement facilities. In the Lampung Districts alone, the 1930 census recorded the presence of 90,000 Javanese and 40,000 Sundanese, whereas the two kolonisasi centres, Wonosobo and Gedongtatan contained only 32,000 people (Pelzer 1945: 195-196). The ratio of official to spontaneous migrants was thus one to three even at the beginning of the century, and it must be added that this figure does not take into account a significant number of migrations of South Sumatrans from the neighbouring

Table 5. ESTIMATED SPONTANEOUS RURAL MIGRATION TO SUMATRA
EVALUATION DES MIGRATIONS RURALES SPONTANEES A SUMATRA

Province	Population Growth %		Spontaneous migration to rural area '000 persons		
			World Bank (1)	Study (2)	
	1971-80	1980-90	1950-1980	1975-1980	per year
Aceh	3.0	2.7	145	30	6
North Sumatra	2.6	2.1	1642	33	6.6
West Sumatra	2.2	1.6	4	Important out migration	
Riau	3.1	4.3	125	28	5.6
Jambi	4.1	3.4	153	26	5.2
South Sumatra	3.3	3.3	156	78	15.7
Bengkulu	4.5	4.4	95	33	6.7
Lampung	5.8	2.7	2813	376	75.1
Sumatra	3.3	3.2	5133	604	120.9

(1) World Bank estimation based on inner language spoken at rural home, with transmigrants and offspring
(2) rural in migration (BPS) without transmigration settlements between 1975 and 1980

residentie of Palembang.

Half a century later, as official settlement policy continued, transmigrants and their descendants represented 1,200,000 inhabitants, whereas spontaneous migrants (and their descendants) probably numbered about 2,870,000, according to ORSTOM figures (Benoit 1989: 168). Although far greater numbers were involved than at the beginning of the century, the ratio was still 1:2.5 in favour of spontaneous migrants.

Looking into this estimate in greater detail, and basing figures on change of province of residence between 1975 and 1980 (Table 3), it may be observed that of the 800,000 spontaneous migrants leaving Inner Indonesia to live in rural areas in the outer provinces, three-quarters chose Sumatra, and 65% the southern part of the island. The annual flow of spontaneous colonists into rural areas of the latter region was more than a hundred people.

Planned resettlement has been an obvious incentive here. The importance of the closeness of Java to Lampung (time and cost of journey) should be taken into account, as should the historic contacts between the populations and the particular availability of land with good farming potential. The settlement and transformation of the Southern provinces is thus the result of a combination of favourable factors. This large-scale movement, fed by the overspill population from Java and favoured by the official agricultural colonization programme, is progressing Northwards after overflowing into the plains bordering the Sunda Straits.

■ A large-scale Northward movement

When G. Collet visited the Lampung Districts in 1925, he was convinced of "the necessity of setting up plantations near coasts or navigable rivers ... since land routes are more or less non-existant".

Organized settlement in colonial times, like the earliest investments (railway, plantations) occurred naturally, starting on the shores closest to Batavia, gradually encroaching on the forests of the central plains, and finally occupying the swampland along the shores of the Java Sea, which the indigenous population had never inhabited. This progression is particularly noticeable in Lampung. (Fig. 2)

FROM SOUTH TO NORTH : THE PROGRESSIVE OCCUPATION OF LAMPUNG

The first settlements date from 1905. Seeking to recreate an agricultural system that the Javanese excelled at - rice growing - the first villages of the Kolonisatie were set up in the plains of the lower Semangka at Wonosobo, and the Pringsewu and Gedongtataan basin in the East of Telukbetung, not far from the shores of the Sunda Straits. In 1935, a large-scale occupation of the Sukadana region was undertaken, on the sparsely populated interfluves of the Sekampung, Batanghari and Seputih rivers, whose waters could be used to create an extensive irrigation network. About 35,000 ha. were parcelled out during the colonial period around the Metro centre, 135,000 ha. before the *REPELITA* period and at the beginning of the first five-year plans with the Seputih and Rumbia projects. The whole of the central part of the plains is occupied today, and about a third of the surface area of the scheme is properly irrigated. During the same inter-war period, the development of the South of the province was completed by the organization of the Way Jepara and Sidomulyo-Palas irrigated schemes.

The first five-year plan confirmed the progressive occupation of the plains towards the North, with the implementation of the Way Abung-Panaragan scheme, over an area of more than 50,000 ha. near Kotabumi. Originally started for unirrigated crops, the scheme now benefits from irrigation provided by the Way Rarem dam, which has become necessary to make up for the rapid exhaustion of the soil of the interfluves.

During the second plan (1974-1979), villages beyond Menggala represented the last settlements carried out via *Transmigrasi Umum*, even further North in the plains watered by the Tulang Bawang. Unirrigated crops remained the rule here, whereas the third plan introduced the idea of smallholder plantations (2 or 3 ha.) of rubber trees associated with food crops: the PTP X and PIR projects in Panarangan or in the North-East of the province, near Baradatu.

The third plan (1979-1984) was also the period when the most northerly regions of the province were occupied. Local Transmigration, organized to rehouse colonists who had settled illegally in the protected forests in the South of the province, completed the agricultural colonization movement starting in Wonosobo and Pringsewu at the beginning of the century, and, after 80 years' uninterrupted migration, reaching the frontiers of the province of South Sumatra. One hundred and ten sites chosen by the provincial administration became huge clearings in the forest, devoted to unirrigated crops, surrounded by the last forest areas of Lampung. More than 50,000 families were relocated, encouraging, in their turn, another wave of spontaneous migrations. In the villages situated near the Mesuji, the inhabitants only needed to cross the river to reach the extension of the Belitang scheme, set up in colonial times in the neighbouring province (See separate sheet No.4).

The occupation of the plains is now being completed with the development of the coastal swampland. With the development of the swamps, which started in 1974 in the South-East of the province in Rawa Sragi, and was extended during the following decade with the schemes organized between the Tulang Bawang and Mesuji estuaries, the last large area available in Lampung province has been settled.

FROM THE PLAINS OF BELITANG TO THE MUSI DELTA

In the province of South Sumatra planned resettlement was also carried out between the piedmont and the coast. The first settlements clustered around former centres set up in colonial times, with the extension of the Belitang and Tugumulyo irrigation networks, both located between plain and piedmont. The environs of Belitang remained, until the middle '80s, an important area for planned resettlement on the land not irrigated with Way Hitam, then from 1974 to 1986, with the big Batumatra pilot scheme, financed by the World Bank, giving transmigrants between 3.5 and 5 ha. of land, with one ha. planted with rubber trees. Together with the Tebing Tinggi (Lahat) project, this marked the beginning of the association of smallholder plantations on non-irrigable land belonging to the Transmigration scheme [3].

The development of the coastal swampland began in 1968 with Cinta Manis and the Upang delta. It continues today in the East of the delta, as far as the Saleh and Sugihan rivers, and in the West, beyond Pulau Rimau island in the estuary. The Musi Banyuasin kabupaten is the county which has received the most official transmigrants in the whole of Indonesia : 55,000 families settled on 300,000 ha. of reclaimed marshlands.

Between this marshy strip and the piedmont, the interfluves of the plains, left by the local population, were occupied from the mid '70s onwards, starting in the South, on the borders of Lampung, and moving North, to the borders of Jambi province, in the Musi Rawas and Musi Banyuasin *kabupaten* : Kelingi, Sekayu, Babat Toman and Betung have already been developed, and other areas are in progress. These plain settlements are either based on unirrigated food crops, or, more recently, with on the association of rubber plantation (PIR system). In all, 223,000 people have been settled in the peneplaines. The mountainous areas, with their numerous plateaux and valleys have not been chosen for Transmigration, apart from an isolated centre in the Lahat kabupaten.

LAMPUNG LOSES ITS STATUS AS THE MAJOR PROVINCE FOR RURAL IMMIGRATION

As locations (between the plains and the coastal marshes) and crops (rice, unirrigated food crops, rubber trees)[4] became more varied, the distribution of the resettled population throughout the island also changed, confirming the move towards the North. The Southern provinces - Lampung, South Sumatra, Jambi and Bengkulu, generally known collectively as *SUMBAGSEL* (i.e. a contraction of *Sumatra Bagian Selatan*, the Southern part of Sumatra) - were still the main recipients of official schemes, but their relative share dwindled in favour of the rest of Sumatra.

If we consider only entirely State-funded movements, Southern Sumatra, which was the destination of nearly all colonists during the first plan (95%, *REPELITA* I), received only 60% during the fourth, after a regular decline (Table 6. a).

Table 6. a SUMATRA PLANNED MIGRATION
LES MIGRATIONS ORGANISEES A SUMATRA

		SUMBAGSEL (1)	Sumatra	Sumbagsel Sumatra (%)
Repelita I 1969-1974		22 223 (2)	23 383	95.0
Repelita II 1974-1979		39 009	49 859	78.2
Repelita III 1979-1984		169 376	235 650	71.8
Repelita IV 1984- 1989	TU (3)	72 865	120 814	60.3
	TS (4)	242 587	331 201	73.2
		315 472	452 015	69.7

(1) SUMatra BAGian SELatan : Provinces of Jambi, Bengkulu, Sumatra Selatan, Lampung.
(2) Number of families (KK, Kepala Keluarga).
(3) T.U. : Transmigrasi Umum.
(4) T.S. : Transmigrasi Swakarsa.

Sources : Departemen Transmigrasi, data compilation 1991.

Fig. 2 PLANNED AGRICULTURAL SETTLEMENT IN SOUTHERN SUMATRA
LA COLONISATION AGRICOLE OFFICIELLE DANS LE SUD DE SUMATRA

PROVINCE OF LAMPUNG - *PROVINCE DE LAMPUNG*

		hectares
1. WONOSOBO		3 500
2. GEGONG TATAAN - PRINGSEWU		25 000
3. SIDOMULYO		
4. PALAS	(3, 4)	30 000
5. WAY JEPARA		11 700
6. METRO/WAY SEKAMPUNG		
7. SEPUTIH BANYAK	(6,7,8,9,10)	180 000
8. RUMBIA		
9. WAY SEPUTIH		
10. SEPUTIH MATARAM		
11. WAY ABUNG		
12. PANARAGAN	(11,12)	53 000
13. BARADATU		17 500
14. MENGGALA		5 000
15. MESUSI TULANG BAWANG		20 100
16. RAWA SRAGI		22 000
Others / *Autres*		11 000
TRANSMIGRASI LOKAL		100 000
	TOTAL	**478 000**

PROVINCE OF BENGKULU - *PROVINCE DE BENGKULU*
(partly - *en partie*)

		hectares
51. KOTA PADANG		700
52. AIR KATI		700
53. KASIE KESABUN		1 050
54. BLUMAI		700
55. MANGKURAJO		1 225
56. KUROTIDUR	6.9	7 000
57. KUROTIDUR	1.5	8 750
58. KEMUMU (ARGAMAKMUR)		2 300
59. AIR BANAI/AIR BAUS BANYUMAS		675
60. TALANG BOSENG		675
61. PEKIK NYARING		427
62. RENAH KANDIS	1-2	1 558
63. BENTIRING		1 579
64. KEMBANG SARI		2 615
65. BT PENINJAUAN	1-2	3 150
66. AIR PERIUKAN	1-2	1 750
67. RIMBO KEDUI	1-2	2 100
68. AIR TERAS		700
69. ULUTALO	1-3	3 238
70. PENAGO I-II		1 925
71. MANNA X/F		805
	TOTAL	**43 622**

PROVINCE OF SOUTH-SUMATRA - *PROVINCE DE SUMATRA-SUD*

	hectares
17. BELITANG	61 000
18. BATUMARTA BUAYMADANG	48 500
19. WAY HITAM	8 000
20. PEMATANG PANGGANG I, II, III, V, VI	52 700
21. LUBUK BATANG	1 050
22. PIR PENINJAUAN	2 650
23. PIR SUS II/A I/B PAYUNG NEGARA BERINGIN	8 300
24. SUNGIRAWAS	2 800
25. AIR LIMAU (Kec. Muara Enim)	700
26. GUNUNG MEGANG	9 150
27. LAHAT TEBING TINGGI - BUNGAMAS	62 250
28. NGESTIBOGA	4 550
29. KELINGI	9 100
30. TUGUMULYO	15 000
31. SEKAYU	25 900
32. BENAKAT	-
33. BINGIN TELUK	9 800
34. PANGKALAN KERSIK	-
35. BETUNG I, BETUNG II	37 650
TOTAL UPLANDS - *TOTAL TERRE FERME*	**359 100**
36. KARANG AGUNG ILIR	7 850
37. KARANG AGUNG TENGAH	17 450
38. BERTAK I, BERTAK II	21 800
39. KARANG AGUNG ULU	10 050
40. PULAU RIMAU	33 450
41. AIR SENDA - AIR TENGGULANG	36 600
42. AIR BATUNG - AIR LIMAU	8 000
43. AIR PUTIAN	8 000
44. DELTA TELANG	40 000
45. DELTA UPANG	15 000
46. AIR SALEH	16 500
47. AIR KUMBANG PADANG	18 500
48. CINTA MANIS	4 000
49. AIR SUGIHAN KANAN	36 500
50. AIR SUGIHAN KIRI	45 000
TOTAL WET LANDS - *TOTAL MARAIS*	**318 700**
SUGIN WARAS	2 800
KETAPAT	-
BANGSA NEGARA	5 500
MEGANG SAKTI	1 750
OTHERS - *DIVERS*	**10 050**
TOTAL	**678 850**

Figures are the result of various datas, included estimations or plotting due to the lack of precise sources - *Les chiffres présentés sont le résultat de la compilation de sources diverses, d'estimations et de planimétrages en l'absence de données précises ou concordantes.*

Old programs (before 1969)
Programmes anciens (réalisés avant 1969)

irrigated rice fields; programs mostly achieved during colonial and PRAPELITA period, except for Way Rarem program (n° 11-12 on the map)
riziculture irriguée; programmes réalisés en majorité à l'époque coloniale et PRA PELITA (1950-1969), à l'exception du programme Way Rarem (n° 11-12 sur la carte)

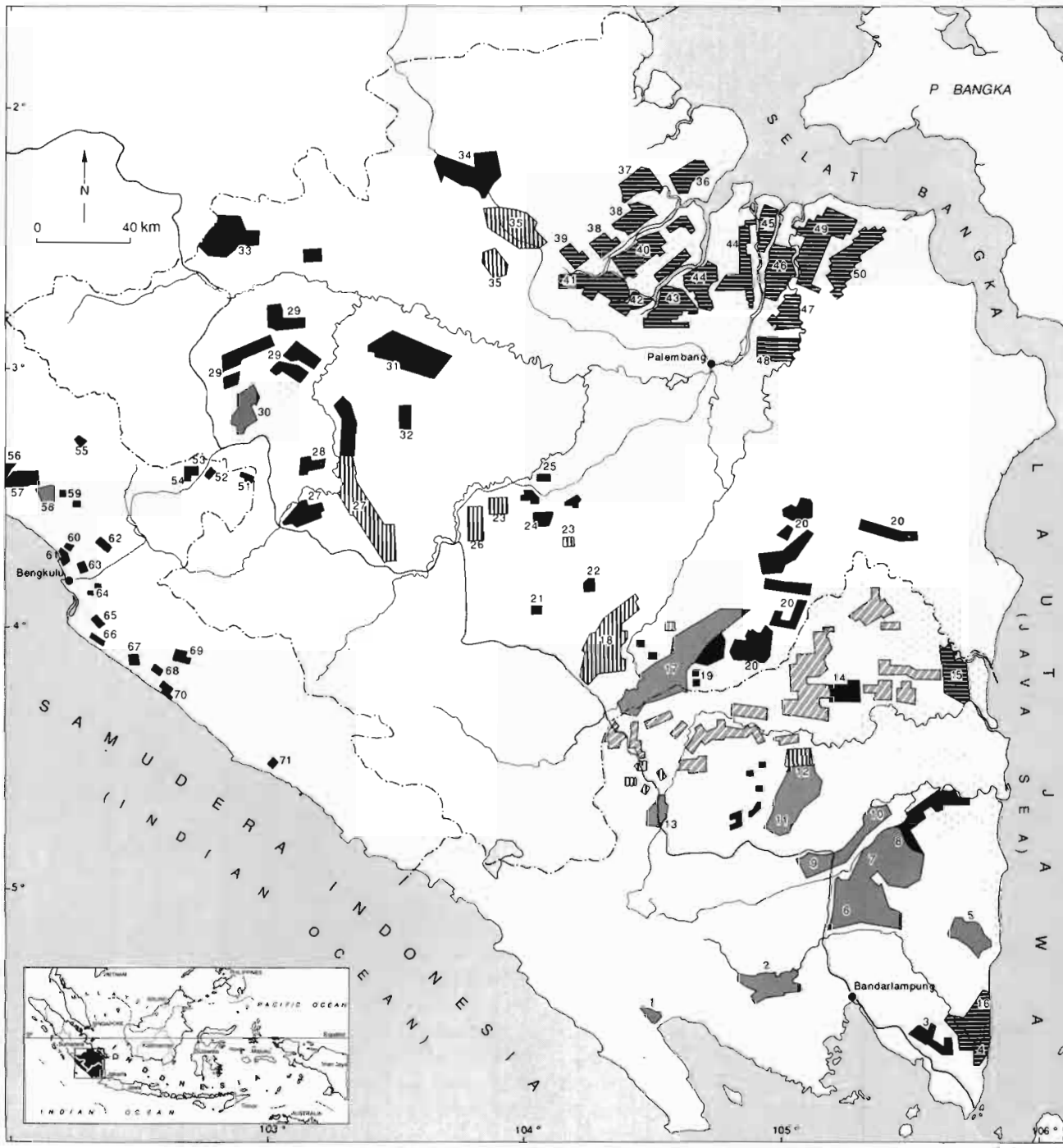
Recent programs and settlements in process
Programmes récents et aménagements actuels

dry food crops
cultures vivrières en sec

included Local Transmigration (province of Lampung, 1979-1989)
dont Transmigration Locale (province de Lampung, 1979-1989)

combination of family plantations (hevea) and food crops - P.I.R. system
association de petites plantations (hévéa) et de cultures vivrières -système P.I.R.

swampland reclamation, mainly rice fields, and plantations (P.I.R. system; coconuts: 40, partly; oil palm: 41,42 43)
aménagement des marais , essentiellement riziculture, et plantations (système P.I.R., cocotiers: 40, en partie; palmier à huile:41,42, 43



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Field surveys - *enquêtes de terrain*

Table 6. b SUMATRA PLANNED MIGRATION
LES MIGRATIONS ORGANISEES A SUMATRA

The first three receiving provinces in Sumatra (T.U. - P.I.R.)
Les trois premières provinces d'accueil de Sumatra

Repelita I	1. Lampung	11 729
1969-1974	2. Sum. Sel.	6 754
	3. Jambi	2 450
Repelita II	1. Jambi	13 659
1974-1979	2. Sum. Sel.	13 250
	3. Lampung	6 500
Repelita III	1. Sum. Sel.	84 051
1979-1984	2. Lampung (TL)	49 727
	3. Riau	40 389
Repelita IV	1. Riau	32 729 (*)
1984- 1989	2. Sum. Sel.	26 217 (*)
	3. Jambi	20 237 (*)

(TL) : Transmigrasi Lokal.
(*) T.U./P.I.R. only, Transmigrasi Swakarsa not included.

Sources : Departemen Transmigrasi, data collected in 1991.

Lampung lost its position to South Sumatra province, and each subsequent plan showed the increasing role of the central provinces, Jambi and Riau. *Transmigrasi Umum* stopped in Lampung in 1979, and *Transmigrasi Lokal* took its place. South Sumatra benefitted greatly from the third plan, the one involving the greatest investments. The fourth plan, however, gave priority to Riau (North of Jambi), which was only in third position in the previous plan. (Table 6 . b).

Estimates of spontaneous migrations between 1975 and 1980 show a decrease in movement from South to North, with Lampung well ahead of all the other provinces in the region. It is estimated that 375,000 spontaneous migrants arrived here during this five-year period, an enormous figure compared to that for South Sumatra - five times less - or for the surrounding provinces - ten to fifteen times less (Table 5, col.4 and 5).

However, since the beginning of the '80s, South Sumatra has given signs of becoming the major receiving province for spontaneous migrants, and is gaining on Lampung. For many colonists or their children, and for those turned out of the protected forests of Lampung, it has become the second stage in their pioneering career. The slowing down of population growth, already observed in studies performed by the ORSTOM (Benoit 1989), has been confirmed by the first results of the 1990 census. With the decrease of annual population growth from 5.6% between 1971 and 1980, to 2.6% over the past decade, Lampung has ceased to be the immigrants' main destination, a position it formerly shared with the Indonesian capital.

These changes confirm the powerful northward trend of population shifts. The phenomenon is even more noticeable since spontaneous movements are mainly concentrated in the mountains and their piedmont, whereas organized movements affect mainly the central plains. Thus, the whole of Southern Sumatra has been transformed by these large-scale arrivals of immigrants.

3. The new face of Southern Sumatra

■ Complexity and overlapping of agricultural systems

The most noticeable result of this extraordinary migratory movement is the almost total occupation of available space, a generalized recession of the forest, the creation of new landscapes, and the transposition of production systems bearing the mark of those who exploit them. Thus, socio-cultural and economic units appear in the region that are either the reproduction of Javanese models, or an imitation of local ones, or even a combination of production systems referring to several cultures, brought together by historical events and a colonial policy which later became a national priority.

The conquest of new lands, analyzed using topographical maps, SPOT images and field surveys, represents, in local terms, a complex situation, of which we can get an idea by taking a cross-section through the Baturaja area, where, from East to West, we find a juxtaposition of plain, piedmont, mountains, old traditional agriculture, and, more recently, official and spontaneous agricultural colonization. Despite the overlapping of different forms of land occupancy, and occasional difficulties of interpretation due to the superimposition of different population strata, it is possible to make out the main features of regional organization (see Separate sheet No. 4).

The first thing that becomes obvious is the extent of the modifications that have occurred, and the importance of new settlements between two dates fairly close to each

other : 1969 for the topographical maps and 1986-87 for the SPOT images. The underlying stratum of indigenous population remains plainly visible, unchanged since the beginning of the century.

TRADITIONAL LAND USE STILL IN EVIDENCE

The three major areas of traditional occupancy are still in evidence today : the land along the rivers in the central plains, the mountain valleys and basins, and the swamp free coast.

The rivers on the Eastern slopes of the Barisan range remain the main axes of settlement for the native population. These rivers cross the plain, through areas once completely covered in forest, bordered by strips a few kilometres wide, along which can be found low-terraced paddy-fields, riverside villages, shaded by orchards, then plantations and clearings.

In the mountain valleys, the villages still follow the rivers, sometimes spread round large irrigated areas, as could already be seen on maps drawn in 1920 : the Pasemah valley, certain mountain valleys of confluents of the Musi.

On the Western slopes, the alignment of the villages along the narrow coastal plain towards the Indian Ocean, which can be seen from either side of Kuripan, reminds us of the permanence of Pesisir populations from Bengkulu to Kalianda on the Sunda Straits.

The innovating factor was the construction of roads linking the catchment areas of the different rivers, thus providing a better integration of space. Until the '30s, and in the Palembang *residentie*, these cross-routes did not lead to any real population shifts on the interfluves. However, the section of road linking all the branches of the Musi catchment basin right along the piedmont led to a linear settlement between Martapura and Lubuk Linggau. The road also undoubtedly strengthened the agricultural colonization movement led, since the end of the last century, by the ethnic groups from the Ogan and Komering mountain valleys, towards the Lampung piedmont (Sevin 1989: 90-94).

In Lampung, the main road built - the future Transumatran Highway, starting from the port giving access to Java, crossing from South to North to reach Martapura - completely changed the land use and the spatial organization. Today, the main road, strengthened and regularly maintained, has attracted numerous activities and spontaneous settlements. The agricultural regions, easily accessible and situated less than 60 minutes' journey from the Transumatran Highway, account for half the total population of the province, in one-third of the surface area (Pain 1989:306-309; 368-370).

The Transumatran Highway, with the railway running alongside it, has been an essential element in the settlement process, and has favoured the integration of the Southern regions, between Palembang, Bengkulu and Bandarlampung.

OCCUPATION OF THE INTERFLUVES AND MARSHES BY TRANSMIGRATION

The interfluves, once uninhabited, have now received large numbers of settlers via the Transmigration scheme. Whether we consider the irrigated areas of Belitang, the food crop and rubber tree units of Batumarta, or the more recent Pematang Panggang or Local Transmigration centres, based on unirrigated crops, they all have the same regular, geometric outlines on the map, and can be immediately identified on aerial photos and satellite pictures. A close mesh of villages has created a high population density in hitherto little-occupied areas. The village network of the major irrigated schemes of Metro-Way Seputih (180,000 ha.), Belitang (60,000 ha.) or Tugumulyo (15,000 ha.) gives an eloquent picture of the upheavals introduced by these vast organized settlement operations. From the catchment point on the river, the principal irrigation canal and the access road leading to the Transmigration project are located on the top of the interfluves, and thus form the backbone of the settlement process (Fig.3).

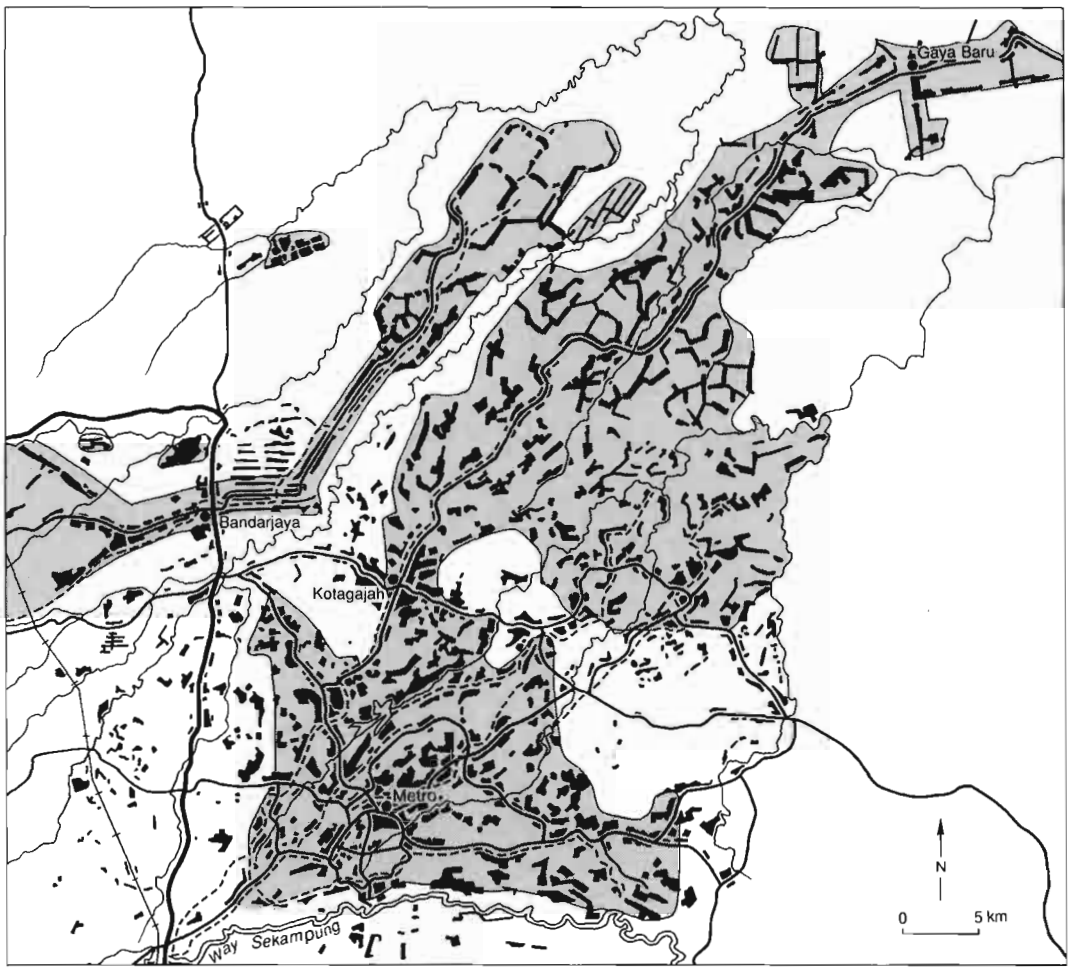
The more recent occupation of the coastal swamps, from Rawa Sragi to the development of the Mesuji-Tulang Bawang in Lampung, or the reclaiming of the Musi delta in South Sumatra (more than 300 000 ha.), is just as spectacular (see details in insert map No 3, second book), especially since this area was practically uninhabited, apart from a few extremely isolated villages. If the earlier projects were rather modest in size, Cinta Manis being 4,000 ha and Upang 15,000 ha, recent settlements situated in the lower part of the delta have been considerably larger. The orthogonal drainage and irrigation networks which link together the various arms of the delta, stretch as far as the eye can see in the the flat lands, rather like the Dutch polders on which they have been modelled. The Delta Telang settlement alone covers 40,000 ha. The Sugihan Kiri and Sugihan Kanan projects, established on either side of the Sugihan River, have been developped over 80,000 ha.

A diversification of the farming systems has gone hand in hand with an increase of the size of the settlements. If the earlier settlements were devoted solely to rice growing, the latest projects have become more diversified, combining the cultivation of food crops and coconuts and oil palm plantations.

The whole coast from the Sugihan River to the north of Pulau Rimau has been transformed into a man-made

Fig. 3 VILLAGES NETWORKS IN PLANNED SETTLEMENT AREAS
TRAMES VILLAGEOISES DANS LES REGIONS DE PEUPLEMENT ORGANISE

METRO AREA
REGION DE METRO



house-plot ("pekarangan"), colonial period and PRAPELITA (1950/1969)
maison et cour jardin ("pekarangan"), époque coloniale et PRAPELITA (1950/1969)

villages outside Transmigration area - *villages en dehors des zones de Transmigration*

access road - *voie d'accès*

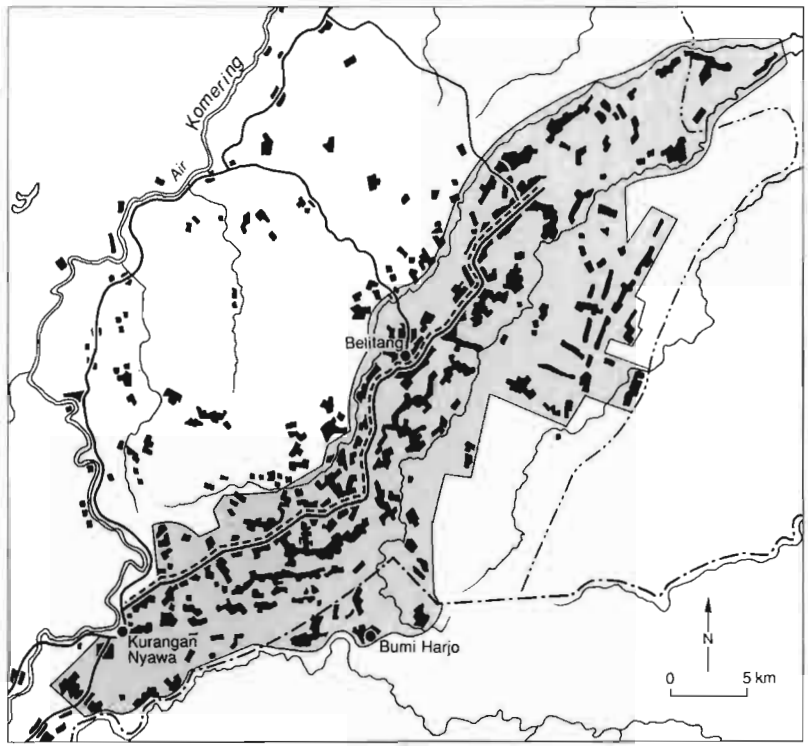
railway - *voie ferrée*

irrigation canal - *canal d'irrigation*

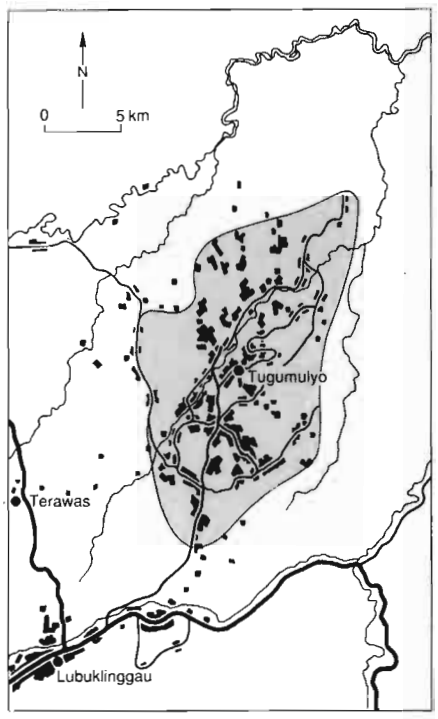
Sources - *Sources*

topographic maps JANTOP - *cartes topographiques JANTOP*
BAKOSURTANAL 1969 - 1976
Kanwil Departemen Transmigrasi, Bandarlampung, Palembang, 1990

BELITANG AREA
REGION DE BELITANG



TUGUMULYO AREA
REGION DE TUGUMULYO



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geometric landscape, and represents the largest resettlement area in Indonesia. Beyond the borders of the region, the Batang Hari delta, in the neighbouring province of Jambi, has also undergone the same large-scale development.

VARIED DESTINATIONS OF SPONTANEOUS MIGRANTS

Spontaneous migrants are less easily identifiable. They are everywhere - along the roads, in the towns and in the country. In rural areas, they mainly head in three directions.

First of all, they can be found near organized settlements. This phenomenon is particularly noticeable around Belitang, where, next to villages that are immediately beyond those established by Transmigration, there are pockets where spontaneous and organized settlers are living side by side. They have become mixed to such an extent that after a few years it is difficult to define the limits between one and the other. This is the case in Lampung.

Spontaneous migrants also go towards the mountain ranges and piedmont, where they join the local families cultivating the fertile volcanic soils by traditional methods. Not only are they more and more numerous, sometimes more numerous than the local population in Lampung, but, in contrast to the inhabitants of the plains, they set up small, individual plantations, and live in scattered groups. There is no longer a dense network of villages and large cleared areas, but a multitude of small clearings and a progressive encroachment on the forests. Plate 3, representing the situation in 1986/87, shows where active deforestation is occurring. It show the importance of the movement in the valleys and on the lower slopes of the Barisan mountains, from Liwa to Pagaralam and Padangtepung, and also the retreat of the forests surrounding organized settlement centres.

A third form of spontaneous development, original and relatively long-established, occurs along certain estuaries or branches of the Musi delta. Bugineses and Banjars, coming from the North-East of the Java sea, have settled beyond the bankside villages of the Malay population, digging small canals (*parit*) which enable them to drain land regularly flooded by high tides and use it for growing rice and coconuts. However, the impact of this development is limited, and it is far less important that the movements described above.

Next to these peasant farming systems, large industrial plantations have been established on the interfluves, in spaces left vacant by the Transmigration programme. Cheap, plentiful labour is available in the villages set up for agricultural colonization. These immense plantations, situated next to organized settlement centres, are unpopulated spaces, sometimes still uncleared several years after they have been created and marked out.

The overlapping of types of settlement and the diversity of farming systems have given rise to a patchwork of landscapes and population densities which did not formerly exist. The developments of the last twenty years have enabled us to individualize demographic regions reflecting the dynamics of each of the systems.

■ Individualization of demographic regions

REGIONAL DENSITIES

Taken as a whole, the population densities resulting from the history of the settling of the region decrease from South to North. The highest densities are found in the regions closest to Java, in Lampung, where they form a homogeneous, relatively compact block. The lowest densities occur in the swampland along the East coast (with the exception of the Musi delta) and in the still virgin forests bordering the frontiers of Jambi province.

Apart from districts containing a large urban centre, and the Talang Padang *kecamatan* (although benefitting, itself, from National Office of Reconstruction (*BRN*) villages established just after Independence), the highest rural population densities, greater than 500 inhabitants/km^2, are found in a handfull of small kecamatans, all located in the regions first affected by Transmigration in Lampung.

Densities greater than 200 inhabitants/km^2 are fairly uniform in the South and centre of Lampung, where organized settlement is the rule (environs of Metro and Pringsewu), and where spontaneous settlement has been noticeable (Kalirejo, Bangunrejo, South coast around Kalianda). In South Sumatra province, such densities are found only in urban areas.

Towards the north of Lampung, high population densities continue on the plains, with 100-200 inhabitants/km^2, mainly due to the recent Transmigration Programme of Way Abung-Panaragan and, in the province of South Sumatra, those of Belitang (settled from 1937 to the 1980s) and Batumarta (1976 to 1986).

To those areas of relatively high density may be added the piedmond and slopes long inhabited by the Sumatrans: Bukit Kemuning and Banjit in Lampung, the Lahat foothills and Pasemah mountain valleys, and the *kabupaten* Rejang Lebong in Bengkulu.

The entire Palembang hinterland stretching as far as Kayu Agung has historically formed an area of uniformly

high population density of between 100-300 inhabitants/ km², a striking contrast with the more sparsely populated area around it. The area where the coastal swamplands meet the land above the flood-water mark has long been settled. This situation was re-enforced by proximity to the old capital and by the convergence of the three major rivers providing access to the interior.

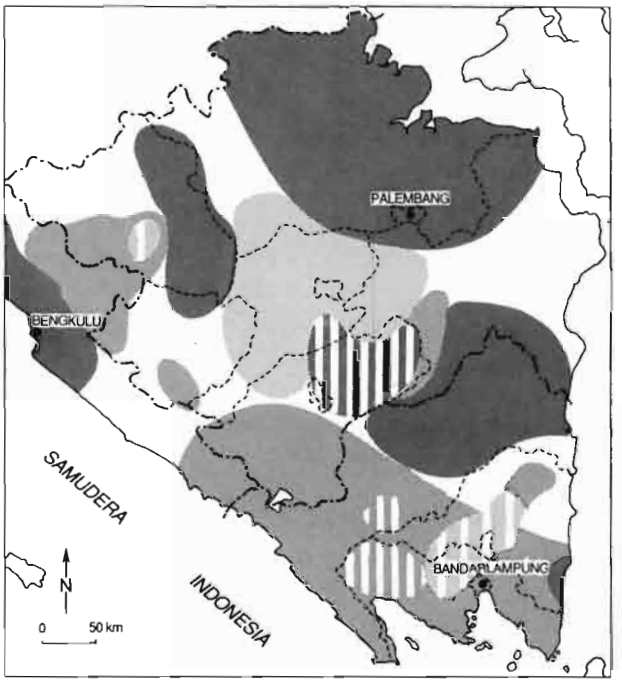
Very low population densities are a feature of the marshy shores along the East coast. Fairly low densities are characteristic of the Western slopes of the Barisan range, from the South of Lampung to the South of Bengkulu. They are also characteristic of those parts of the central plains still covered by forest in the middle section of the Musi basin, Musi Banyu Asin and Musi Ulu Rawas.

EVOLUTION AND DYNAMICS OF THE POPULATION

Of course, the large-scale influx of transmigrants into underpopulated areas has made annual growth rates soar, whereas densities have remained moderate. In the maps shown below (See insert map No.2 p. 56), the annual growth rates in the main map showing the evolution of the population of Southern Sumatra do not include the contribution of Transmigration between 1971 and 1987. These have been superimposed using a different type of figure. The growth rate categories are not the results of averages but have been adapted for our topic. An annual growth rate of 2-2.6% is considered normal, corresponding to natural growth. Below this rate, emigration occurs; above it, immigration increases. However, the second map showing annual growth rates includes all populations. The main regions of demographic change are summarized in the figure 4.

Setting aside the population settled by Transmigration, of the regions with the highest growth rates (over 5%), all except two correspond to a planned input of settlers since 1971 : the north of Lampung with the opening of the Local Transmigration project (*kec*. Tulang Bawang Udik, Tulang Bawang Tengah, Pakuan Ratu and Menggala), the very end of the Metro scheme (*kec*. Rumbia and Seputih Surabaya), the south-east of the province of South Sumatra with the large Pematang Panggang project (Mesuji and Lempuing, the southern part of Kayu Agung), the Upang-Telang and Sugihan part of Musi delta, and all the transmigration receiving *kecamatan* of the northern part of the provinces of South Sumatra and Bengkulu. This emphasizes the incentive effect of the settlement programme. The local population is generally maintained, and sometimes attracted, by this input of activity, whereas newly-arrived transmigrants encourage their families and friends to join them. The exceptions are due either to the fact that the Transmigration villages are very recent (Muara Enim)

Fig. 4 EVOLUTION OF THE POPULATION - MAIN TRENDS
EVOLUTION DE LA POPULATION - PRINCIPALES TENDANCES 1970-1987



localization of demographic regions / ***individualisation des régions démographiques*** — **yearly growth** / ***croissance annuelle*** **1970-1987 / 88**

(except where rate approaches national average of 2,2 % - *en dehors des cas voisins de la moyenne nationale 2,2 %*)

- very high or high growth rates linked to transmigration or swamp reclamation programs – *très forte croissance ou forte croissance liée aux programmes de transmigration récents ou à l'aménagement des marais* — 5 to 10 % or more / *5 à 10%, voire plus*
- steady or high growth rates linked to spontaneous migratory movements – *croissance soutenue ou forte croissance liée aux mouvements migratoires spontanés* — 3 to 7 % / *3 à 7%*
- moderate growth rates despite influx caused by transmigration – *croissance modérée malgré les apports de la transmigration*
- moderate growth rates despite spontaneous migrant influx due to removal effect of local transmigration – *croissance modérée malgré les apports migratoires spontanés en raison des ponctions de la transmigration locale* — 2 to 5 % / *2 à 5%*

low growth rates - *faible croissance :*

- depressed regions at the central plains - *régions déprimées des plaines centrales*
- saturation of the old transmigration regions (very high rural densities) – *phénomènes de saturation dans les vieilles régions de transmigration (très fortes densités rurales)* — 0,5 to 2,5 / *0,5 - 2,5 %*

sources - *sources*

Departemen Transmigrasi, Jakarta
Kanwil Transmigrasi Bandarlampug, Bengkulu, Palembang
Sensus Penduduk 1971,1981 BPS, Jakarta
Penduduk Propinsi Lampung, Bengkulu, Sumatra Selatan, Kantor Statistik 1987 (projections et statistiques annuelles)

M P / j z 1991

From separate sheet No. 4 - *repris de la carte hors-texte n° 4*

or that the region has experienced a considerable emigration of the local population - the Ogan of the Peninjauan *kecamatan* and the Komering of Buay Madang - which has not yet been compensated by the nevertheless considerable immigration towards the Batumarta villages established by Transmigration.

It may also be noted that, although the oldest *kecamatan* set up for organized colonists in Lampung and South-Sumatra have a stable or negative growth rate, the population of the districts surrounding them is greatly increasing. This phenomenon is the second stage of the population process : the excess population has spread to other areas via spontaneous migration. This pattern is repeated everywhere in exactly the same way, in Lampung central part, in Tugomulyo (Musi Rawas) and Belitang, except that the flow is sometimes in a single direction, as in the North-East of Belitang, where population densities remain low.

High growth rates with no contribution from Transmigration are mainly the result of spontaneous migration. It can be found in two regions of Lampung. The South-East point receives many immigrants, partly due to the incentive effect of official settlements (Sidomulyo and Rawa Sragi), but mainly thanks to the improvement of existing roads and the creation of new ones : the prolongation of the Transumatran Highway towards the new Java-Bakauheni ferry embarkation point.

The other region experiencing a high growth rate is the mountainous area from South-West tip of the island up to the adjoining South Sumatra, where the setting up of coffee plantations has attracted large numbers of spontaneous colonists. This movement has spread with a lesser, but still significant intensity into South Sumatra (OKU) ; it is interrupted in the central region on account of high population densities in the Pasemah valleys, but continues into the mountain valleys around Lubbuklinggau and the North of Bengkulu. These high growth rates correspond to the arrival of spontaneous colonists from other regions of Southern Sumatra, and of other people, either arriving directly from Inner Indonesia, or coming from former migration centres in Lampung or South Sumatra. The mountain areas and their foothills make up the greater part of the lands occupied by purely spontaneous immigrants.

The anomalies observed in these areas with high concentrations of spontaneous migrants - growth rates which are comparable to the national average - correspond to the effects of Local Transmigration in Lampung. However, it must be emphasized that these eviction measures have only partly diminished the attraction of the mountain areas for inhabitants of neighbouring provinces and of the already overpopulated central plains. Thus, in the Pulau Panggun *kecamatan*, three quarters of the people moved on by Local Transmigration were replaced by new spontaneous migrants (Benoit 1989: 174).

The central plains of the Palembang hinterland, with a solid native population, and little affected either by Transmigration or spontaneous movements, form a demographic "depression", with growth rates similar to, or below the national average, in twenty-odd *kecamatan*. The area between the capital and Kayu Agung is experiencing strong emigration to Palembang and to the nearby coastal transmigration project, Air Sugihan. The same demographic depression is the rule for the whole of the region which is considered to be the geographical heart of the province of South Sumatra : all the *kecamatan* south of Palembang, on the middle reaches of the three main rivers (Musi, Ogan and Komering). These are the unfertile central plains where, without transmigration, steady indigenous emigration is felt.

These maps reveal considerable differences between the provinces of Southern Sumatra. The spontaneous migration movement in the province of South Sumatra is not new. It is at least as old as that in Lampung, but has never been as extensive. This is not only because the province is further away from the immigrants' regions of origin, but also because South Sumatra offers specific conditions for immigration, the social occupation of available space is longer-established and better-structured, and the regional economy is more vigorous. The spaces of South Sumatra appear to be better "run" than those of Lampung. If we compare land use maps over a period of time, we see a certain continuity in the development of land use in the Palembang region, whereas in Lampung province, a real upheaval of traditional organization can be observed.

Figures for population growth support the idea that the influx of spontaneous immigrants into South Sumatra, independent of government-organized migration, is an integration, rather than an invasion such as that observed in Lampung, submerged by an unprecedented wave of immigrants. However, with the unusual population increase in Lampung province, South Sumatra now finds itself bordered by a region which has become, itself, a source of migrants.

Notes to chapter 1

(1) *The figures for* Repelita *IV add together the 896,005 people (228,422 heads of families) entirely supported by the State and the 1,360,350 people (521,728 heads of families) displaced without government support* (TBB) *or with minimum State support* (DBB/APBD). *Sometimes, unplanned arrivals have been included, and swell the statistics. Source :* Departemen Transmigrasi.

(2) *1980 census. This criterion is closer to reality in rural areas than in urban ones, where a growing number of city dwellers now speak Indonesian, and no longer declare their original language.*

(3) *Batumarta was planned to occupy an area of 65,000 ha. Based on rubber growing, each family was given 5 or 3.5 ha. of land instead of the usual 2 ha., one ha. of which was planted by a State-owned company which had its own plantations in the centre of Transmigration units, and a processing plant. This pilot project has been the subject of numerous studies, and has been well-controlled. It has benefitted from exceptional funding, since the investment cost per family was almost twice the average cost of a family of transmigrants. The Lahat centres, after setting up production systems based solely on food crops, and achieving mediocre results, have undergone rehabilitation programmes known as "second stage development". After further studies, all financed by the World Bank, several centres were to be given the means of developing cash crops (rubber, Bungamas SSDP 1, Senabing PIR SUS).*

(4) *The observed trends were confirmed by the 5th plan whose intention was to redistribute 550,000 families into varied production systems : food crops (32.7%), plantations (36.3%), fishing (16.3%), forestry (7.2%), services (7.2%).*

Insert map No.2 - *Carte n° 2*

EVOLUTION AND DENSITY OF THE POPULATION IN SOUTHERN SUMATRA

EVOLUTION ET DENSITE DE LA POPULATION DANS LE SUD DE SUMATRA

1 POPULATION GROWTH AND NUMBER OF TRANSMIGRANTS IN THE SOUTH OF SUMATRA
EVOLUTION DE LA POPULATION ET APPORTS DE LA TRANSMIGRATION DANS LE SUD DE SUMATRA
1971-1987

POPULATION EVOLUTION BY KECAMATAN
EVOLUTION DE LA POPULATION PAR KECAMATAN
annual growth without transmigrants (%)
croissance annuelle sans les apports de la transmigration (%)

- 0 - 1.9
- 2.0 - 2.6
- 2.7 - 3.4
- 3.5 - 4.4
- 4.5 - 5.4
- 5.5 - 6.9
- ⩾ 7.0

TOTAL OF TRANSMIGRANTS SETTLED IN THE REGION
NOMBRE DE TRANSMIGRANTS INSTALLES DANS LA REGION
(estimation by *kecamatan* - *évaluation par* kecamatan)

60 000
50 000
40 000
30 000
20 000
10 000
0

sources - *sources*

- Departemen Transmigrasi, Jakarta, 1990
- Kanwil Transmigrasi Bandarlampung, Bengkulu, Palembang
- Sensus Penduduk 1971,1981 BPS, Jakarta
- Penduduk Propinsi Lampung, Bengkulu, Sumatera Selatan Kantor Statistik 1987-1988 (projections and annual statistics / *projections et statistiques annuelles*)

(44•) data unavailable - *absence de sources*

N
0 20 km

MUSI BANYUASIN
MUSI RAWAS
BENGKULU
BENGKULU UTARA
BENGKULU SELATAN
LEBONG
LAHAT
MUARA ENIM
OGAN KOMERING ULU
OGAN KOMERING ILIR
LAMPUNG UTARA
LAMPUNG TENGAH
LAMPUNG SELATAN
Palembang
Bengkulu
Bandar lampung

N
0 30 km

2 TOTAL POPULATION GROWTH
EVOLUTION DE LA POPULATION TOTALE
1971 - 1987/88

annual growth - *croissance annuelle* %

- 0 - 1.9
- 2.0 - 2.6
- 2.7 - 3.4
- 3.5 - 4.4
- 4.5 - 5.4
- 5.5 - 6.9
- 7.0 - 9.9
- > 10.

by – *carte réalisée par* M. CHARRAS, G. § M. PAIN
drawing-cartography
dessin, cartographie Yanto Wahyantono

OGAN KOMERING ULU
1. PULAU BERINGIN
2. BANDING AGUNG
3. MUARADUA
4. MUARADUA KISAM
5. SIMPANG
6. MARTAPURA
7. BATURAJA BARAT
8. BATURAJA TIMUR
9. SOSOH BUAY
10. PENGANDONAN
11. PENINJAUAN
12. BUAY MADANG
13. BELITANG
14. CEMPAKA

MUARA ENIM
15. SEMENDO
16. TANJUNG AGUNG
17. MUARA ENIM
18. PRABUMULIH BARAT
19. PRABUMULIH TIMUR
20. GUNUNG MEGANG
21. TALANG UBI
22. RAMBANG DANGKU
23. RAMBANG LUBAI
24. GELUMBANG

LAHAT
25. TANJUNG SAKTI
26. PAGAR ALAM
27. MUARA PINANG
28 PENDOPO
29. ULU MUSI
30. TEBING TINGGI
31. JARAI
32. KOTA AGUNG
33. P. PINANG
34. MERAPI
35. LAHAT
36. KIKIM

MUSI RAWAS
37. TUGU MULYO
38. MUARA BELITI
39. MUARA LAKITAN
40 MUARA KELINGI
41. LUBUK LINGGAU BARAT
42. LUBUK LINGGAU TIMUR
43. RAWAS ILIR
44. RAWAS ULU
45. MUARA RUPIT
46. JAYA LOKA
47. BATU KUNING LAKITAN ULU TERAWAS

OGAN KOMERING ILIR
48. MUARA KUANG
49. TANJUNG LUBUK
50. PEDAMARAN
51. MESUJI
52. KAYU AGUNG
53. TANJUNG BATU
54. TANJUNG RAJA
55. SIRAH P. PADANG
56. INDERALAYA
57. PEMULUTAN
58. TULUNG SELAPAN
59. PAMPANGAN

MUSI BANYUASIN
60. SEKAYU
61. BABAT TOMAN
62. SUNGAI LILIN
63 BAYUNG LENCIR
64. BANYUASIN I
65. TALANG KELAPA
66. BANYUASIN II
67. BANYUASIN III

LAMPUNG SELATAN
1. CUKUH BALAK
2. PADANG CERMIN
3. KEDONGDONG
4. PARDASUKA
5. KOTA AGUNG
6. WONOSOBO
7. TALANG PADANG
8. PAGELARAN
9. PULAU PANGGUNG
10. PRINGSEWU
11. SUKOHARJO
12. GADINGREJO
13. GEDONGTATAAN
14. N A T A R
15. TANJUNG BINTANG
16. SIDOMULYO
17 KALIANDA
18. KETIBUNG
19. PENENGAHAN
20. P A L A S
21. TELUK BETUNG PNJ.

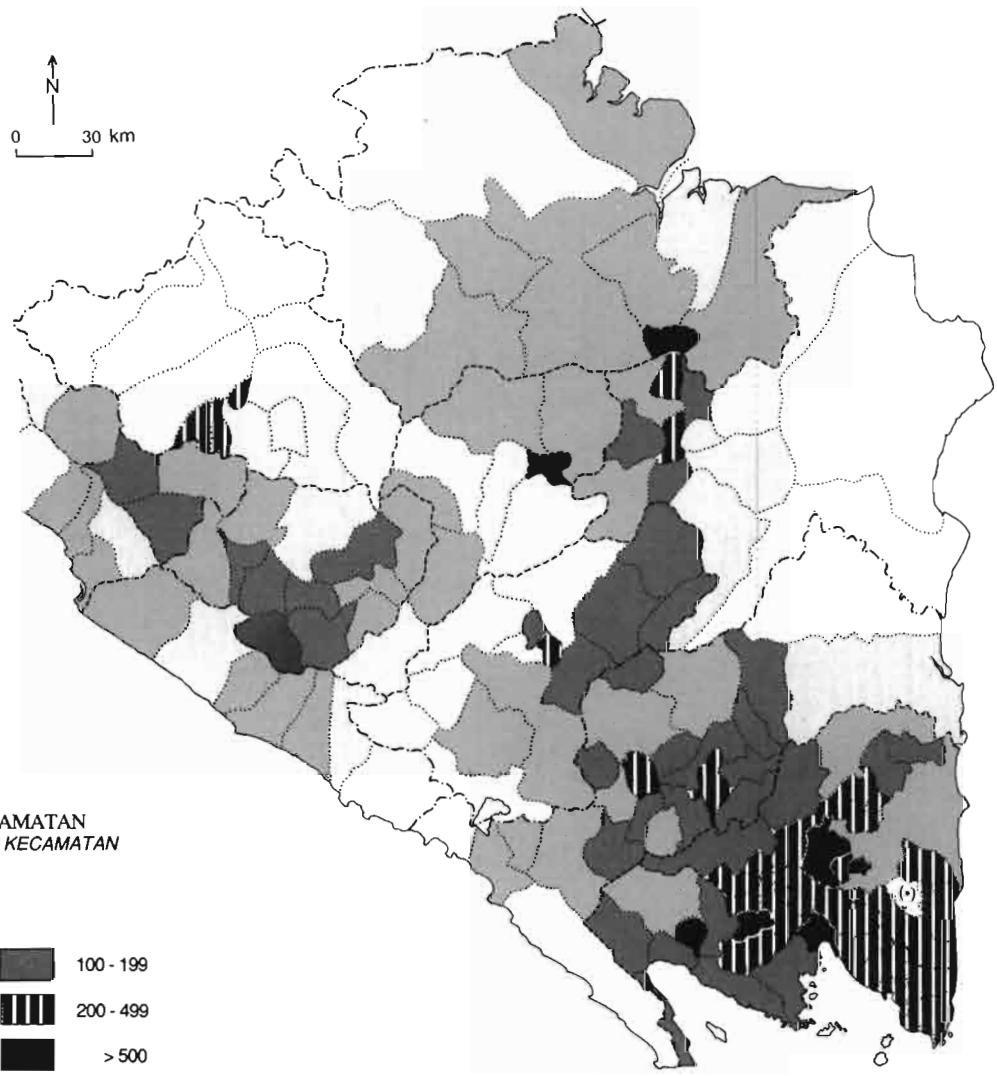
LAMPUNG TENGAH
22. KALIREJO
23. BANGUNREJO
24. PADANGRATU
25. GUNUNG SUGIH
26. TRIMURJO
27. M E T R O
28. BATANGHARI
29. SEKAMPUNG
30. JABUNG
31. LABUHAN MARINGGAI
32. WAY JEPARA
33. SUKADANA
34. PEKALONGAN
35. PUNGGUR
36. TERBANGGI BESAR
37. SEPUTIH RAMAN
38. RAMAN UTARA
39. PURBOLINGGO
40. RUMBIA
41. SEPUTIH BANYAK
42. SEPUTIH MATARAM
43. SEPUTIH SURABAYA
44. GUNUNG BALAK

LAMPUNG UTARA
45 PESISIR SELATAN
46. PESISIR TENGAH
47. PESISIR UTARA
48. BALIK BUKIT
49. SUMBER JAYA
50. BUKIT KEMUNING
51. KOTABUMI
52. SUNGKAI SELATAN
53. K A S U I
54. BLAMBANGAN UMPU
55. PAKURAN RATU
56. TULANG BAWANG UDIK
57. TULANG BAWANG TENGAH
58. MENGGALA
59. MESUJI
60. BELALAU
61. TANJUNG RAJA
62. ABUNG TIMUR
63. ABUNG BARAT
64. ABUNG SELATAN
65. SUNGKAI UTARA
66. BANJIT
67. BARADATU
68. BAHUGA

BENGKULU SELATAN
1. KAUR SELATAN
2. KAUR TENGAH
3. KAUR UTARA (PADANGGUCI)
4. M A N N A
5. P I N O
6. T A L O
7. SELUMA

BENGKULU LEBONG
8. KEPAHIANG
9. PADANG ULAK TANDING
10. C U R U P
11. LEBONG SELATAN
12. LEBONG UTARA

BENGKULU UTARA
13. PONDOK KELAPA
14. KETAHUN
15. L A I S
16. TABA PENANJUNG
17. TALANG EMPAT
18. KERKAP



3 POPULATION DENSITY PER KECAMATAN
DENSITE DE LA POPULATION PAR KECAMATAN

1987 – 1988

0 - 29
30 - 49
50 - 99
100 - 199
200 - 499
> 500

Chapter 2

Phase two: the agricultural colonization of the province of South Sumatra

Muriel Charras & Marc Pain

1. Favourable conditions for immigration

■ Varied landscapes and crops

South Sumatra is the fifth largest province in Indonesia, with 104,000 km². All the major natural regions of Sumatra are represented, except the coastal strip on the Indian Ocean. Each zone forms a parallel strip oriented North-West to South-East, in the same way as the mountain zone with its dissected slopes and a central tectonic depression which forms the Pasemah (Lahat) and the Ranau (Banding Agung) fertile highlands in this province. This is followed by a narrow piedmont strip and then by a large hilly to flat peneplains area. Though not very fertile (red-yellow podzolic soils), the latter area harbours the largest concentration of smallholder rubber plantations in the whole of Indonesia. In the so-called "Palembang hinterlands", between the Musi, Ogan and Komering rivers, the peneplains are flooded, due to the constricted river basins, for at least nine months of the year, creating the *lebak*. Then there is a wide, swampy coastal strip which, in many areas, is regularly flooded by the tidal effect on river flow. The province of South Sumatra also includes two large islands, Bangka and Belitung, which must remain outside the scope of this study.

Apart from the swampy coastal zone, traditional farming systems are identical inland (plains, piedmont and mountain valleys), and their development, which has long shown a great degree of adaptability to the outside world and market economy, has been very similar. The agriculture of South Sumatra may be characterized by a shifting cultivation system for food crops, which adapted its cycle to perennial cash crops, such as rubber and coffee, as soon as they were introduced into Indonesia at the beginning of the century.

The swidden fields were cleared using slash and burn techniques along the river banks, and over a 1-2 km radius around villages. The fields were strongly fenced to discourage predators, and they were planted for two seasons, or three at the most, with rice and other food crops before the forest was left to grow again, although teak, fruit trees and damar were planted to mark the family's right of use. The settlements situated on the river banks were surrounded by orchards, but these were constantly threatened by fires in the swidden fields.

RUBBER TREES EVERYWHERE

Rubber trees were introduced into clearings in the same way as other trees, but latex production enabled the rural population to re-enter the market economy. The Malay and Chinese traders of Palembang organized its collection. The Komering river appears to be the Southern limit for rubber growing, since there are far fewer rubber plantations (Kitamura, 1980: 10), and, beyond, the Lampung region never underwent a similar development. In 1977, Lampung had 17.7 thousand hectares of smallholder plantations, whereas South Sumatra had 480.3 (*Statistik karet*, 1978, Bogor).

Up to now, the majority of farmers have grown traditional varieties of rubber trees, with a high planting density (600-650 plants/ha), on a one-ha or half-ha plot. Rice, and other food crops like cassava, chili, pineapple and bananas

Chapter translated from French by Caroline Wheeler

are planted for up to three years alongside the rubber in the *ladang*. Then the *ladang* is abandoned and the rubber trees continues to grow amid the forest regrowth. Once the trees have reached maturity, the latex will be tapped when the price is high enough (Fig. 5), otherwise the trees will be neglected for other more profitable activities, such as the extraction of sand from rivers, fishing, hunting, trade, or harvesting the damar tree (Barlow, 1982: 96).

Thus, every four or five years (sometimes every ten years if income from latex is high), a family makes a new clearing to cater for its rice crop, and very few swidden fields are abandoned without being planted with rubber trees, since the extra investment needed by a farmer using unselected seedlings is low. The surface area planted with rubber trees may thus reach 5-10 ha per family, but not all of this is exploited. When latex prices are good, the farmer and his wife may produce 6-9 kg of dry rubber per day, and drying is carried out on the spot in a hole in the ground or a wooden crate. The latex is taken regularly to the collection point (road or river) in 20 kg slabs, using a forehead strap. From plain to piedmont, and up into the mountain valleys, there is the "rubber jungle" around every settlement and along each means of communication (river and road). Although very moderately exploited, the "rubber jungle" places this province at the head of smallholder latex production.

Fig. 5
RUBBER TREE TAPPING ON AN INDIGENOUS SMALL HOLDING - *SAIGNÉE SUR UN HÉVEA D'UNE PETITE PLANTATION AUTOCHTONE*

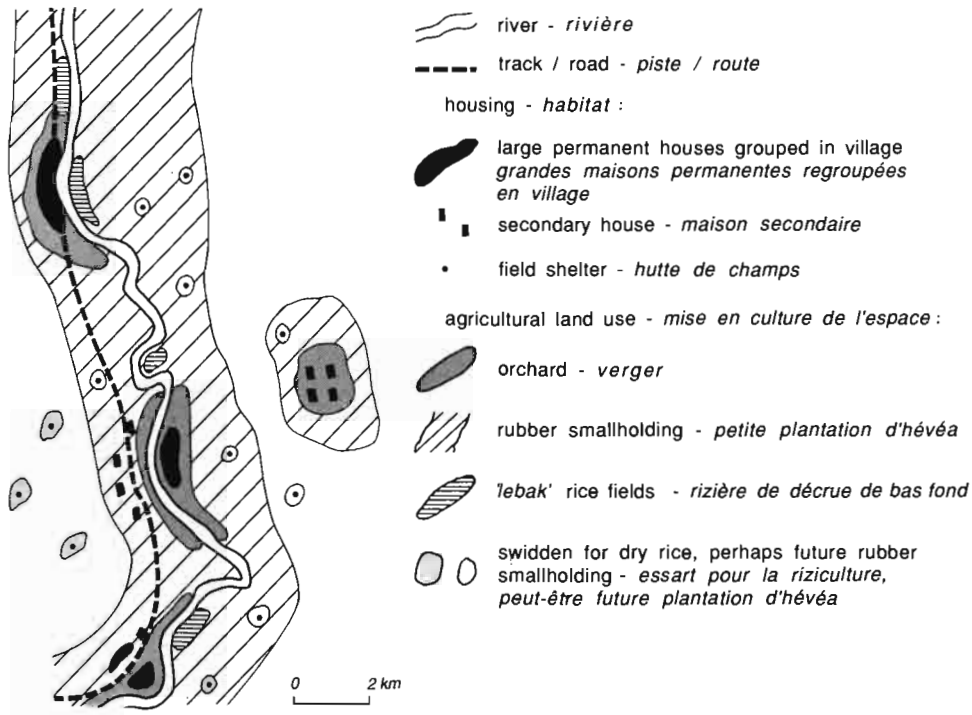
THE PALEMBANG HINTERLAND

In the Palembang hinterland, and, more generally, on *lebak* lands, rubber trees were planted on dry land (river banks and small hills or mounds (pematang), on soils traditionally used for ladang rice cultivation. Consequently, the local people have begun to practice swamp rice growing in the marshy depressions. At the first signs of a lowering of the water level, rice is planted on the outer margins of the swamp, and planting continues as far as possible towards the middle of the depression, sometimes using boats to bring the rice seedlings to be planted. Rice planted on the outside will be vulnerable to prolonged drought, whereas that planted in the middle could fall victim to an early start to the rains (Scholz, 1982: 153-160). In 1988, 124,000 ha in the province were under rice cultivation using this "*lebak*" system, and crops, fairly unpredictable from one year to the next, were 1.5 t maximum of paddy/ha for traditional varieties, and 3 t/ha for high-yielding varieties. In these areas, fresh-water fish farming also provides a useful income (Fig. 6).

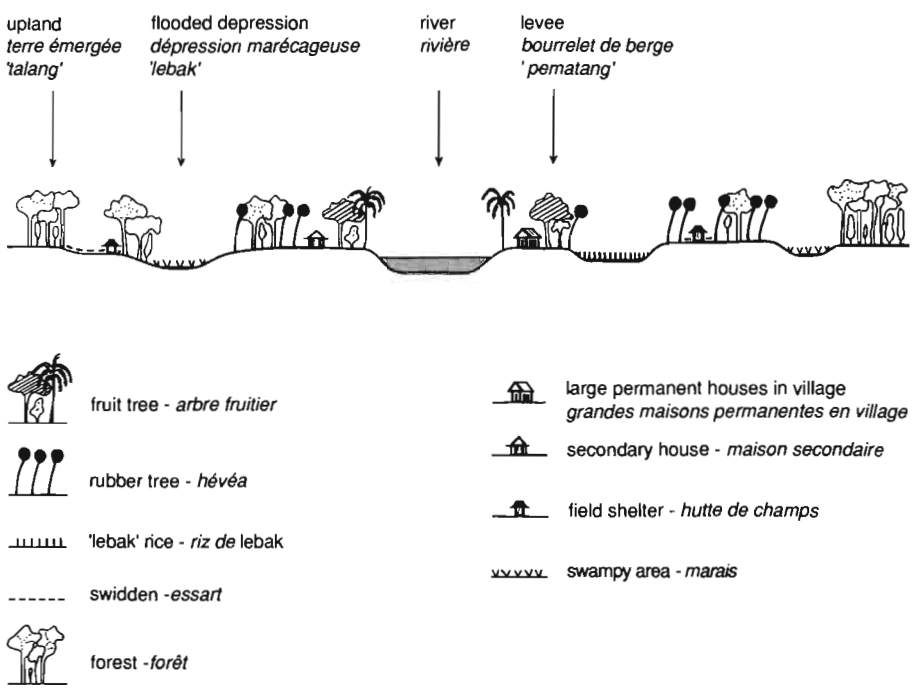
THE COASTLAND WETLAND

Populations living at the boundaries of the wide swampy coastal zone added to their system of swidden fields with rubber trees on dry land, the cultivation of paddy fields directly behind the high banks of the delta's numerous branches. To mitigate the effects of the daily flooding of the land, they set up a simple drainage system, using sluice gates placed directly on the watercourse. This is a seasonal type of farming, and one that has not until recently attracted any settlements, on account of the particularly difficult living conditions. Only a few fishing and trading villages once occupied this area devoted to hunting and fishing. This was the area that was to undergo the greatest upheavals in the whole province, with the massive arrival of transmigrants and the reclaiming of land by the Bugis colonists in the 1960s.

Fig. 6 TRADITIONAL SETTLEMENT PATTERN IN THE SOUTH SUMATRA PLAINS
OCCUPATION TRADITIONNELLE DE L'ESPACE DANS LES PLAINES DE SUMATRA-SUD



CROSS SECTION OF RIVER VALLEY IN THE PLAINS
COUPE TRANSVERSALE D'UNE VALLEE EN PLAINE



sources - *sources*
sketch from U.Scholz (1983) and field surveys (Lematang and Musi rivers) 1990
croquis d'après U.Scholz (1983) et enquêtes de terrain (rivières Lematang et Musi) 1990.

M C / j z 1991

INVASION OF THE HIGHLANDS BY COFFEE

In the valleys and plateaux of the mountain regions, coffee was introduced into the farming system in the same way as rubber. Rubber is still found in the valley bottoms, whereas coffee plantations can be set up further away, in a less densely populated area since coffee is less vulnerable to the ravages of wild boar.

Until the 60's, the surface area per family set aside for coffee was less than that for rubber, since the crop is harvested over a two-month period (from May to July in the region studied), and therefore requires casual outside labour, in contrast to rubber growing, since the trees may be tapped as often as needed by family labour. In regions where ladang rice growing predominates, farmers did not systematically plant coffee in a new clearing, but often waited for ten years or so before replanting, when the production of an earlier coffee plantation was exhausted.

Coffee, generally of the robusta variety, is also densely planted, 2,000-3,000 bushes per ha, rather than the recommended maximum of 1,500. The "exceptional harvest" - *panen agung* is obtained after three and a half years, i.e., nearly two tons for 1,500 bushes, then yield stabilizes at 500-600 kg/ha from the sixth year onwards, without the use of fertilizer. The increase in coffee prices and the availability of labour gave new incentive to this family business; today, native planters often own at least three one-ha plots, frequently partly let out in a sharecropping arrangement.

In this mountainous region, rice growing in clearings is the rule, except in the valleys of the Pasemah and those of the upper Enim, the native region of the Semendo, where irrigated crops have long been grown. The property of *sawah* gives an important socio-economic status here. This irrigated rice fields has helped to stabilize dwelling places and increase population densities, as can be seen on maps as early as 1920-1930. Market gardening has not yet developed, except in the densely populated Pasemah valleys, especially in Pagalaram and Jarai on permanent fields located near settlements, or in association with young coffee bushes during the first two years of planting.

The main feature of traditional South Sumatran agriculture is a certain variety, both in cash crops and food crops, although food crop production is not so highly developed. With regard to smallholdings, variety is also the rule. The plots cultivated by a family ensure day to day needs (cereals, fruit and vegetables), but also provide a source of income (rubber, coffee, pepper, fruit). Also, since farming is extensive, the size of the farm makes up for low yields. This agriculture is also characterized by low production costs.

■ A dynamic regional economy

The economic situation of the province is far better than that of its neighbour Lampung, probably due to the historical roots of its economic structures. Palembang harbour has long been a strategic gateway at the mouth of the Musi on the Malacca Straits, linking the three main trade routes of pre-colonial times: the Middle East, China and the archipelago itself. The tin and pepper of Bangka island provoked an early intervention by the English and the Dutch, and, more recently, oil, rubber, timber and coffee have supported the regional economy. Although the management of trade changed hands during the colonial period, exports were maintained and three-quarters of these were sent directly abroad: to Singapore (55%) and other foreign ports (22%). The Palembang hinterland remained the most dynamic region of Southern Sumatra, since the volume of its imports and exports was equal to the sum of those of Jambi, Lampung and Bengkulu (1932)(Miksic, 1985: 456).

Nowadays, South Sumatra is still an exporting province and its economy is governed by the ups and downs of the international market. Not counting the mining sector, which is mostly managed outside the province [1], and excluding the oil and gas producing provinces, South Sumatra was, in 1983, the second ranking outer province for the GDP per capita and the third exporting province after North Sumatra and East java. South Sumatra is the leading smallholder coffee and rubber producing province in Indonesia (Table 7).

Table 7. PRODUCTION AND EXPORT OF RUBBER, COFFEE, PEPPER IN SOUTHERN SUMATRA - *PRODUCTION ET EXPORTATION DU LATEX, DU CAFE ET DU POIVRE DANS LE SUD DE SUMATRA*

1981-1984 ('ooo tonnes)

PROVINCE		RUBBER		COFFEE		PEPPER	
		1981	1984	1981	1984	1981	1984
South Sumatra	Pr	146	160	75	79	17	17
	Ex	*80*	*144*	*59*	*61*	*0*	*0*
Lampung	Pr	7	6	74	42	19	14
	Ex	*20*	*33*	*74*	*84*	*19*	*24*
Bengkulu	Pr	13	16	25	26	1	0,4
	Ex	*0*	*1*	*0*	*2*	*0*	*0*

Pr : production, Ex : export

Sources : South Sumatra Dept. of agriculture

However, since the end of the '50s, Palembang has no longer been an international port, and most goods are exported through the port of Jakarta. Today, its economic expansion is limited by the strong development of Bandar Lampung through which much of the province's production transits, due to the better road network, and the lack of investment to keep Palembang harbour from silting up. Lampung exports twice as much coffee as it produces, and the proportion is even higher for rubber. This situation is not likely to change with the future opening of the so-called East Sumatra highway, linking the capital of Lampung with Palembang, via Menggala, and beyond to join the Jambi highway already in existence. This new road would have the advantage of stimulating better regional integration and opening up a previously undeveloped zone on the swamp fringe (from Mesuji to Sugihan rivers). Meanwhile, the decision to build a new ocean port has not yet been taken, the only decision which could reactivate the province's core.

The manufacturing sector has a large share in the GDP by Indonesian standards, but it is dominated by State enterprises such as the oil refinery, the PUSRI fertilizer factory (the first to be built in Indonesia, 1964) and the Baturaja cement factory (early 1980s), which have high capital, low employment, and have few linkage effects on industrial activities in the current national context. Private enterprise went through a boom period following the ban on log export and the creation of plywood factories. Plywood export rose from $1 million in 1977 to $32 million in 1985 with four main plywood factories recorded in 1988. It is unlikely that this activity can be sustained, as can be seen by the departure of companies after the destruction of the forest downstream from Kayu Agung, and the present economic depression of this region.

For other manufactured products (food processing, rubber processing, weaving), the data point to a stabilization, or even a regression of activities. Since 1974, industrial investments have been more concentrated on Lampung, especially on food processing industries [2]. The manufacturing sector is highly concentrated in and around Palembang, but export crops and timber production have led to the blossoming of small-scale industrial activities nearly everywhere.

The 1980s opened a new era with the strong development of estate plantations (33,000 ha in 1984, 76,000 ha already planted in 1988), which have not yet produced a high yield, either due to the immaturity of the trees or to land speculation. Huge areas were contracted by private or semi-public firms with the local government at the beginning of the 1980s, but no crops are in evidence ten years later (as in the case of Cempaka OKU, where more than 30,000 ha have been frozen for a future sugar cane plantation).

The evolution of agriculture in South Sumatra is characterized by continuing increases in area of land under production, whether for food crops or for tree crops (Tables 8,9,10). The province is at present barely self-sufficient in rice. The increase in cultivated area devoted to other food crops is significant and mainly due to the Inner migrants, either transmigrants or spontaneous settlers who occupied an empty niche in the local agricultural system. The yields remain generally lower than the national average thus illustrating the slight of agricultural extension and the low level of fertilizer applications due to the underdevelopment of the distribution network.

Table 8. PADDY IN SOUTH SUMATRA: CHANGES IN AREA AND TOTAL PRODUCTION - *EVOLUTION DES SURFACES ET DE LA PRODUCTION TOTAL DE RIZ*

Rice fields	Area '000 ha 1974	1988	Main actors involved
Irrigated	41	46	Indigenous and migrants
Lebak	84	128	Indigenous
Pasang Surut	26	119	Trans., spontaneous
Pluvial	124	100	Indigenous, migrants
Ladang	13	53	Indigenous
Total area	288	446	'000 ha
Total production	*891*	*1.283*	*'000 T*

Sources : South Sumatra Dept. of agriculture

Table 9 DRYLAND FOOD CROPS CHANGES, 1979-1988 *EVOLUTION DES CULTURES VIVRIERES EN SEC*

	1979	1988
Corn		
'000 ha	7	30
'000 T	*5*	*50*
Cassava		
'000 ha	22	35
'000 T	*178*	*437*
Soja bean		
'000 ha	4	20
'000 T	*3*	*22*
Peanuts		
'000 ha	7	17
'000 T	*6*	*19*
Mungo		
'000 ha	3	4
'000 T	*2*	*3*

Sources : South Sumatra Dept. of agriculture

The total of smallholding plantations grew sharply, thus confirming the specificity of the province. The increase in area cleared for coffee was particularly large, both from former rubber plantations (rubber forest), and from forests on the highland valleys and slopes. This production trend suggests that old plantations were not rejuvenated or else that there was an overestimation of the total area planted. This distinct increase is explained by the high price of coffee on the international market between 1976 and 1986, but it should slow in the coming years due to global overproduction (Table 10).

Table 10. TREE CROPS : AREA PLANTED AND PRODUCTION (smallholding and estate) - *EVOLUTION DES PETITES ET GRANDES PLANTATIONS* ('000 ha, '000 T)

Plantation		1974	1985		1988	
		S	S	E	S	E
Rubber	Ar	472	495	8	520	1
	Pr	*149*	*155*	*13*	*170*	*13*
Coffee	Ar	78	194	-	236	-
	Pr	*40*	*79*	-	*82*	-
Pepper	Ar	12	23	-	47	-
	Pr	*8*	*17*	-	*29*	-
Coconut	Ar	32	50	-	51	-
	Pr	*13*	*n.a*	-	*16*	-
Oil Palm	Ar	n.a	n.a	21	-	41
	Pr	*n.a*	*n.a*	*12*	-	*42*
Sugar-cane	Ar	n.a	n.a	3	-	12
	Pr	*n.a*	*n.a*	*8*	-	*71*
Total area		594	762	32	854	72

S : smalholders, E : estate, Ar : area, *Pr* : production

Sources : South Sumatra, Dept. of Agriculture

Rubber, the principal crop of the province, has experienced a slower increase in surface planted and a clear increase in yields. Nevertheless, the modernization of traditional plantations is generally a slow process for the local people (Barlow, 1982). In all, an additional 778,000 ha have been put under cultivation between the mid-1970's and 1988 for the above crops. This does not include secondary food crops such as vegetables and fruit orchards.

This economic situation, mainly the smallholder tree crop structure (which induces better income distribution among the population), may explain the very good position of the province in Sayogo's calculation of the percentage of people below the poverty line in 1980: 9.4% in urban areas and 1.1% in rural areas, compared to 42.6 and 40.1, respectively, in Lampung [3]. Nevertheless, the level of services is far from satisfactory, mainly because the population is distributed over a very large area and because of the high concentration of services in Palembang. The situation is particularly delicate for health services (medical care for children under five and family planning). Since access, even to education, is thus hampered, primary and secondary school enrolment is on a par with the Indonesian average (Table 11).

In conclusion, we might note that the dynamism of the regional economy offers better opportunities for employment with better salaries than in Java, representing an important factor of attraction. At the time of our fieldwork, the salary of an unskilled worker in Palembang was officially Rp 5000 per day, but only Javanese migrants accept this rate; in Java they would receive at most Rp 3500 for comparable work. Profits are even higher for the migrant who lives more frugally and can save more. For the locals, this salary (Rp 5000) is insufficient, and they blame the Javanese for undermining the labour market. Agricultural wages during periods of heavy work (rice harvest in the old Transmigration centres and coffee harvest in the highlands) are almost double those in Java [4].

■ A period of change in rural society

Society in South Sumatra, like the majority of ethnic groups in Indonesia, is undergoing major changes, due not only to the effects of the accelerated modernization that the country is undergoing (with better access to education and health facilities, improvement of communication, transportation and information), but also to attempts at national integration, via a specific orientation of the economy and administrative and socio-political uniformization. South Sumatra is entering this period of change in its own particular way. Without claiming to deal with this question in depth, we must nevertheless mention some essential characteristics to explain changes taking part in this province, and its capacity for receiving migrants.

EASY CONTACTS AND GEOGRAPHICAL MOBILITY

The basic elements favoring early contacts with overseas have already been examined. The pre-colonial period was, for this region, very rich in relationships with a world extending Eastwards as well as Westwards. The colonial period, while removing all native prerogatives from the head of the hierarchy, also narrowed the range of contacts

with overseas. However, the upholding of trade relations with Singapore guaranteed a certain dynamism, with, as its main partners, Chinese and Malay traders from Palembang, who plied their trade throughout the province. After Independence, contacts with overseas became restricted to other regions of Indonesia, mainly Jakarta. This is true not only for economic relations, but also for society. Socio-political competition for the regional elite has been won by Jakarta [5]. One of the consequences is the acceleration of emigration towards Jakarta and West Java.

Open-mindeness and mobility are two long-established characteristics. The origin of certain settlements along the middle course of the Komering up to the North of Lake Ranau, as mentioned in the pluridisciplinary study carried out by Japanese researchers (Kyoto, 1980), shows the extreme mobility of local groups, whether between different highland groups, or between highland and lowland groups. The origin myths about the settlements show this region as a centre for the meeting of peoples from far-flung areas, not only by land from the centre (Minangkabau) and the South (Lampung) of Sumatra, but also by sea, with references to Modjopahit and the Bugis (Tsubouchi, 1980: 4-19)[6].

High mobility can be seen, first of all, in the agricultural sector. The space used by people from South Sumatra does not take into account administrative and ethnic boundaries. It has long stimulated migration to Lampung, particularly for highland people: Ogan Ulu and Semendo (Sevin, 1989). In 1980, about 113,000 people born in South Sumatra resided in Lampung (BPS: 1984). Bengkulu is also a major receiving land for South Sumatran people.

This propensity to go further to open land can be partly explained by the inheritance system. In the interior regions, particularly in the upper Ogan and Komering rivers, traditional law, despite the influence of Islamic law, gives all land and the house to a single child, the eldest daughter in the case of the Semendo, the eldest son in the other cases. This heir might best be considered the guardian of the lineage's wealth as he or she must provide economic support for the members of the lineage (especially for education and health care) and must receive the whole family for the annual reunion of *lebaran hadji* or for life-cycle rituals. While these differences (based on rank and gender) are becoming blurred at the present time, families remain clearly reticent to divide their properties. Those who decide to remain in the village have responsibility to take care of the family properties, and today it is more and more frequently the youngest child who stays longest with the parents. Meanwhile, his or her elder brothers and sisters will have gone elsewhere, often far away, to open up new land, where they reside permanently.

According to traditional Semendo law (*adat*), in which matrilineal inheritance practice is still quite strong, newly opened land becomes part of the eldest daughter's inheritance, which partly explains the extreme mobility of this ethnic group and its reputation as the master of isolated land. They open land, plant coffee, wait for the maximum harvest, *panen agung*. Some then resell their plots, often to Javanese whom they employ, in order to go and open new land free of charge elsewhere, therefore often nowadays in isolated areas and in forest reserves.

Today, this agricultural mobility has spread to the towns, due to the impact of improved services, particularly transport and education. The latter has become the top priority for families. This migration first occurred to provincial towns. In 1980, 27% of the population lived in towns, which is a high percentage by outer Indonesian standards, and Palembang experienced an annual growth of 4.6% between 1971 and 1980, and 3.7% over the last decade. Even the Semendo are settling down in towns; they live in a particular district of the town of Lahat, and some living in isolated plantations, when asked, announce their intention of moving to the town. Not only is their

Table 11. SOUTHERN SUMATRA, SELECTED SOCIO-ECONOMIC INDICATORS
LE SUD DE SUMATRA, INDICATEURS SOCIO-ECONOMIQUES

Provinces	Index GDP 83 Per Capita without oil	Asphalt road, 1984 km/ '000 pop.	Asphalt road, 1984 km/ '000 km²	Export $ million * 1985	Health Centre Sub-centres / 100.000 persons	Urban Population 1980, %	Cinema Visit per capita
South Sumatra	164	0.73	37.0	646	17	27.4	1.2
Lampung	92	0.45	77.8	275	9	12.5	0.9
Bengkulu	91	1.14	49.1	5	38	9.4	0.4
East Java	89	0.4	258.6	717	7	19.6	0.6
Indonesia	100	-	-	-	-	22.4	-

* Export figures don't include oil

Sources : South Sumatra BAPPEDA and BPS

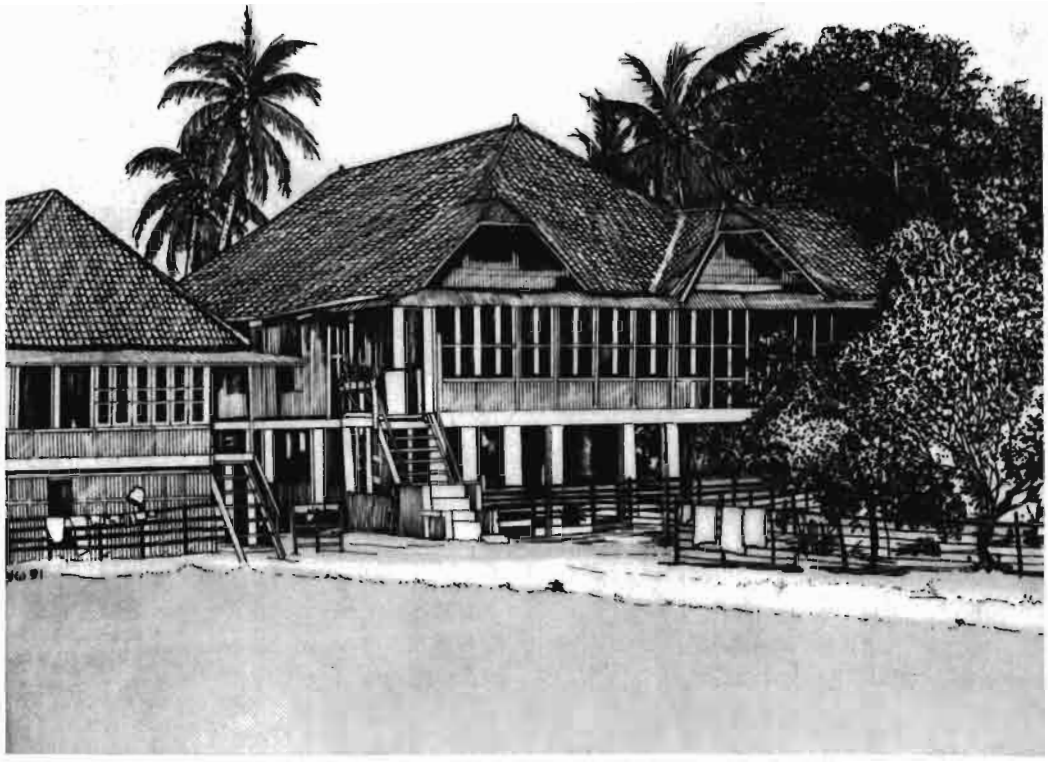


Fig. 7 SOUTH SUMATRA FAMILY HOUSE IN MAIN VILLAGE *(DUSUN)*
GRANDE MAISON FAMILIALE DANS LES VILLAGES DE LA PROVINCE DE SUMATRA-SUD

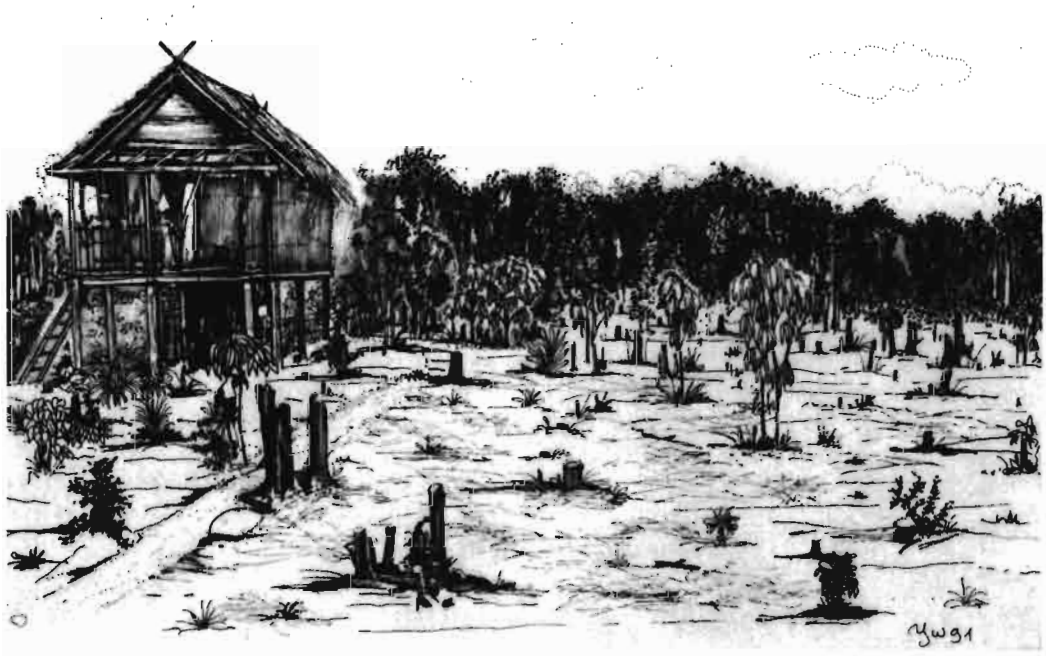


Fig. 8 HOUSE ON FIELD WHEN CLEARING ARE TOO FAR-AWAY FROM THE MAIN VILLAGE
MAISON DES CHAMPS LORSQUE LES ESSARTS SONT ÉLOIGNÉS DU VILLAGE-MERE

farmland diminishing due to demographic pressure and expulsion from protected areas, but also, their strategy is changing due to contact with the modern world.

Migration to the active centres of the country, such as Jakarta and Bandung are increasing. In 1980, 333,000 people born in South Sumatra resided outside the province, equivalent to 7.2% of the 1980 population, compared to 5.8% in the preceding decade. This mobility is increasing, since in 1930 only 4.9% of people from Palembang resided outside their administrative territory. Between 1975 and 1980, 46% of changes of residence were to towns. People born in South Sumatra and residing in Jakarta were officially less numerous in 1980 (28,000) than in 1971 (34,000), but we should probably rectify this figure by taking into account the migrants increasingly residing in the suburbs (Bogor, Tanggerang or Bekasi) in West Java.

In the course of our field work, we have noted the links which exist between Bandung and South Sumatra; often local people declare that their children are pursuing their education in Bandung, which has universities of a high standard and specialized institutes. The network of fruit and tidbit (*empe- empe*) peddlers in Jakarta, although it has not yet been studied, shows that this migration is no longer exclusive to the provincial élite.

Fig. 9
SHELTER IN THE SWIDDEN FIELDS NOT TOO FAR FROM THE MAIN VILLAGE OR HAMLET - *SIMPLE HUTTE SUR LE CHAMP LORSQUE L'ESSART EST PROCHE DU VILLAGE-MERE OU DU HAMEAU*

ABOLITION OF THE MARGA SYSTEM

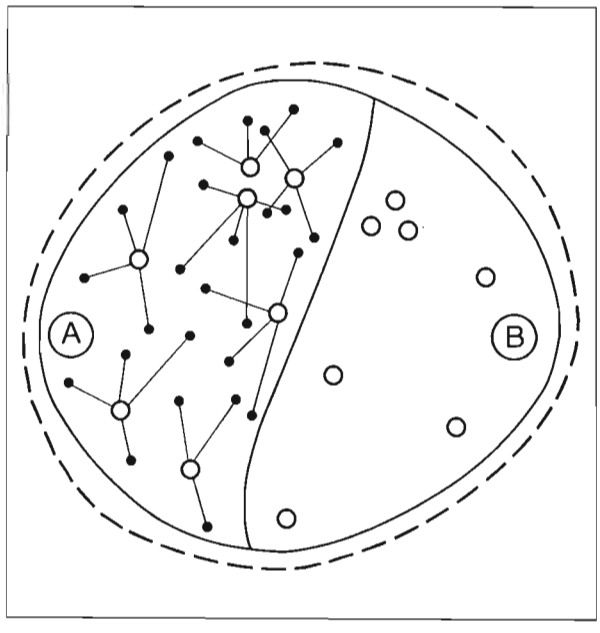
The basis of social organization in rural areas was the *marga* system, which operated until 1982, when it was abolished. This led to a major break, but we will only deal here with aspects concerning organization and management of territory. The resulting social upheavals would require much more study [7].

The land, as a whole, was divided into adjoining *marga*, except for Palembang and certain forest areas requiring protection, whose limits had been fixed by the colonial administration. The boundaries of the *marga* were defined most frequently by rivers or fixed landmarks. It contained more than one settlement; therefore the land was managed by an inter-village organization. The elected head of the *marga*, the *pesirah*, with his council, gave permission to clear land, respecting existing customary rights and conservation areas. Slopes, river banks and areas around springs were not usually allowed to be cleared. People from outside the *marga* who asked to clear or use land (for farming or for living purposes) had to pay a fee, *pancong alas*, which went into the *marga*'s funds. Fishing rights on parts of the river banks, reallocated each year by auction, also went into these funds, as did various fines. All land which had been unproductive for three years became once more the property of the *marga*, as often occurred with clearings made for rice-growing only. Otherwise, it was enough to plant trees (fruit trees, damar, teak, coffee or rubber) to ensure the perpetuity of the customary rights to which one's descendent were entitled. These rights are considered today as a common law property right which may be the object of a land certificate.

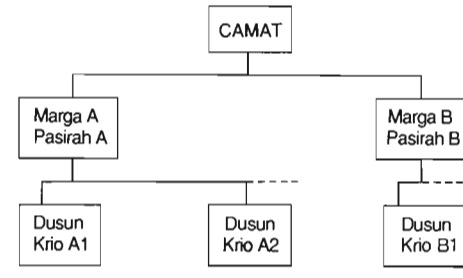
Within the *marga* certain settlements had village (*dusun*) status, with a *krio* at their head. These villages were of a permanent nature, and large family houses were built in them (Fig. 7, 8, 9). The *dusun* had no individual territory. When several families from the village decided to build a hamlet closer to their clearings and plantations, if these were too far away (generally more than 10 km), these families usually remained subject to the authority of the original village. Hamlets forming part of the same village (sometimes acquiring, themselves, the size and permanency of a "village") could be scattered over the *marga*, and might be found closer to another main village, *dusun*.

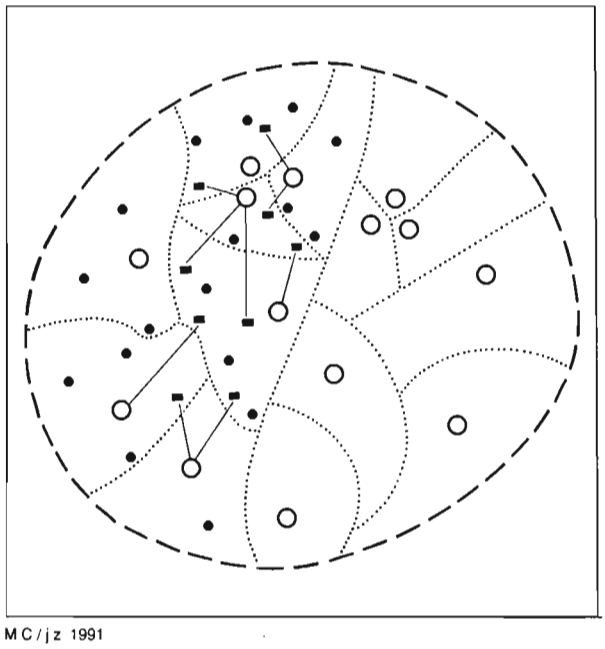
The general population census of 1980 always took the *marga* into account. The national administrative division of *kecamatan*, introduced in 1963, usually grouped together at least two *marga*. The *camat*, which was part of the modern territorial administration of the province had as its interlocutor the *pesirah*, who managed his area and the settlements as a whole. The 1979 village law, whose aim

Fig.10 TRADITIONAL ORGANIZATION AND NEW ADMINISTRATIVE DIVISION.
ORGANIZATION TRADITIONNELLE ET NOUVELLE STRUCTURE ADMINISTRATIVE.



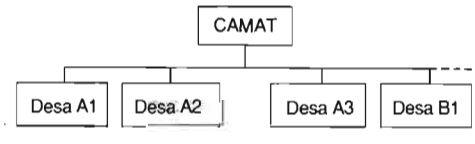
Before 1982
Avant 1982





M C / j z 1991

After 1982
Après 1982



sources - *sources*
field surveys - *enquêtes de terrain* 1990

— — — kecamatan district boundary - *limite de kecamatan,*

——— marga boundary - *limite de marga*

..... village boundary *limite de village*

○ main village dusun / desa - *village centre dusun / desa*

●——— hamlet depending from a mother village
hameau dépendant d'un village centre

■——— hamlet separated from its mother village - *dusun kantung*
dusun kantung : *hameau enclavé dans un autre territoire administratif*

was to uniformize village administration throughout Indonesia, introduced, among other concepts, the idea of a village territory. A debate took place in South Sumatra to determine whether a *marga* was the same thing as an Indonesian village, but, since development subsidies were distributed to each village "unit" in the sense given to it by the national administration, it was decided that the *dusun* should be the basic unit. For the provincial government, the volume of subsidies from the central government was substantially increased: 194 *marga* became, in 1988, 2,238 villages (*desa*) [8]. The *pesirah* were abolished, and authority was transferred to the *krio*, without a transitional period to redivide the territory of the *marga*, under the authority of its chief who alone had a good knowledge of the matter.

Today, the limits of village territories are ill-defined within the former *marga*, and the *camat* do not have authority to fix them(Fig.10). Each hamlet wishes to remain attached to its original village, now a *desa*, even if it is ten kilometres away from it and only five minutes from another village. The *krio*, who has become a *kepala desa*, records the population of his hamlets or satellite villages, *dusun kantung*, village pocket, while the nearest village records its land. This system is a real puzzle, and it is no longer possible to manage the area in a consistent manner. Conflicts between village are frequent. Nowadays, prior permission to clear land is no longer asked. All land may be assumed to be ancestral fallow fields.

Any outsider wishing to settle either negotiates for some allegedly "unoccupied" land, by paying an administrative registration tax to the *kecamatan* via the village chief, or he makes a deal with the owner, which is normally also recorded with the village chief; but this land may be on the territory of another village. There is sometimes a race to record land to establish a village territory, or to sell or grant a concession for large plantations or forest by individuals who are not directly concerned with land management on a local level.

The traditional easy contacts with the exterior, high mobility - turned today towards the urban life, and made possible by a cashcrop economy - and a greater freedom in land use, are all elements in favour of receiving, and even attracting migrants searching for work and for land.

2. A receiving land

■ A constant and moderate flow of spontaneous immigrants

Since the 1970s, annual population growth has been higher than 3% (1971-1980: 3.3%, and 1980-1990: 3.2%), the same as the average growth rate for the whole island of Sumatra. Population density is still fairly low at 58 people/km², compared to the neighbouring province of Lampung which already has 180 people/km² (1985). Lampung is the leading receiving province for spontaneous rural migration (with some 75,000 people estimated per year, between 1975 and 1980), while South Sumatra is a distant second for Outer Indonesia (with 15,000 per year), which means a steady flow of in-migrants.

Like Lampung, South Sumatra also received transmigrants in colonial times (in Belitang, OKU and Tugumulyo, MURAS), a large number through the *prapelita* transmigrant programme (1950-1969: 125,000 people), as well as during all Five-Year Plans to this date (from 1977 to 1988 some 500,000 people moved in). Musi Banyuasin regency, situated on the coastal plain, is by far the largest transmigrant receiving regency in the whole of Indonesia. There, settlement is based mainly on tidal-swamp agriculture.

The length of establishment of sponsored settlements is important for their power to attract populations of the same ethnic origin; in this case, Javanese, Sundanese, Madurese and Balinese [6]. The distance and the degree of accessibility from the sending area are also important factors that can explain the attraction of the region. The spatial continuity of the phenomenon in the Southern part of Sumatra, from South to North, has been shown, but detailed examination reveals, however, that the migratory process is not always characterized by a frontal progression. The flow of spontaneous migration to Lahat (older than the movement to the Northern part of Lampung), the Gayo highlands in the central part (Jambi) - where spontaneous migrants arrived in isolated areas devoid of sponsored settlements - may illustrate the role of fertile soil and cash crop opportunities in attracting migrants.

Rural population densities in the province of South Sumatra are still low to average. Maximum rural densities per district do not exceed 200 per km² except in one case, Tugumulyo, the small irrigated *kecamatan* that grew out of the *"kolonisatie"* settlements (262 inhabitants/km²). Districts with over 100 inhabitants per km² are only found in and around the *"kolonisatie"* zone where there is irrigated rice farming (Belitang, Buay Madang, Cempaka, and Martapura), as well as in the old settlements of the Pasemah

valley (Pagar Alam, Muara Pinang, Pendopo and Jarai) where irrigated rice farming and smallholder coffee planting support the local agricultural economy. This higher density settlement is found in the piedmont area or in the mountain valleys. In the peneplains rural densities did not reach 50 inhabitants/km² in 1971 (except in the Palembang countryside), and along the swampy coast they rarely exceeded 30 per km².

To determine which rural areas are undergoing the most changes due to the pressure of spontaneous migration, the annual population growth rates were calculated by subtracting the population added by Transmigration from 1971 to 1988. The demographic trends are presented for each major environmental zone, and the resulting evaluation uses the criterion of 2.3% natural growth per year, not counting emigration towards the towns or outside the province.

MOUNTAIN AND PIEDMONT AREAS APPEALING

The mountain areas, usually with good volcanic soils, are found in part of the kabupaten OKU, Muara Enim, Lahat (almost all) and a small part of Musi Rawas.

From 1961 to 1980, a central section of this zone, situated around the Semendo district, experienced significant emigration (*kecamatan* Tanjung Agung, Pengandonan, Merapi, Pulau Pinang, all having less than 2% growth) (Table 12). This area corresponds more or less to the original territory of the Semendo and Ogan Ulu ethnic groups, who have a propensity to go and open new land in Lampung, and closer by in the Banding Agung and Simpang *kecamatan* on the Kotaway plateau, as well as in the districts bordering on Bengkulu.

Between 1961 and 1971, they were joined by Javanese who came to work as labourers on their plantations, or to clear land for themselves. It should be remembered that this period was very difficult for Javanese peasants from a political as well as from an economic point of view. The largest influxes were experienced in the Lahat districts of Tebbing Tinggi, which offered fertile slopes to settle in the South (Bukit Balai and Bukit Besar), Pagaralam on both slopes of the valleys (towards Bengkulu), and, further on, Tanjung Sakti.

A major settlement of migrants was also situated in the regency of Musi Rawas, in the Muara Rupit and Bukit Kemuning districts, most probably due to an important addition of *prapelita* transmigrants on the fringes of the *"kolonisatie"* centre in Tugumulyo, who were not registered in the Transmigration data.

In the OKU regency, the two above-mentioned districts, Simpang and Banding Agung, received an estimated 150 migrants each per year. Martapura, situated in the piedmont area, received some *prapelita* transmigrants and played the role of arrival point for many spontaneous migrants entering the region, a role it plays to the present day.

Between 1971 and 1980, Lahat, already densely populated, left the bulk of spontaneous migrant reception to the mountainous *kecamatan* of OKU, which were to receive more than double the influx of Lahat. The Pasemah valley offered, in addition to coffee plantations on the slopes, rice fields irrigated since ancestral times. Though the Javanese could find work here, they knew that they would never be able to buy the fields, a fact that was responsible for frustrations, and encouraged migration to the nearest peneplain, where the land was less fertile but available. The Kotaway plateau, the Mapas and Semut Mountains in the district of Martapura, the slopes of the Muaradua valleys, and most particularly the sloppes of Mount Graba to the North-West of the town were to receive many of the new arrivals, while Banding Agung continued to receive its share.

Up until around 1986, high coffee prices strongly encouraged the movement. Spatially, the movement extended to the most isolated districts (Muaradua Kisam and Pulau Beringin), which offered more opportunities for newcomers with no initial capital; the same phenomenon is found in Lahat with the growth of the isolated district of Ulu Musi. Trends in village population growth demonstrate the continuing of immigration to the most isolated interior hamlets.

When the fall in coffee prices began to be felt, certain indigenous groups began to abandon or sell their coffee bushes once they had been harvested for their maximum yields, and return to their places of origin. This may explain the recent population growth of districts with Semendo populations. Some brought back with them the Javanese working for or with them in Lampung.

This back-and-forth movement makes any calculation difficult. In 1989, a sizeable increase in immigration was felt with the arrival of people expelled from protected land in Lampung.

At the same time, some areas in OKU declared reserves or protected land, including Mount Mapas and Semut in Martapura, were emptied of their illegal planters. In Sapulima, located in the two districts of Simpang and Muaradua, about 750 families were expelled. Also, some people left areas reserved for military training camps, between the roads from Simpang to Martapura and Baturaja,

and recently extended along the right bank of the Komering.

In the district of Pagar Alam, Lahat regency, 229 families have already been moved out (including 50 land-owning families from Java) and two thousand more will soon be moved (between Pagaralam and Tebbing Tinggi). These figures do not take into account the thousands of agricultural labourers who rapidly leave in search of new contracts in other regions.

In all, this mountainous region, which has practically no State-organized settlement, had received an estimated surplus of about 150,000 people (of all origins) settled in 17 years, and as such is the rural region with the strongest attraction in the whole province, for the spontaneous movement

THE STRONG ATTRACTION OF THE PIEDMONT-PENEPLAIN AREAS

In these zones, the strong attraction is directly linked to the presence of *"kolonisatie"* villages which also have irrigated rice cultivation. The arrival of migrants from Inner Indonesia has continued ever since the creation of these villages up to the present day; in the Tugumulyo area (Muras), Muara Lakitan, Kelingi and Kemuning districts have undergone strong growth, and the same is true for the Belitang area (OKU) with Buay Madang, Cempaka, and the district of Mesuji and Lempuing in the regency of OKI (Ogan Komering Ilir) [9]. The latter have received the most spontaneous migrants since the 1970s (Table 13).

Table 12. POPULATION CHANGES IN MOUNTAIN AND PIEDMONT AREAS
EVOLUTION DE LA POPULATION DANS LES ZONES DE PIEDMONT ET DE MONTAGNE

Kecamatan	Trans. persons settled	Population annual growth %					Density		Milieu main physical
		without Transmigration				with	persons/km²		
	71/88	61/71	71/80	80/88	71/88	71/88	1971	1988	
OKU									
1 P. Beringin		1.8	2.6	4.2	3.3	3.3	9	16	M
2 Banding Agung		2.8	4.7	1.6	3.2	3.2	17	29	M
3 Muaradua		2.1	5.0	1.8	3.5	3.5	28	50	M
4 Muaradua Kisam		2.3	3.5	2.4	3.0	3.0	18	30	M
5 Simpang		3.1	7.2	3.0	5.2	5.2	28	67	M
6 Martapura	1,665	5.6	6.1	2.7	4.5	4.6	57	123	M, Pi
7 Baturaja Barat		2.3	2.7	3,7	3.2	3.6	364	189	T, Pi
8 Baturaja Timur*	4,414	*	*	*	*	*	*	466	T, Pi
9 Sosoh Buay Rayab*		*	*	*	*	*	*		21
Pi 10Pengandonan		0,8	0,2	1,5	0,8	0,8	43	49	M
MUARA ENIM									
1 Semendo		-0.8	1.6	3.5	2.5	2.5	26	39	M
2 Tanjung Agung		0.4	1.6	3.8	2.7	2.7	55	86	M, Pi
LAHAT									
1 Tanjung Sakti		2.9	2.7	2.6	2.7	2.7	38	60	M
2 Pagar Alam	500	2.9	4.1	1.8	3.0	3.0	107	178	M
3 Muara Pinang		1.8	3.1	1.8	2.5	2.5	78	118	M
4 Pendopo		1.4	2.5	2.7	2.6	2.6	101	156	M
5 Ulu Musi		2.7	3.5	3.3	3.4	3.4	40	70	M
6 Tebing Tinggi		4.1	2.6	2.5	2.5	2.5	47	72	M, Pi, Pe
7 Jarai		0.7	3.8	1.7	2.8	2.8	75	121	M
8 Kota Agung		2.0	3.5	2.2	2.8	2.8	47	75	M
9 P. Pinang		-0.2	2.4	1.8	2.1	2.1	44	63	M
10 Merapi		1.1	1.2	2.8	2.0	2.0	36	50	M
11 Lahat		1.4	3.3	4.1	3.7	3.7	64	118	T, M
MUSI RAWAS									
8 Rawas Ulu		1.2	2.8	2.3	2.6	2.6	8	12	M
9 Muara Rupit		3.1	2.1	3.0	2.5	2.5	6	9	Pi, Pe
11 Bukit Kemuning Ulu	2,500	6.3	7.5	2.2	4.7	5.0	11	25	M, Pi
SOUTH SUMATRA Mountain, Piemont	**9,079**	**2.2**	**3.7**	**2.6**	**3.2**	**3.2**	**38**	**65**	

M : mountain, Pi : piemont, Pe : peneplains, T : town * Change in district boundaries, new district Sources : South-Sumatra office of statistics

It was around these *"kolonisatie"* villages that the 125,000 *prapelita* transmigrants were settled, often in unprepared sites. Towards the end of the 1960s, with the descendent of the *"kolonisatie"* settlements and their relatives who had come to join them, they created villages on the borders of agricultural areas. The *kecamatan* of Peninjauan, populated by Ogan Ulu, experienced strong emigration, which obscured the long-established immigration of small numbers of railway workers and farm labourers. However, this immigration has recently increased, providing an example of the progression of the phenomenon in time and space.

In all the estimated surplus over and above that brought by planned settlements in these regions between 1971 and 1988 is probably about 70,000 persons.

DEMOGRAPHIC DEPRESSION IN THE CENTRAL PLAINS

The *kecamatan* situated in the peneplains, in between the piedmont and the swampy coastal area, have densities of 30-60 inhabitants per km², with the exception of the countryside around Palembang, where in the *lebak* areas densities can reach 136 people per km².

This zone, populated by Melayu people (Komering, Ogan and Musi Ilir), offers little unclaimed land and spontaneous migrants are almost completely absent outside the small towns.

Elsewhere, the local populations are most often settled along the river banks. Many secondary roads opened during the colonial period are no longer usable today due to lack of maintenance, so that these indigenous villages are thus relatively isolated from circulation, since river transport has decreased markedly. For example, between Muara Lakitan and Sekayu, land routes have been interrupted and there is only one boat a month on the Lematang.

The Transmigration settlements appear as massive blocks in the wide areas between the rivers. With the addition of population through Transmigration, this agro-ecological zone has stable population growth, which indicates a high level of out-migration of local population towards the towns, or other regions of the province. The Muara Enim regency, situated in the centre of the province, and not having benefitted from large-scale Transmigration programmes, is representative of the evolution of this zone; it has had stable demographic evolution without much spontaneous influx, and has even experienced a degree of rural exodus. Spontaneous migrants penetrate into this area in very small numbers.

Yet, on the northern fringes of this space - *kecamatan* Rawas Ilir, Babat Toman, Sekayu, Sungai Lilin and Bayung Lincir - we can detect an in-migration movement rooted either in the Transmigration settlements, along the roads (mainly the new Palembang to Jambi road), or around centres of activity where migrants can find people of the same ethnic group (military bases, large plantations).

Table 13. POPULATION CHANGES IN THE WAKE OF FORMER KOLONISASI SETTLEMENTS
EVOLUTION DE LA POPULATION AUTOUR DES ANCIENS NOYAUX DE PEUPLEMENT ORGANISES

Kecamatan	Trans. persons settled	Population annual growth %					Density persons/km²		Milieu main physical
		without Transmigration				with			
	71/88	61/71	71/80	80/88	71/88	71/88	1971	1988	
OKU									
Peninjauan	17,028	0.9	0.7	0.6	0.7	3.4	15	26	Pi, Pe
Buay Madang	27,322	6.3	2.5	0.8	1.7	2.7	97	153	Pi, Pe
Belitang	7,788	4.4	4.0	1.8	2.9	3.3	94	163	Pi, Pe, K
Cempaka	12,345	4.4	0.5	1.7	1.2	2.0	89	125	Pe
MUARAS									
Tugu Mulyo*		3.4	3.4	1.1	2.1	2.2	36	262	Pi, Pe, K
Muara Beliti*	1,516	*	*	0.4	*	*	*	30	Pe
Muara Lakitan	16,928	1.5	5.2	5.0	5.1	7.4	3	11	Pe
Muara Kelingi	7,743	2.4	3.0	8.1	5.5	6.2	12	35	Pe
Bukit Kemuning Ulu	2,500	6.3	6.9	2.2	4.7	5.0	11	25	M, Pi, Pe
OKI									
Mesuji	29,923	5.4	14.1	3.3	8.9	12.3	3	19	Pe, Ps
Kayu Agung	16,344	2.6	5.9	3.3	5.0	6.0	23	62	Pe, T
Total	**139,437**	**3.8**	**3.4**	**2.2**	**2.9**	**3.8**	**23**	**43**	

M : mountain, Pi : piemont, Pe : peneplains, T : town, K : Kolonisasi centres

Sources : South Sumatra, Office of Statistics

* Change in district boundaries, new district

This in-migration probably represents about 20,000 people over a 17-year period in the rural zones, all ethnic groups included. In view of the low population densities, this region remains a potential immigration zone if the agricultural systems set up can be adapted to the low fertility level of the soils (Table 14).

THE WIDE SWAMPY COASTAL AREA

Up till 1971, population densities in the wide swampy coastal strip were quite low (less than 15 people per km²). They increased considerably in 1988 with the major input of population from the Transmigration programme (more than 250,000 in the MUBA regency and 80,000 in OKI), now representing more than 40% of the population (Table 15).

Since this specific agro-ecological zone is swampy and in some parts is flooded daily by the tides, it was not an area of permanent residence for locals, except in grouped fishing or trading villages such as the picturesque village of Sung Sang, perched on slits. This swampy region was a place for fishing (with fishing rights distributed yearly by

Table 14. THE CENTRAL PLAINS: POPULATION CHANGES OVER TIME
EVOLUTION DE LA POPULATION DANS LES PLAINES CENTRALES

Kecamatan	Trans. persons settled	Population annual growth %			Density		Milieu main physical
		without Trans.		with	persons/km²		
	71/88	61/71	71/88	71/88	1971	1988	
OKU							
Peninjauan	17,028	0.9	0.7	3.4	15	26	Pe
M. ENIM							
Muara Enim	5,000	1.0	1.3	2.0	66	93	Pe
Prabumulih Barat*		0.5	*	3.4	2743	1428	T
Prabumulih Timur*		*	*	*	*	933	T
Gunung Megang	5,000	0.2	1.6	2.2	19	27	Pe
Talang Ubi		1.0	2.4	2.4	39	59	Pe
Rambang Dangku*	5,000	*	*	*	*	43	Pe
Rambang Lubai*		2.2	2.0	2.0	43	60	Pe
Gelumbang							
LAHAT							
Kikim	8,515	1.5	3.7	4.6	23	49	Pe
MUARAS							
Muara Beliti*	1,516	*	*	*	*	30	Pe
Muara Lakitan	16,928	1.5	5.1	7.4	3	11	Pe
Muara Kelingi	7,743	2.4	5.5	6.2	12	35	Pe
Rawas Ilir	15,217	1.8	3.7	5.4	12	28	Pe
Jaya Loka	5,520	*	4.7	7.0	14	45	Pe
OKI							
Tanjung Batu		1.1	1.6	1.6	81	106	Pe
Tanjung Raya		1.3	1.5	1.5	303	393	Pe
Sirah P. Padang		1.3	1.7	1.7	144	193	Pe
Inderalaya		1.3	0.7	0.7	85	97	Pe
Pemulutan		1.1	1.4	1.4	227	287	Pe
Mesuji	29,923	5.4	8.9	12.3	3	19	Pe, Ps
Kayu Agung	16,344	2.6	5.0	6.0	23	62	Pe
MUBA							
Sekayu	18,400	2.0	1.8	2.7	39	61	Pe
Babat Toman	13,800	3.1	3.8	4.4	18	37	Pe
Sungai Lilin	27,500	- 1.5	6.3	8.9	15	64	Pe
Bayung Lincir	24,000	5.8	3.1	8.6	1	6	Pe, Ps
Total	**222,433**	**1.5**	**3.0**	**3.8**	**21**	**39**	

M : mountain, Pi : piemont, Pe : peneplains, Ps : pasang surut, coastal swamps, T : town * Change in district boundaries, new district
Sources : South Sumatra, Office of Statistics

auction, *lelang lebung*, for each sector) and hunting. Rice cultivation was practiced by people living on the fringes of this zone on dry land. Rice could be harvested once a year, if not less. The large huts on stilts can be seen sprinkled along the banks, occupied only during the season.

The Bugis people from Sulawesi were the first to come in the sixties and systematically exploit this environment, associating rice cultivation and coconut plantations, and live there throughout the year on land cleared with the authorization of local officials on each side of the narrow drainage canals, *parit*, which they themselves dug.

Since the Transmigration programme opened its villages on a newly-dug large canal (*kanal* PU) and brought in settlers, economic activity and infrastructures (schools, health centres and markets), some local people have decided to settle in a permanent manner, creating small hamlets comprising a few houses located on the banks, now shaded by coconut palms and other fruit trees. Many new Bugis settlements have been set up on the new canal so as to be nearer the infrastructures offered by Transmigration. From this central canal, the Bugis have again dug small canals penetrating up to 7 km into the interior.

Spontaneous immigration in the rural area is difficult to evaluate for several reasons. Firstly, young couples arriving with Transmigration have had an important impact on natural growth (over the last fifteen years, more than 3% per year). Secondly, there is the indigenous movement and the movement of the Bugis, whose settlements are often poorly classified since they are scattered over an immense area where the only transport available is by boat. Finally, there is the influence of the city of Palembang and its suburban area where industrial and commercial activities are concentrated. Among the immigrants, the Bugis are the most numerous in the swampy areas. Spontaneous Javanese migrants usually join Transmigration villages. Many of them have long settled in the higher lands just on the edge of the swamps and are involved in truck farming, or as industrial or plantation workers (at Sembawa for example), or else in one of the many informal sector jobs.

■ Concluding remarks

Since the 1960s, it may be noted that the areas which have attracted the most migrants are those which satisfy several basic conditions, by being located, in particular:

- Where there are people of the same ethnic group;
- Where there is work;
- Where there is unclaimed land with good and manageable agricultural potential.

Table 15. COASTAL AREA: POPULATION CHANGES OVER TIME
EVOLUTION DE LA POPULATION SUR LA PLAINE COTIERE

Kecamatan	Population	Trans. settled	Pop. annual growth %			Density		Milieu main physical
			without	Trans.	with	persons/km²		
	1988	71/88	61/71	71/88	71/88	1971	1988	
OKI								
Pemulutan	59,097		1.1	1.4	1.4	203	287	Ps, T
Tulung Selapan	55,087		3.3	3.7	3.7	3	8	Ps
Pampangan	76,079	40,655	2.6	1.5	6.1	4	15	Ps, Pe
Musi Banyuasin								
Bayung Lincir	40,738	24,000	5.8	3.1	8.6	1	6	Pe, Ps
Banyuasin I	155,231	42,408	0.6	6.4	8.4	13	54	Ps
Talang Kelapa	105,546	19,689	3.1	3.9	5.2	26	83	Pe, Ps
Banyuasin II	169,457	57,952	4.6	8.2	10.9	4	37	Pe, Ps
Banyasin III	187,346	66,593	2.8	3.0	5.7	18	60	Pe, Ps
South Sumatra								
Coastal area	848,581	251,297	2.5	4.1	6.3	8	27	

M : mountain, Pi : piemont, Pe : peneplains, T : town

Sources :South Sumatra, Office of statistics

The rural settlements which, up till about 1990, attracted the most spontaneous settlers were those located in valleys and piedmonts, followed by the older planned settlements. In the first case, the migrants settled where the soil was most fertile (Lahat), before shifting towards areas where land was available. In the second case, the settlement movement was first made on the fringes of the oldest *"kolonisatie"* settlements, and at present the movement is beginning around the oldest Transmigration settlements. Regions with high concentrations of locals offered no room for spontaneous settlers. The swampy coastal regions are still of little interest to spontaneous migrants except for the Bugis who have the ability to adapt to this particular environment and exploit it. Finally, the areas controlled by the local people and based on rubber cultivation seem more difficult for people from Inner Indonesia to penetrate.

After observing demographic changes in each of the agro-ecological regions of South Sumatra, let us now turn to the processes of settlement and land occupancy by means of several local examples.

Notes to chapter 2

(1) Oil and tin are in the hands of Jakarta. The former Palembang refinery has recently been closed, but a new one is being finished (Musi Refinery Project). New oil wells have been opened after some stagnation in prospecting. They mainly supply the national market. Tin production was reduced by nearly half between 1982 and 1985 due to a fall in prices on the international market.

(2) Since the "New Order", until 1985, 47 million dollars of foreign capital were invested in Lampung and only 31 million in South Sumatra. In Lampung, all the money was invested in the food industry, whereas in the neighbouring province, this sector represented less than 3%, with more than three quarters of the money invested in the metal ore mining sector (Bank Indonesia, Hill, 1989: 29). Lampung offers not only the advantage of good road links (with a 45-min ferry crossing) with Jakarta, but today also possesses abundant labour at a lower price.

*(3) This calculation is confirmed by the last National Socio-Economic Survey (*Susenas*), which gives 9.8% for 1987 to be compared with 34.6% for Lampung (Booth, 1991: 45). But, the socio-economic situation appeared to improve at the end of the 80s, with the slowing down of immigration.*

(4) Except on the fringe of some Transmigration centres where the abundance of labour and the absence of job opportunities can cause salaries to fall to the same level or even lower than they are in Java: Rp 750 per day without meals for an unskilled worker in a plantation set up near Pematang Panggan.

(5) For example, the head office of the PUSRI fertilizer factory is in the national capital.

(6) The reference to Mojopahit is not original in the archipelago and can be explained here by the relay of Srivijaya. The same applies to the reference to Minangkabau. The role of a "crossroads" of influences in geographically isolated regions can also be found around another lake in Southern Sumatra, Lake Kerinci (A. Fedenssieux, current research).

(7) The system of the marga *and the consequences of their abolition would require a more detailed study. We have used local information here, and some studies performed by the University of Sriwijaya. The information collected by the first colonial administrators and the changes made in the system in the course of history deserve to be studied, especially since it appears that this system inspired the reorganization of Lampung into a territorial* marga *system in 1928, to replace a lineal* marga *system. This was another change that did not take place without conflict.*

(8) The 1979 village law also fixed the minimum size of a desa *at 500 families or 2,500 inhabitants. This limit was not applied immediately; if it had been, it would have preserved the* marga *since the majority of* dusun *did not reach this figure. At the end of the 80s, the application came into effect, at a*

time when the central government wanted not only to reduce its expenditure but also to promote the reception of small groups of migrants or transmigrants.

(9) *Kayu Agung* kecamatan *is subdivided into two non-contiguous territories. The northern part is almost entirely urban and first experienced strong development in the 70s, due to forest exploitation, but then as a result of the almost total disappearance of this resource, the town is now experiencing a considerable out-migration. At the same time the southern part, Lempuing, has received a substantial numbers of settlers.*

Chapter 3

Dynamics and process of land settlement

Muriel Charras & Marc Pain

1. On the outskirkts of organised settlements

The centres of organised government settlement are one of the points of attraction and establishment for spontaneous settlers as they offer not only a known cultural environment but also, as they are the hub of fundamental social and agricultural infrastructures, activities not found in the surrounding rural areas.

In southern Sumatra, colonial or Transmigration settlements were established for the most part on the plains and the marshy coast. Belitang, taken here as an example, demonstrates the effect and the problems of establishing agriculture on the poor soil of such plains which were previously covered with dense forest. These plains are only partially used by the local inhabitants. The indigenous villages are mainly built on the river banks and, as a rule, the farmers use the four or five kilometre wide band of productive alluvial soil along the water course. Rice is grown in a few flooded paddy-fields, often reclaimed from marshy hollows, and by using a slash and burn technique where the swidden fields are often planted with rubber trees left to grow without any care. Outside this band, the land between the rivers is farmed sporadically (see Fig. 6, Chap. 2).

The Belitang project, a relatively old establishment (1937) conceived in the first place by the colonial powers, was restarted following Independence and is still being carried on today. A continuous but modest flow of spontaneous migrants has existed simultaneously since the beginning. The Belitang example is half way between that of Lampung, the oldest and the one where the attraction of spontaneous migrants has been extremely strong, and that of the Transmigration centres which have been able to develop rice-growing areas throughout the country. In the province of South Sumatra, the other example which repeats this pattern of conquest is that situated around the old *"kolonisatie"* centre of Tugumulyo in the kabupaten of Musi Rawas.

Based on the infrastructure of an initial nucleus and, then later, on that of the new villages developed by the government after Independence, hamlets and villages spread out in successive waves as a result of local enterprise, each time pushing the limit of agriculture further out. Each wave represents a stage in the evolution of land use with its agricultural system and its output, with each supplementing the others. (Fig. 11.a & b)

■ The initial nucleus: the irrigated area of Belitang

A PRODUCT OF "KOLONISATIE"

The first settlements created by the Dutch from 1937 were the starting point for the populating process. These comprised 5,716 families established in 15 new villages, divided into three groups in a lightly populated area of Upper Komering, between the Maca and Belitang Rivers on the land occupied by four *marga*, including that of Belitang. These communities were part of a much greater project of agricultural colonisation in southern Sumatra, an extension of the settlements in Lampung. They had the advantage of being served by road and by the railway (passing through Martapura) linking Palembang to the southern tip of Sumatra, directly opposite the island of Java.

Chapter translated from French by F. Vaissières & K. Luckcuck

The purpose of the first villages was to create three embryonic nuclei with the necessary infrastructure (health, schools, roads and markets), which would subsequently become the centres of a extensive zone of population and agricultural development. The initial investment was particularly significant, while the second stage development was to be supported in part by the "*Bawon* system", where the founding settlers become host families to the newcomers [1]. In 1941, a 40 km long irrigation canal was completed and the first 50 families of second stage settlers arrived. This programme, which foresaw the arrival of 20,000 families and the irrigation of 19,000 ha (Pelzer, 1945: 215-221), was interrupted by the Second World War.

The so-called "Palembang" system, where a certain dispersion of the start-up villages is thought to encourage a progressive populating of several parts of the area, was tested by colonial government on the Belitang project. This system had the advantage of bringing together the second generation of settlers and the receiving families, the latter providing work for and services to the former. Conversely, each of these communities remained isolated for a long time in the middle of forest that was still dense and filled with predators (elephants, monkeys, wild boars, snakes and others) [2].

THE REPUBLIC TAKE OVER

Following Independence, the new Indonesian government took control of the settlement programme as it had been conceived at the outset, that is, by relying on the community support of the first settlers. The only significant investment made was for the completion of irrigation works. Up until 1960, all new villages were established in the irrigated areas. The initial transmigrants were given 1.75 ha to farm, more than double the 0.75 ha allocated to their forerunners. Both a number of the latter and families that had arrived spontaneously had, however, been able to extend their holdings by clearing new areas on the periphery of the village lands.

Between 1950 and 1965, transmigrants arrived in a totally disorganised manner, 67,000 (124,000 for the entire province) being released in hardly laid out new villages without access roads. A significant number were resistance fighters from the war of Independence who had been organised by the BRN, Council for National Reconstruction. The former chief of the Belitang *marga* recalled the social disorder that the region underwent with the arrival of this disorganised rabble which, as a result of having no means of support, was forced to steal to survive. The period of the 1965 coup d'état was equally difficult, with a massive influx of spontaneous migrants which were suspected, from the very beginning, of having been involved in one way or another with the activities of the Communist Party in their home villages, and of having fled from reprisals [3].

By 1961, the irrigated area could be considered as having been completely developed by the first generation of settlers, the transmigrants and the spontaneous migrants who had arrived since the beginning of the programme to be reunited with their relatives. At this time, the population of the new *kecamatan* of Belitang was 49,000, almost all of which were of Javanese origin. The 1969 map no longer showed any trace of certain indigenous settlements formerly located on the Belitang River and quoted by Pelzer. On the other hand, the native village of Kuruganyawa, situated upstream from the irrigation system, became more consequential.

AN AREA OF INTENSIVE MONOCULTURE

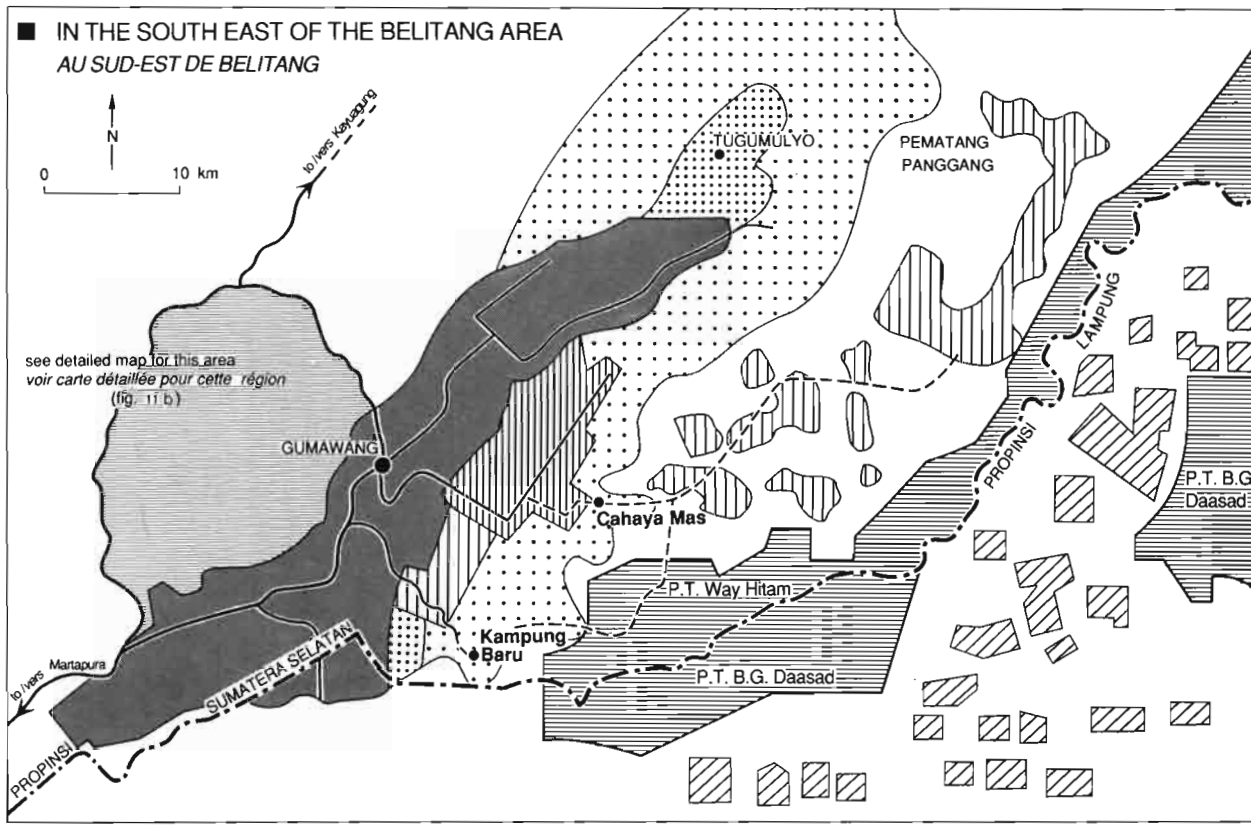
This irrigation area became the "rice bowl" of the province, producing 38% of the total output. The constant rise in paddy-rice yields (8 tonnes/ha in 1988 from two crops) reflected control over a larger and larger area as well as a substantial increase in the intensity of cultivation. Agricultural output was limited to rice production and, as in the rice-growing areas of Java, wide use was made of orchard gardens for growing fruit trees, vegetables and spices for everyday needs.

One contributing factor to this intensification, apart from the BIMAS programme set up in 1974, was the fragmentation of land holdings. An in-depth study carried on this subject in 1977 showed that fragmentation was not very substantial at this time. Taking the first generation, the average holding size was 1.14 ha for villages set up in 1937, and 1.5 ha for those set up in 1950, approximately the same or slightly more than the initial distribution. The study reveals a tendency towards some concentration of land holdings. For each generation following (three for the oldest villages), the land holding is reduced on average by half. For the second and third generations, the study also points out the significance of off-farm labour in creating a fairly high level of prosperity in this zone (UGM 1977, Fachrurrozi 1978).

Today, the service infrastructure is concentrated in this area: a private hospital, a large number of secondary schools (public and private), and a rice research centre. The road network grid is relatively concentrated but, at the time of the study, it was in particularly poor condition (potholed bitumen). An large market is held daily in Gumawang; although busy, it is nevertheless still very rural and caters mainly for the exchange of food crops and their derivatives (soya cakes, dried cassava, ...).

Fig 11 a COMPLEXITY OF SETTLEMENT ON THE PERIPHERY OF THE COLONIAL - ERA BELITANG PROGRAM
COMPLEXITE DU PEUPLEMENT EN PERIPHERIE DU PROGRAMME COLONIAL DE BELITANG

■ IN THE SOUTH EAST OF THE BELITANG AREA
AU SUD-EST DE BELITANG



M P / j z 1991

program during the colonial period based on irrigated rice cultivation
programme de l'époque coloniale fondé sur la riziculture irriguée

extension from the initial program - *extensions à partir du programme initial* (1950/60 - 1970) :

transmigration settlement: Nusa villages, valley rice fields, dry cultivation on inter-river uplands
transmigration: villages Nusa; rizières de fond de vallée, cultures en sec sur les interfluves

spontaneous settlement - *peuplement spontané*

recent extentions based on dry land cultivation (1975 - 1990) - *extensions récentes basées sur cultures en sec (1975 - 1990)* :

sponsored settlement - *peuplement organisé*

local transmigration settlement (province of Lampung) - *programme transmigration locale (province de Lampung)*

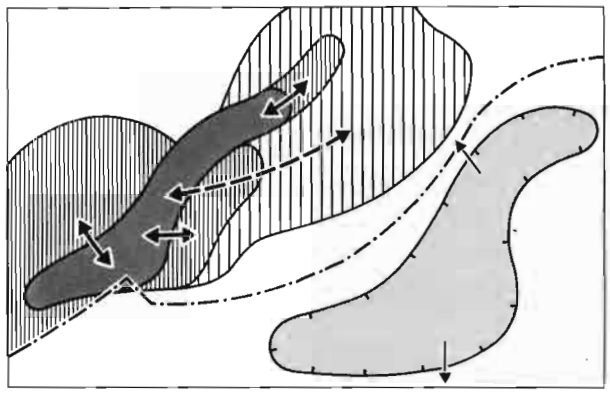
spontaneous settlement - *peuplement spontané*

• **Kampung Baru, Cahaya Mas** : studied villages - *villages étudiés*

forest concession - *concession forestière*

provincial limit - *limite de province*

■ SPATIAL ORGANIZATION - *INTEGRATION REGIONALE*



area with a mature spatial organization and good connection to regional economy - *espace organisé, parfaitement intégré à l'économie régionale*

area with spatial organization in process, directly connected to central nucleous (Belitang) - *espace en cours d'organisation, directement rattaché au noyau central* (Belitang)

area not yet strutured and isolated, badly connected to central nucleous - *espace isolé et peu structuré, mal raccordé au noyau central*

unstructured and landlocked area - *espace enclavé et non structuré*

sources - *sources*
topographic maps JANTOP - *cartes topographiques JANTOP (1969)*
SPOT satellite imagery - *images SPOT 1986/1987*
field surveys - *enquêtes de terrain 1990*

The villages located in the irrigation area have received since the beginning, and continue to receive today, many spontaneous migrants who have no trouble finding work. In the informal sector of the small trades, they sell prepared Javanese food, provide basic services (carpentry, bicycle repairs), make household products (medicinal herb potions, brooms, baskets, saucepans), or become pedlars of products that they know and for which there is no lack of customers. In farming, they become labourers or sharecroppers in the ricefields, or perhaps only work during the harvest so as to ensure a material part of their subsistence rice needs.

This rice-growing area is a zone of intense activity, of attraction for labour and of transit. There is always a shortage of labour for rice cultivation to the extent that the spontaneous settlers, after a few years, and the children of the planned settlers both leave for surrounding areas to open up land that is still available. The chief of a *"kolonisatie"* village, having amassed five hectares of rice paddies, was unable to plant a second crop in 1989/1990 due to the shortage of available labour. As he said, "they've all gone searching for land elsewhere, *mencari hutan*", literally, "looking for forest".

■ The conquest of the dryland fringes

It was at the beginning of the 1960s that new settlements really began on the dryland at the periphery of the irrigated areas. The process of taking over new land is still going on today, extending still further the limits of agriculture. At present, two rings can be defined around the initial nucleus representing two points in time of this same process. The outer circle is the pioneer fringe as such, whereas the first space developed at the beginning of 1960 is becoming more heavily populated and finalizing its improvements.

The population is extremely complex as the village structures have been created either by local initiative or by the Transmigration. Very often, it results from a combination of the two.

FROM 1960 TO 1974

To the east of the irrigated area, in the *kecamatan* of Belitang , the Transmigration built a group of Nusa villages, some of which took in the Balinese victims of the Gunung Agung eruption (1963). To the west of Belitang, the new *kecamatan* of Buay Madang and that of Cempaka admitted 5,593 transmigrants.

Numerous villages established at this time bear the mark of Transmigration, but the origin of the village residents is diverse. A mixture of settlers can be found In one village, some that are totally supported *(Transmigran umum)*, others who enroled with the Transmigration at their point of departure but who arrived by their own means *(T. swakarya)*, and finally others, already there for some time, being spontaneous migrants, *spontan*, or children of the first settlers. The population of the Belitang *kecamatan* rose to 75,000, an annual growth rate of 4.4%.

All the villages set up at this time started off with a minimum of infrastructure. The site of the village was fixed but only one simple access track was constructed, the houses remained to be built (part of the materials was supplied), and the clearing still had to be carried out by the settlers themselves. Everyone acquired a two hectare holding, but only the transmigrants received a few tools and an allocation of food. L. Berthe, an anthropological specialist on Bali, who arrived on sight to study and report on the situation of the Balinese, underlined their isolation and chaos.

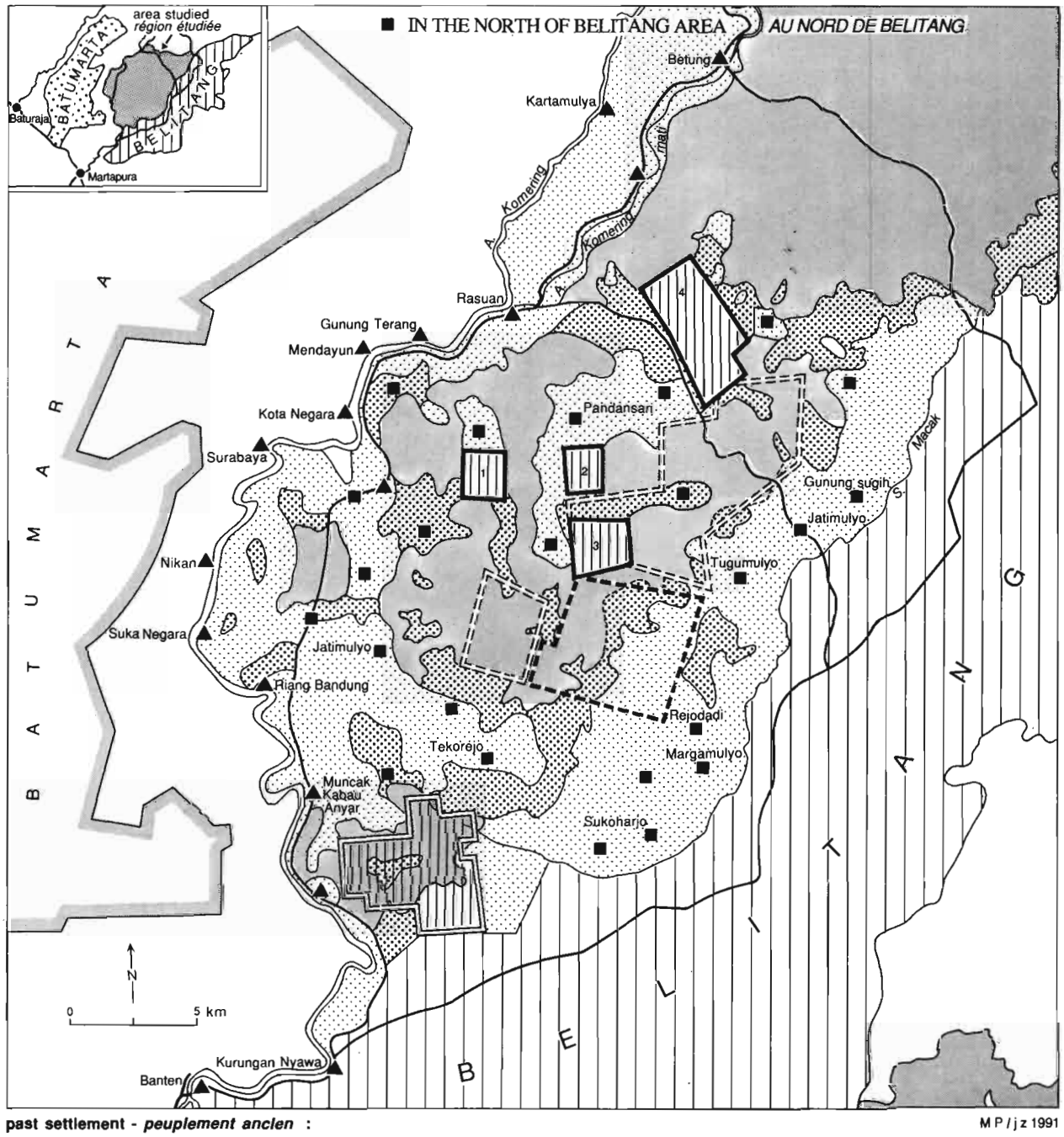
The layout of the villages was always on the same grid pattern, whether or not they had been planned by the Transmigration. On the other hand, a Transmigration undertaking was sure of having after some time, a school, a small dispensary with at least one nurse, and subsidies for the access roads, whereas purely spontaneous undertakings continued for a long time with their small private school.

During this period, a considerable number of spontaneous migrants arrived to join family or friends in the villages of the irrigation area. They found work there, and the bachelors often married the children of the original settlers. They came primarily to find work but, after a time and with a little capital saved while there, they began to look for land they could work for themselves. This venture was identical to that of the second generation of settlers who attempted to delay the fragmentation of their original land parcels. Parents were often encountered leaving their original allotment to their children, now young adults, while they went off to start up elsewhere.

At this time, the available land was located either within the first peripheral ring, in the process of being developed and cleared, where spontaneous migrants joined or preceded the transmigrants, or beyond this ring but close to the native villages mid-way along the Komering and Ogan Rivers. From then until 1982, for all settlements established, be they hamlets or villages, and for all clearing, either collective or individual, the prior agreement of the chief of the *marga* had to be obtained and a small fee, the *pacung alas*, had to be paid.

Belitang represented a rich source of labour for the local population. Accustomed to seeing Sundanese and

Fig.11b COMPLEXITY OF SETTLEMENT ON THE PERIPHERY OF THE COLONIAL-ERA BELITANG PROGRAM
COMPLEXITE DU PEUPLEMENT EN PERIPHERIE DU PROGRAMME COLONIAL DE BELITANG



past settlement - *peuplement ancien* : M P / j z 1991

▲ ethnic Sumatran village existing at the beginning of the century - *village autochtone , en place au début du siècle*

organized settlement during the colonial period ("kolonisatie", Belitang program)
peuplement organisé à l'époque coloniale ("kolonisatie", programme Belitang)

recent settlement trends - *progression récente du peuplement* :

spontaneous land-clearing (ethnic Sumatra and immigrant) - *défrichements spontanés (autochtones et immigrants)* :

area occupied in 1969 - *espace occupé en 1969* area occupied in 1987 - *espace occupé en 1987*

■ villages and hamlets of recent immigrants since the opening of the Belitang program
villages et hameaux d'immigrants récents ,installés depuis l'ouverture du programme Belitang

official settlement programs - *programmes officiels de peuplement* :

- *Swakarsa* Transmigration - *Transmigration* swakarsa

project completed (1983-1988) - *projet réalisé(1983-1988)* : 1 Tanjung Tiga 2 Pandansari II 3 Bangsa Negara 4 Jati Sari

area reserved for Transmigration - *emplacement réservé à la Transmigration*

- Armed Forces (*Angkatan Darat*) - *Forces Armées* (Angkatan Darat)

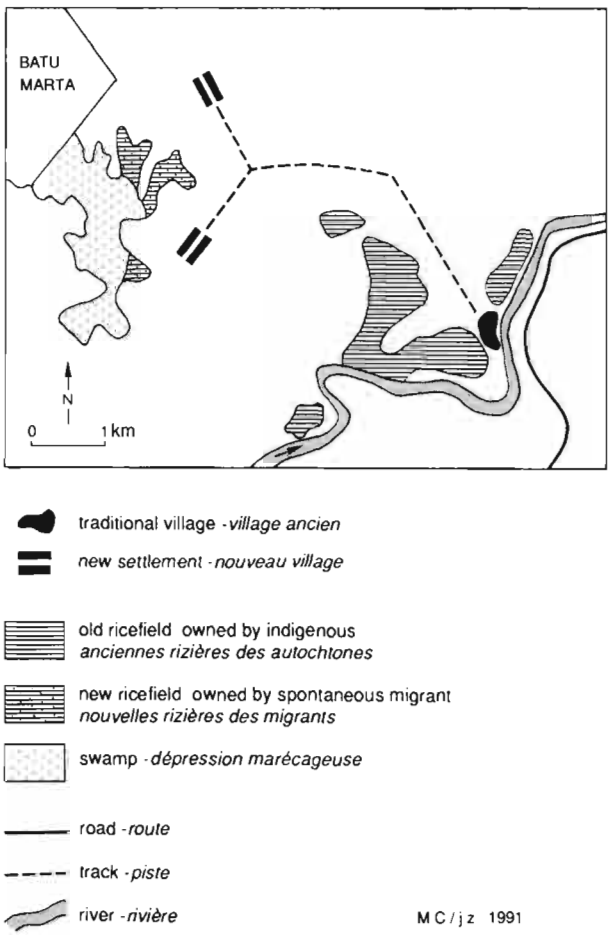
clearing completed (1990) - *défrichement réalisé (1990)*

reserved area - *emplacement réservé*

residual forests in 1987 - *forêts résiduelles en 1987*

sources - *sources*
topographic maps JANTOP - *cartes topographiques JANTOP* :
Gumawang, Betung, Kurangannyawa 1969
SPOT imagery - *photos satellite SPOT* : 279/358 , 27/11:1987
field surveys- *enquêtes de terrain* 1990

Fig. 12
MENDAYUN : SPONTANEOUS SETTLEMENT IN THE ORBIT OF A INDIGENOUS VILLAGE - *MENDAYUN: COLONISATION AGRICOLE SPONTANEE DANS LA PERIPHERIE D'UN VILLAGE AUTOCHTONE*



Javanese working on infrastructure and communication (road and rail) construction and on the private plantations of Lake Ranau, and being satisfied with their efforts, the locals often recruited agricultural workers on sight , then also through connections, in Java (in Batavia/Jakarta or the Sundanese region). Most of the time, these workers, lodged either in the houses of their masters or on the fringes of the local villages, applied after some time to acquire land. The indigenous people of this region often acceded to their request, but not without imposing limits. They determined a certain physical distance to be kept between their own settlements and those of the non-locals, and reserved for themselves those areas traditionally used for farming.

The process of creating small hamlets was mostly carried out, at this time, in that area between Belitang and the Komering River where the major native villages are located (Fig. 11. b). The *dusun* of Pandan Jaya, established in 1965 with about a dozen families under the authority of the local village of Surabaya, situated some ten km away, is one such example. A further example is that of two *dusun*, founded in 1968, which are two km from the local receiving village of Mendayun, to which they are attached, and also two km from the river(Fig. 12). Opposite, on the Ogan River, a group of small hamlets, erected in 1958 on the territory of Kedaton, are all located at least seven km from the receiving village. (Fig. 13)

To the east of the irrigated area, spontaneous settlements infiltrated in between or onto the tracks leading to the villages of the Transmigration. It was also during this period that development took place downstream of the irrigation area in the *kabupaten* of OKI (Ogan Komering Ilir) with the establishment of, amongst others, Tugumulyo. Here, irrigation of the land has been possible. Situated today in a pivotal zone between Belitang, the Transmigration's vast project at Pematang Pangan, and the present vigorous pioneer fringe which is being squeezed between the Transmigration's undertakings and the area of the town of Kayu Agung, this village has the appearance and the atmosphere of a small busy market town in Java (Fig. 11. a).

FROM 1974 TO TODAY

During this period, the new projects of the Transmigration all improved in the quality of their preparation (houses constructed, land cleared and sometimes prepared, or even partially planted) and infrastructure (school, dispensary, roads). The official settlements continued on the vacant lands of the first ring, both to the west (Fig. 11. b) and to the east of the irrigated area (Fig. 11. a). In almost every case, the area allocated to the Transmigration included several hamlets that had developed spontaneously.

One such case was Kalirejo, created in 1974 by about fifteen families coming from the outskirts of Belitang, which was situated on the 3,000 ha granted to the Transmigration in 1980 for the future settlement projects of Bangsa Negara (300 families in 1983 and 203 families in 1987). This tiny hamlet, whose wooden houses in the Javanese architectural style, grouped around what might be a town square under the shade of large fruit trees (coconut, jackfruit and others), was in strong contrast to the grid pattern of treeless gardens and completely identical houses of the Transmigration, just a few minutes from there. Another case was Way Hitam IV, grouping about sixty families from East Java, which settled spontaneously well before the arrival of the transmigrants in 1983.

In the middle of the 1970s, the Transmigration began developing the land situated between the Komering and Ogan Rivers, to the north of the trans-Sumatra road near Baturaja, the capital of the *kabupaten*. Up until 1985, about 30,000 people, divided into 14 village units on 65,000 ha,

were living here. This important centre of Batumarta took advantage of the results of the World Bank's pilot programme by introducing rubber plantations in order to provide a greater diversity of crops and guarantee a quicker economic start-up. The first units set up offered five hectares of land to each family, one hectare of which had been planted with rubber under the guidance of the PTP 10 of the Department of Plantations. Subsequently, the parcels of land were reduced to 3.25 hectares, one hectare which was still planted with rubber.

Spontaneous populating continued in two ways: by an increase in the population density within the first ring, and by forest clearing on its periphery. Completion of the populating of the first ring is still going on today to the west of the rice area (Fig 11. b), except on land set aside for future projects (2,000 ha for army Transmigration (Transad), and about 3,000 ha for plantations, amongst others). Here, land has become too expensive for recently-arrived spontaneous settlers, who often have no other capital asset than their capacity to work. Whenever settlement does take place, it is usually on an individual basis, on the edge of a road or on land already opened up but left to fallow. This is land that has been purchased, or simply occupied with permission to farm, or that is even part of a share-cropping arrangement. Hamlets are formed by the consolidation of these individual initiatives.

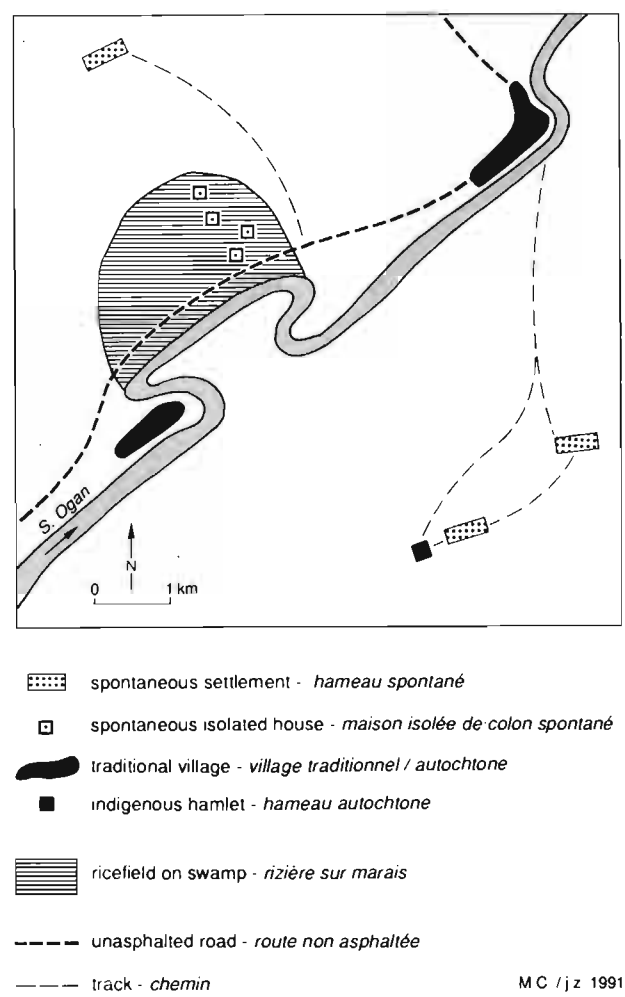
The descendants of the first settlers, and now, settlers from the Transmigration centres, as well as migrants who have been coming to the area by their own means for some time now, leave together to open up land further to the east (Fig. 11. a). Some of this land, between Belitang and the border of Lampung province, has been made available as a result of terminated forestry concessions. This area contains, amongst others, the new village groups of Kampung Baru and Cahaya Mas (see second book, first part), and a significant springing up of others around and between the Transmigration centres from Pematang Pangan to Muara Burnai, situated about 30 km from the town of Kayu Agung, which appears to be the northern limit of the spontaneous agricultural colonisation phenomenon. Beyond this lies what is called the "Palembang Hinterland", with its high density of indigenous population [4].

The fringes of the planned settlements located on dryland, have often been opened up sporadically and farmed by transmigrants, in order to make up for the loss of fertility of their allocated land and establish tentative field rotation. Situated too close to the forest, these crops are always prey to predators, and the land is often abandoned after the intensive hoeing needed to clear out roots. The regaining of these areas, overrun by *alang alang (Imperata cylindrica)*, can only be done in one go so as to leave no hiding place for predators and drive them even further back.

The process of attraction and of the conquest of fringe land that was seen at Belitang, is being repeated on the new organized settlement zone of Batumarta. During an initial phase which lasted up to 1989, an increase in population density was observed inside the Transmigration village units, due to the arrival by their own means of friends and relatives which were, on the whole, registered as "spontaneous", *swakarsa*, at the Transmigration office in their place of origin. Some were able to obtain land, either whole lots or partial lots, and thus became *Transmigran pengganti*, or replacement migrants.

In 1990, when the survey was carried out, there were still 3,000 *swakarsa* families in the various village units, hoping one day to receive a plot of reserve land while, in the meantime, working part of the receiving family's lot, most of the time without any compensation to the owner, under a system called *numpang*. This situation was made possible by the fact that the Transmigration lot size (5 or 3

Fig. 13
KEDATON : *SPONTANEOUS ISOLATED HAMLET*
KEDATON : UN HAMEAU SPONTANE ISOLE



ha) was, at the beginning, too big for a family with children who were often still young, and that later, with the first production of latex, the transmigrants became less interested in food crops. Spontaneous migrants were not yet being forced out of the village in search of land they could own.

The drive for new development on the periphery of the Transmigration centres only began in 1989 when new villages were constructed by Javanese and Balinese migrants who had already been in the area for some time.

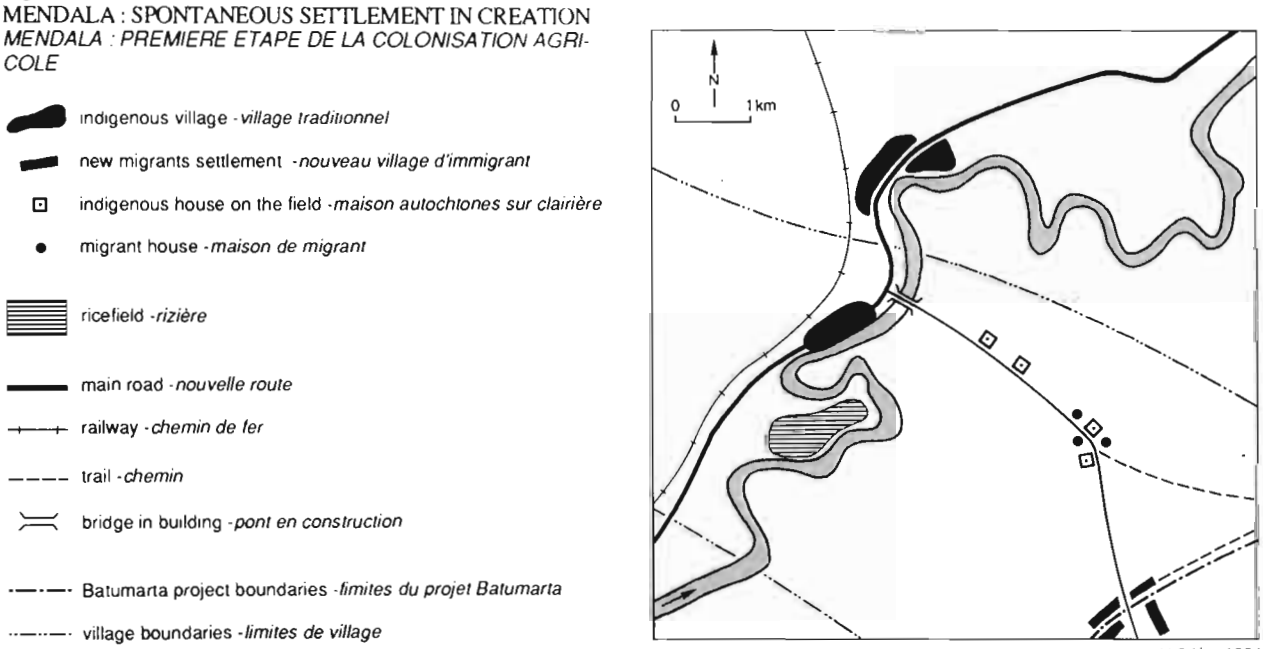
Such is the case of the Triomulyo dusun *located on the Mendala village's territory, just at the uncleared limit of one of the Batumarta units (Fig.14). Thirty Javanese and Sundanese families had already built their houses, and about another thirty were due to start construction in the following months. All the families had already lived in the region for more than two years, and not one came from the Batumarta units. Several indigenous families (Ogan people) came back from the mountain areas to set themselves up together with spontaneous migrants in what they considered to be the rebirth of the village, up until now deserted. The migrants had been given permission to settle, and to work the land situated on the bank of the river opposite the original village, which up till then had been covered with thick forest and scattered old rubber trees.*

■ Hierarchy and interrelations

The process of reclaiming new land in this forest plain area is characterized by collective endeavours. The environmental conditions (a forest full of predators), and the agricultural techniques and systems of the settlers (based on food crops grown in permanent fields, worked at worst by hoeing and at best by ploughing), do not allow isolated clearings to be opened up. In this plain region, less than ten families were never encountered at the beginning of a settlement project. During a second phase, the essential criterion for success, and hence for anchoring of the settlement, is the maintenance of food production on marginally fertile soils. This can be achieved by land rotation with fallowing, by crop rotation, or through the use of fertilizer, the last of these depending not only on access to the settlements but also on the establishment of a regional distribution network. In view of this, and under the present conditions, there is a significant advantage in reclaiming land on the fringes of an old and quite large irrigation area.

A zone of organized settlement can create a pull area if it offers the possibility to work (agricultural or other) so as to build up seed capital in addition to the comfort offered by a known cultural environment (the same origin), which creates strong solidarity. This is the situation with the

Fig. 14
MENDALA : SPONTANEOUS SETTLEMENT IN CREATION
MENDALA : PREMIERE ETAPE DE LA COLONISATION AGRICOLE



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intensive, irrigated rice growing at Belitang, and with the small modern rubber plantations and large plots of cultivable land at Batumarta.

In opening up new land, the initial infrastructure established by the government for the first nuclear settlements is used as a starting point for new settlements. Tracks are opened up by the new settlers as an extension of the access roads built by the government. In the still embryonic pioneer settlements and during the initial set-up years, children can go to the school and the sick can be cared for in the dispensary of the Transmigration village.

In becoming more concentrated, infrastructure elements are established initially by the new community before being recognized by the public authorities. The opening up of new land and new settlements further out, stimulates activity in the intermediate area and transforms it from a pioneer zone to a service zone. As a result, small private primary schools are found in the pioneer fringe, the outer ring, public primary schools in the inner ring, and junior high schools, or sometimes full high schools, in the planned government nuclei of Belitang and Batumarta. The same is true for the semi-permanent dispensaries *(pembantu)*, the fixed dispensaries, and the hospital in Belitang.

A counterpart of what is established for the social service sector also exists for agricultural development and commerce. The conversion of the fringes brings new activity to an intermediate area due, on the one hand, to the protection finally afforded against predators by the buffer zone formed by the new villages. This is the moment to invest in fertilizer, as the return on their crops is virtually guarantied. On the other hand, they become the preferred intermediaries for commercial transactions (crop collection, purchase of consumer goods in their small stalls) with the settlers in the zone being reclaimed.

A certain complementarity exists between the different agricultural systems: intensive rice growing at the centre, intensive and commercial dry cultivation of food crops (soya, mungo beans, corn) in the inner ring and, finally, in the pioneer fringe, less intensive cultivation of these same crops but often dominated by cassava and, in our case, by chili. In this last zone, the use of fertilizer depends on the location of the land relative to the forest. Its use is not consistent throughout the year, as transport costs still remain high during the wet season, when the tracks cut by the settlers themselves are barely practicable. Its use here is still, nevertheless, greater than amongst transmigrants, as spontaneous settlers have, in one way or another, come from the settlement nucleus and share in the extended distribution network already well structured for rice cultivation. Charcoal, among the few value-added products produced in the pioneer fringe, is sold in the centre where, at present, domestic firewood can no longer be found in the vicinity.

This progression with time and this complementary spatial relationship are also observed among the families of the Nusa villages, which were erected by the Transmigration at the beginning of the 1960s. Up until the beginning of the 1980s, these were the last outposts before the dense forest, set up here and there by the forestry franchise. Fertilizer was not as yet available, and the settlers had opened up land slightly further out than their allocated lots. Following two good crops, they abandoned their fields due to a drop in yields and the fact that more than half of their poor crop was destroyed by predators. During this period, part of the X family (the father, a Balinese transmigrant, his son and his son-in-law) left, initially to work on the nearby coffee plantations (Muaradua, Lake Ranau), and later to set up its own plantation. Whenever pioneers set up new settlements in the forest on the periphery of their Transmigration village, part of the family collaborated (a son and a nephew who came directly from Bali). The two houses built in the garden of the Transmigration village became the assembly point for an extended family which was scattered over coffee plantations, rice fields reclaimed in a small valley, the first dry land allotted (now intensively farmed with commercial food crops), and land on the pioneer fringe whose food crops were still precarious. The children of this family remained with their grandmother at Nusa, the oldest being able to go to high school by bicycle (the nearest being in the rice-growing centre), whereas the daughters and daughters-in-law came here during childbirth. In 1990, the father collaborated with about ten other families in the opening of a new irrigable area in the coffee growing region.

Perennial commercial crops, such as rubber which is particularly suited to this type of soil, are just beginning to be planted using hybrid varieties, as carried out on the modern smallholdings of Batumarta. This crop can only be introduced by spontaneous migrants in well populated areas, taking into consideration the limit of their know-how and the vulnerability of the young plants to predators. The progress of this crop should be followed in detail, inasmuch as it could have a very positive effect on household economies and thus induce an acceleration in agricultural settlement activity in plain areas [5].

■ Constitution of a core area and its integration into the region

The large irrigated area, the "provincial rice granary", stimulated its own rapid fusion with the regional structure. Beginning with a planned settlement, catalyst for the occupation process, there is a progressive integration into the regional zone, a zone in the process of organisation directly as an extension of the initial nucleus, and finally into a second ring which is still relatively isolated but designed so that it will eventually be linked perfectly to the inner ring (Fig. 11 a, spatial organisation).

If completely isolated reclaimed areas did exist in the 1950s, it would seem that at the present time in this plain

region, given the continuous arrival of migrants and increasing population densities, new developments are always carried out with a view to on-going and large scale land reclamation. The basic unit is henceforth the village and no longer the hamlet, the latter only surviving as an adjunct to an already well established village unit.

If planned settlements were most frequently devised as population enclaves, it is undeniable that spontaneous settlements have converted them into interconnected points of population and production. They are the real role-players in the formation of a hub of development in an evolving regional context.

2. The "moth-eaten" forest of piedmont and mountain areas

The mountain region of South Sumatra, with its alluvial plains, valleys and lower slopes, has provided a strong "pull" environment since the 1950s. It can be shown that the degree of immigration and development is directly related to fluctuations in the price of coffee, which recorded strong upward movements in 1977 and 1986. The price quadrupled between 1974 and 1977, going from 500 to 2,000 Rps/kg, then tripled from 1,000 to 3,500 Rps/kg between 1981 and 1986. In this region where valleys can be planted with either rubber or coffee, the former has been clearly supplanted by the latter since the 1970s.

Establishment and growth in the territory were determined, for the region under study, both by comparing maps prepared in 1969 or 1976 (from aerial photographs) with the available SPOT images (1986), and from field surveys. The area covered included the *kecamatans* of Pengadonan, that part situated south of the Trans-Sumatra road, Muaradua and Pulau Beringin, Muaradua Kisam, Simpang and Banding Agung (on the northern shore of Lake Ranau) (Figures 3 and 4, separate sheet No. 5).

The main finding was the very significant recession in dense forest, being replaced for the most part by smallholders' coffee plantations. The form of this reduction depended not only on the nature of the terrain, but also on the state of the communication network and the previous settlement conditions. Overall, it was noted that the population density of the region under study had increased dramatically, from 17.5/km^2 in 1961 to 36.8/km^2 in 1988, a change that was not without consequences for the landscape and systems of production.

■ Landscape and production systems changes

PERMANENT DWELLINGS AROUND RICEFIELDS

In this mountain region, farming activities were traditionally found on the valley floors (at an average altitude of 100-150 m, and a maximum of 500 m), with the exception of the following peripheral situations in the study zone: the territory of Semendo (*kec.* Semendo, *kab.* Muara Enim) and the Pasemah valleys (the *kecamatans* located to the south of the *kabupaten* of Lahat) where crops may be found as high as 1,500 m. Dense forest prevails above this average altitude with, however, some infrequent clearing.

The traditional agricultural patterns are essentially based on the small family plantation as part of a system of slash-and-burn agriculture. As in the case for the plains, the cleared patches are opened up for one or two seasons of food crops, while certain clearings are planted with suitable trees: rubber, combined with teak and fruit trees, or coffee plants mixed with shade trees (*dadap - Erithrina lithosperma* - and *Lantoro - Leucaena glauca* -) and fruit trees.

Rice fields, using simple irrigation, were present in the region under study, but in small numbers. On the other hand, they were much more extensive to the west in the valleys of the Pasemah, where they have been irrigated for generations, as well as in the upper valley of the Enim River, region of origin of the Semendo (around Pulau Panggung, Tanjung Raya and Remantai), and upstream from Muaradua Kisam near the source of the Saka River (Sugihan and Bayur Tengah), an area occupied by the Semendo for about one hundred years. All these sites are long-established and are indicated on separate map 2 (1920-30). Elsewhere, there are only small fields, attached to low-lying river flats or set up in old meanders. Rice-growing only plays a secondary role in the rural economy but confers a significant social status on all the natives of this area. It has been and remains a key factor in the implantation of settlements. Traditionally, in this region, an annual crop provides the food needs of the owner's family for a year, with rarely any surplus production. Orchards located in and around the settlements also play an important role in the agricultural economy, as did previously the resin-producing *damar* plantations.

If the situation to the north and to the west of Mount Nanti (Fig. 15, a & b) is compared for the years 1976 (JANTOP map) and 1988 (SPOT image), the same formation of native villages is observed, located along the banks of water courses, at the intersection of roads and rivers, and in the neighbourhood of rice fields. Rice growing showed a comparative improvement between these two dates,

mainly by an expansion of the existing areas. Rice fields generally belong to the local inhabitants but are now sometimes worked by Javanese migrants who often grow a second annual crop. The expansion of rice-growing areas is almost always linked to the arrival of migrants from Inner Indonesia, and the labour and know-how they bring. There is a strong attachment to this type of land, as indicated by the infrequent land sales, an attitude that was observed in all land areas, but also among the Semendo and Pasemah, and in Lampung (ORSTOM, 1989:224). On the other hand, further examples in the *kecamatan* of Muaradua (Bumi Cahaya), Simpang (Sarekat Jaya) and Banding Agung (on the banks of Lake Ranau) demonstrate that migrants gain access to rice fields whenever a new development, which they are even sometimes called on to carry out, is involved.

ACCESS TO RICE FIELDS

At *Sarekat Jaya* (near Kotaway, kec. Simpang), at the end of the 1960s, the village leader offered about sixty Sundanese families the possibility of reclaiming a marshy depression abandoned by the local people. The drainage and irrigation works were carried out by the migrants assisted by several native families. Each person earned about three quarters of a hectare for this first portion of the project. Its potential was not fully exploited, and the first settlers were not interested in expanding their holdings. In 1988/89, the son of the first native leader then offered the 500 hectares of irrigable land to 140 families of Javanese origin, whom he recruited himself in villages that were in the process of being expelled from Southern Lampung. After operating the land for three years, the new arrivals will receive their SKT, serving as a certificate of title to the land, in exchange for an amount covering the administrative costs (25,000 Rps for a two hectare lot in 1990).

In the village of **Bumi Cahaya**, *the history of accommodating migrants goes back to the 1920s when, during the construction of the road leading from Muaradua to Lake Ranau, a large private plantation was opened. It began with young Sundanese marrying young girls from the village. Having stayed there, their integration is now complete, even to the point of being able to inherit a rice fields from their wife. Subsequently, during the 1950s, Javanese and Sundanese families arrived to work in the coffee plantations and were able to gain access to property by buying plots of secondary forest* (belukar), *but not a single one was ever able to buy a rice field. A few of them had been able to start terrace rice fields at the bottom of slopes. In 1989, a group of about fifty families from the village, including ten of Javanese and Balinese origin, opened up land around an isolated lake (eight hours away on foot), a part of which was to be developed as rice fields. At the end of the job, each of the families, native or non-native, received a title deed.*

The overall increase in the space devoted to wet or irrigated rice growing remains insignificant when compared to the needs of the region; the addition of slash-and-burn rice growing remains necessary for most families. On the contrary, according to agricultural advisers, the intensity of wet rice cultivation has made enormous progress (double cropping and high yield varieties), due mostly to the involvement of people arriving from Inner Indonesia.

From Figure15, it is also evident that there is little clearing on either side of rivers (for at least two kilometres) and roads, where villages have been set up. For the most part, these areas correspond to hereditary family orchards planted, in the majority, with *duku* (*Lansium domesticum Corr.*), but also with *rambutan* and durian, whose production goes directly by truck to Jakarta or Bandung. The stability of this market is the best security for preserving these strips. This is also the best land, as much from the point of view of the soil quality (alluvions) as from that of its accessibility. It is very rarely sold to foreigners.

FROM RUBBER TO COFFEE PLANTATION

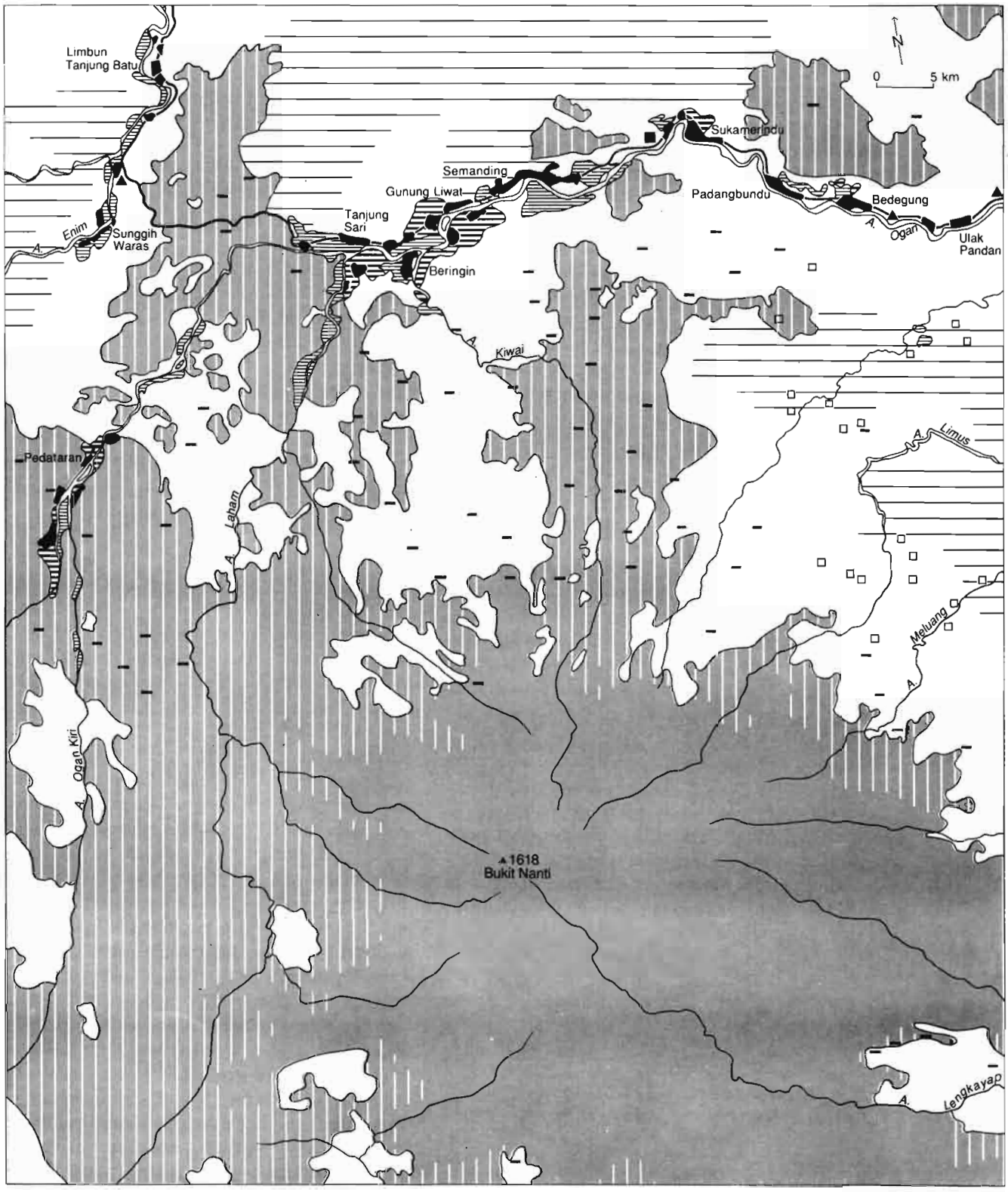
The old rubber forests (rubber jungle) located around settlements, have sometimes been cleared to make room for coffee trees, without radically changing the land use patterns. On the other hand, outside the settlements, coffee is more in evidence.

The conversion to coffee growing has introduced several new elements with significant ramifications for spatial and population organization. Coffee plants need much more upkeep than rubber. The re-growth of the forest must be prevented, thus requiring that long periods be spent on the plantation. The harvest is carried out over about two months each year, and requires the use of seasonal labour. Finally, a young coffee plantation is less vulnerable to predators (mainly wild boars) and, because of this, can be opened up in fairly isolated places. Coffee has allowed the cultivation of traditionally neglected areas, an advance that was only achieved with the assistance of imported labour.

Although coffee growing in this region dates from the beginning of the century, the favourable coffee price conditions of the 1970s brought about a marked trend to conversion, be it from rubber forests, dense forest (primary or secondary), or from lesser growths such as land infested with *alang-alang* (*Imperata cylindrica*). This land development took place everywhere, even at the expense of prohibited zones which were to have been conserved for national parks or for the protection of catchment areas.

Fig.15 PAST SETTLEMENT AND RECENT CLEARING IN *ORANG OGAN ULU* TERRITORIES

a. LAND USE EVOLUTION BETWEEN 1969 AND 1986 — *EVOLUTION DE L'OCCUPATION DU SOL ENTRE 1969 ET 1986*



Situation in 1969 / *Situation en 1969*

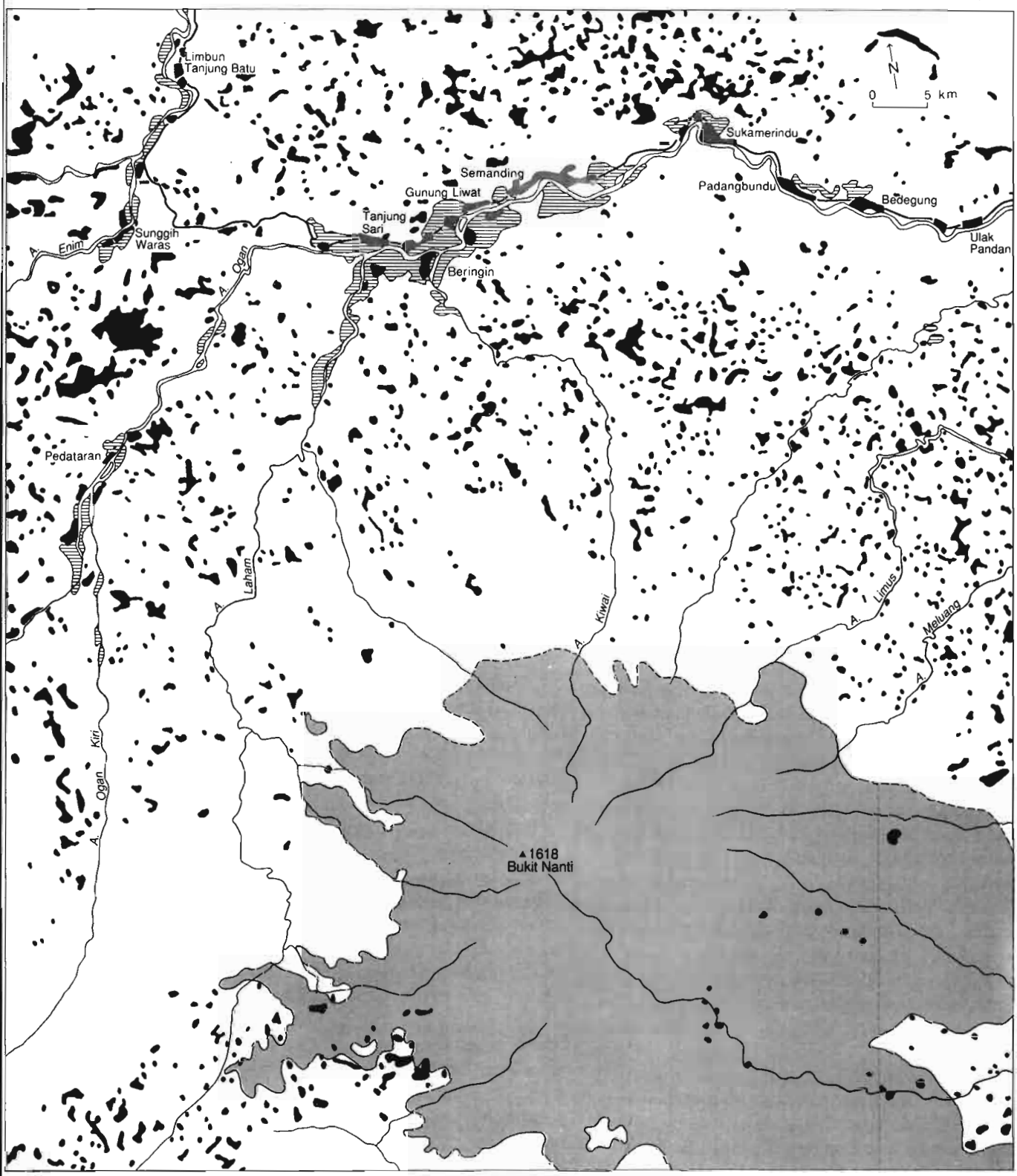
- ethnic Sumatran village - *village ripuaire autochtone*
- scattered settlement - *habitat dispersé*
- ricefield - *rizières*
- smallholder plantations - *petites plantations familiales* :
  - scattered, in secondary forest *éparses, dans forêt secondaire*
  - dense, mosaic of secondary forest and plantations *denses, mosaïque forêt secondaire/ plantations*
- primary forest - *forêt primaire*
- secondary forest - *forêt secondaire*

Evolution between 1969 and 1986 (SPOT imagery) / 1990 (field survey)
Evolution entre 1969 et 1986 (SPOT) / 1990 (enquêtes de terrain)

- new constructions along the main road - *constructions nouvelles le long de la route principale TransSumatra* :
- school - *école*
- restaurant, informal activities *restaurant, point de vente et parking aménagé*
- extent of valley rice fields - *extension des rizières de fond de vallée*
- reduction of the primary forest between 1969 and 1986 (extent of smallholder plantations) - *recul de la forêt primaire entre 1969 et 1986 (progression des plantations familiales)*

PEUPLEMENT ANCIEN ET DEFRICHEMENTS RECENTS DANS LE PAYS DES ORANG OGAN ULU

b. RECENT CLEARING ON THE SLOPES OF MT NANTI (1986) *NOUVELLES CLAIRIERES DE DEFRICHEMENT SUR LES PENTES DU MONT NANTI (1986)*



main villages - *principaux villages*

rice fields - *rizières*

recently opened clearing or rehabilitation of old plantations, ground uncovered (blue turquoise color in the images) - *clairière de défrichement récemment ouvertes ou réactivation de plantations anciennes, sol mis à nu (couleur bleu turquoise sur les images)*

altitudinal forest above 700-750 m, probably primary forest
forêt d'altitude, supérieuse à 700 - 750 m, vraisemblablement primaire

approximate limit - *limite imprécise*

sources - *sources*
Topographic maps JANTOP - *cartes topographiques JANTOP* : Blanbangan, Pengadonan, Pulaupanggung/Muaradua, Baturaja 1969 - 1976
SPOT satellite imagery - *images satellite SPOT* : 277/358 , 20/08/1986
Field surveys - *enquêtes de terrain* 1990

M P / j z 1991

■ Expansion of the coffee plantations.

CONQUEST OF THE VOLCANIC SLOPES

Mount Nanti, illustrated in Figures 15 a & b, shows this expansion in the volcanic landscapes spreading up from the base to the summit. In the 1969 and 1976 documents, there was already considerable erosion of the forest to the east of the volcanic range, beginning in the penetrating valleys of the Limus and the Lengkayap. The clearings and plantations in secondary forest displayed a fairly dense distribution up to an altitude of about 250-300 metres and, together with scattered small hamlets, made up a mosaic pattern, while the significant villages were situated downstream in the vicinity of rice fields. At higher altitudes, up to about 500 metres, a very few isolated clearings were noted. The area was still barely populated.

One SPOT images from 1986, supplemented by the 1990 and 1991 field surveys, revealed the spectacular growth of coffee plantations, in all cases by individual clearing. It was a true "nibbling away" of the forest. To the east of the volcano, an enlargement of what already existed was observed, but it was also noted that there was still very little above the 500 m limit. The greatest transformation took place to the west and the south-west. The Ogan Valley to the north (kec.Pengandonan), and those of the Gilas and the Saka to the south (kec. Muaradua Kisam), form a settlement corridor. In this area, clearings have gone well beyond the 500 m limit, and can be seen up to 750 m.

This was a recent advance. Good quality maps, drawn from a series of aerial photographs taken in 1976 in the western part of Mount Nanti, only showed a good dozen houses on clearings (*rumah terpencar*) between the upper valleys of the Laham River and the Gilas, about fifteen kilometres as the crow flies from the centres of Air Sugihan in the Semendo territory and from Muaradua Kisam in Kisam territory. On the SPOT images of 1986, this zone appeared to be covered by new coffee plantations or recently cleared spaces, producing an intense blue colour.

In the case of Mount Nanti, a progression was observed from the base of the slopes towards the summit between 1969 and 1986, which finally ended up with only a crown of forest being left on the summit. This was also observed on the volcanoes of Gunung Raya, Gunung Sigiguk and Gunung Pesagi, to the north and to the east of Lake Ranau, which were subjected to a much earlier and much higher population pressure coming from the Province of Lampung.

Generally speaking, a striking pattern of concentric circles of graduated clearing was noted: traditional and permanent living conditions on the external perimeter; a first ring, with very little clearing because of the established native settlement; following this, a ring with the highest level of clearing on substantial contiguous areas (in large blocks/patches); then follows a sparse distribution of small clearings, which is more intense whenever the preceding ring has a long-established population (the zone around the Limus River); finally, before the almost untouched inner circle, corresponding here to the 500 m contour line, very sparsely scattered clearings.

On the northern part of Mount Nanti, it can be asserted that no new communication infrastructure has been established to bolster the development of the land under cultivation. Also, there is no official registration of new villages or hamlets. Within the limits of the scale of our SPOT documents, no hamlets could be detected. Field surveys, however, revealed the existence of a considerable number of *talangs*, small assemblies of two to ten houses. Systematic mapping, which has not been undertaken by the villages concerned, would require a considerable time on sight. The hamlet of Sukorejo, a satellite of the village of Pedataran (see Fig.28, second book), is the only one to have grown to a reasonable size and that can be picked out on the maps.

A MASSIVE INFLUX ON THE PLATEAU OF KOTAWAY

The plateau of Kotaway provides an example of an area uncontrolled by the local population and subjected to a massive invasion and conquest by migrants coming from other regions of the province, directly from Java or from Java after a stay in Lampung. This case is not unique although it reaches a certain magnitude.

This plateau, situated to the south of Kotaway village, stretches to the west up to the Lampung border, and south towards *kecamatan* Banding Agung on the slopes of Gunung Raya (1643 m). This important ignimbrite plateau is situated at an altitude of about 250 m offering large flat spaces dissected by numerous deeply-banked rivers (which flow into the Komering down-river from Muaradua) forming deep canyons which make communication very difficult. At present, the asphalt road ends up about one kilometre before the village of Kotaway. The Telema River is spanned by a suspension bridge suitable for motorcycles and pedestrians. Located at this point are a group of shops selling day-to-day consumer products (rice and groceries), and stalls for petrol and motorcycle repairs. Coffee trading also takes place here and, on the verandahs, women are busy with a first grading.

This plateau is serviced by narrow and very steep tracks and trails, carefully maintained by the communities through tolls paid by the trail motorcycles that crisscross the region. The planters began moving in little by little, progressing from the north, Kotaway, or from the south, the slopes of Gunung Raya, where private coffee and tea plantations have been set up since the beginning of the

century, and where the settlement movement is oldest. The first occupants were the Komering Ulu (mainly located near the Telema River) who now only represent about 0.5% of the population. The land conquest was made at the end of the 1950s with the Semendo and the Ogan Ulu closely followed by people originally from Java, mainly Sundanese at the beginning. The colonisation movement speeded up in the 1970s once a forest concession (which had opened up some of the trails) pulled out.

Since 1982, there has been no more land to settle outside of the protected zones which themselves have suffered major encroachment, most probably due to the strong influx from Lampung. The plateau is covered with coffee trees and, occasionally, pepper plants. Only the deep gullies remain untouched. In 1989, this plateau included about 2,675 families and 13,000 ha of plantations within the authorized areas. In this sub-division of the *kecamatan*, the population is said to be composed of 40% Javanese, 25% Sundanese, 1.5% Balinese, 30% Semendo-Kisam, and 3.5% Ogan. Habitat is very dispersed. Most of the houses are built on plantation plots which often exceed one hectare. Two or three houses on adjacent plots are often grouped together so as to form a small hamlet with a collectively maintained access track. Grouping also occurs along the major tracks. The Ogan Ulu and the Semendo join together straightaway into real settlements with the houses built facing each other around a public square (See Fig. 22, second book).

Major concentrations are still rare. Curup, where the first settlements at Tanjung Durian were re-established after being devastated (dwellings and plantations) by an extensive fire in 1982, groups together planters as well as merchants, restaurants and schools.

INSERTION INTO CONTROLLED BUT ACCESSIBLE SPACE

Between these two extreme situations - a free and unoccupied space and one where migrants' access to land is very limited - Bumi Cahaya, situated at the western extension of the Kotaway plateau, can be considered an example of migrant insertion into a space controlled by the local people. This situation is the most frequently encountered in the region, as noted in our studies of other *kecamatan*.

Located on the road from Muaradua to Danau Ranau (opened by the Dutch in 1920 using Sundanese workers, neglected, and then recently improved), the village has harboured a continuous and controlled flow of migrants since the heavy influx in the 1950s. The southern part of the village, accounting for 40% of its territory, is in protected forest, determined by the Dutch forestry services, where the terrain is extremely dissected and access is very difficult.

Out of the 482 families, 210 families are local or mixed (Sundanese men married to local women before 1950) and are grouped in the mother village (*desa induk*). About 35% of the families (169) are completely foreign to the region. Those migrant families are dispersed throughout the village territory on *talang* as well as about one hundred local families in their country dwellings. Some migrant settlers' homes are grouped together, but rarely more than ten at a time, either on their fields for the majority or just a few, along the road.

Of the 169 non-local families, 30 cultivate the land on a share-cropping arrangement, while the remainder works its own land, acquired under the old clearing permit issued by the *pasirah*. Only 5% of them, those needing a bank loan, have a certificate of title evidencing ownership of the land. On average, spontaneous migrants have a one hectare plantation, whereas the locals have 2 ha of plantation in production and a minimum of 5 ha of ground lying fallow.

Outside the protected forest, there remains secondary forest owned by locals, so allowed to be cleared, but it is very difficult to reach, using steep tracks through the hills. At the present time, about 50 village families, including 10 Javanese and Balinese, are in the process of opening up an area near a lake.

■ Perspectives and problems

TOWARDS A MORE DIVERSIFIED FARMING SYSTEM

In the region under study, spontaneous migrants isolated on their coffee plantations cannot go in for a substantial alternative crop. Following the example of the local people, a few vegetables essential for their own use (chilli, egg plant, cassava, bananas, etc.) are usually planted very close to their houses so that they can more easily keep an eye out for predators. In the various valleys of Muaradua and in the upper Ogan valley, a significant combination of crops was never encountered except during the first two years following clearing (rice and corn). The integrating of intensive vegetable growing with the first three years of a new plantation, as carried out by spontaneous settlers in the nearby Liwa valley (Lampung, ORSTOM, 1989: 214), is not undertaken here, even though the soil makes it possible.

Except for those settlements which have been able to develop a few wet ricefields, only one spontaneous settlement in this area is devoted entirely to market gardening. Situated in the coffee zone but devoted mainly to food crop production, the *dusun* of Sabutan (Bumi Agung village, *kecamatan* Muaradua) was systematically studied, focusing on some 100 families concentrated in two farming groups (*kelompok tani*). Located on flat terrain about 12

km from Muaradua on the road to Bading Agung, the settlement was set up on land originally set aside for irrigation. When the irrigation project was abandoned, the 2 ha parcels were redistributed to veterans or government officials. Subsequently, the parcels have been sold one by one, mostly to spontaneous migrants who have come from Inner Indonesia since 1976. Because of the way in which it was created, this settlement is very spread out (with each house located on its own parcel) and has no centre. It was established without the involvement of the local people who live along the road.

Situated along a major communication axis leading to the Muaradua market, and in a controlled area free of predators, this settlement is the only one which has been able to develop an intensive food crop agriculture which includes vegetables. Only three families have retained coffee plantations in other areas where they had previously lived.

In the future, with the assistance of an increase in population density in parallel with a better control of the region and a withdrawal of the predators, the region should experience a diversification of crops. With the improvement in the level of infrastructure, this region should be better linked to the regional market for the outflow of its produce and the inflow of necessities. The ownership of land, whose status is one of the significant problems, should be guaranteed before settlers commit themselves to improvement works on their properties.

THE IMPLICATIONS OF AN INTENSIVE INVASION OF THE SLOPES

The repeat of the forest retreat phenomenon from Lampung (ORSTOM, 1989) to beyond Lubbuk Linggau (beginning in the valleys situated in the south and cutting into the slopes of Mount Kelam and Mount Besar), going across the Pasemah plain (between Lahat and Tebingtinggi via Pagaralam) and between Pagaralam and Manna (Bengkulu), has the appearance of a large-scale phenomenon which is attacking every slope of the mountainous region of Sumatra (See separate sheet No. 3).

This intense process of settlement of the terrain raises two important problems. On the one hand, there is the fear of a possible population overload both locally as well as in the region situated downstream, with the normal ecological risks, as much on the eastern slope as on the western slope towards the very proximate coast on the Indian Ocean. The movement in this latter direction takes place down the eastern slope (Manna and Curuk gaps) but also originates from new Transmigration settlements established on this coast. The flow rate of the Komering River has already dropped where silting up of the river bed has been observed (Musi River Study, 1989), and in the Pasemah Valley, many small irrigation networks have been ruined.

Another acute problem is that of settlement in "forbidden" zones. It should be noted that in not one of the situations known in South Sumatra does the process involve exclusively migrants coming from Inner Indonesia, and often they account for less than 50% of the planters, the others being people from the local province, from Bengkulu and a very small number from the northern part of Sumatra. Nevertheless, the situation of those from Inner Indonesia is much more tragic to the extent that some of them have been deceived and do not have a host village to fall back on like the natives who always have their principal residence elsewhere.

On the other hand, there is the fear of a certain influx which might tip the balance between local population and migrant population, a phenomenon whose implications are difficult to grasp. An attempt to answer these two fundamental questions will be made in the third part of the present work.

3. Roads, axes for settlement

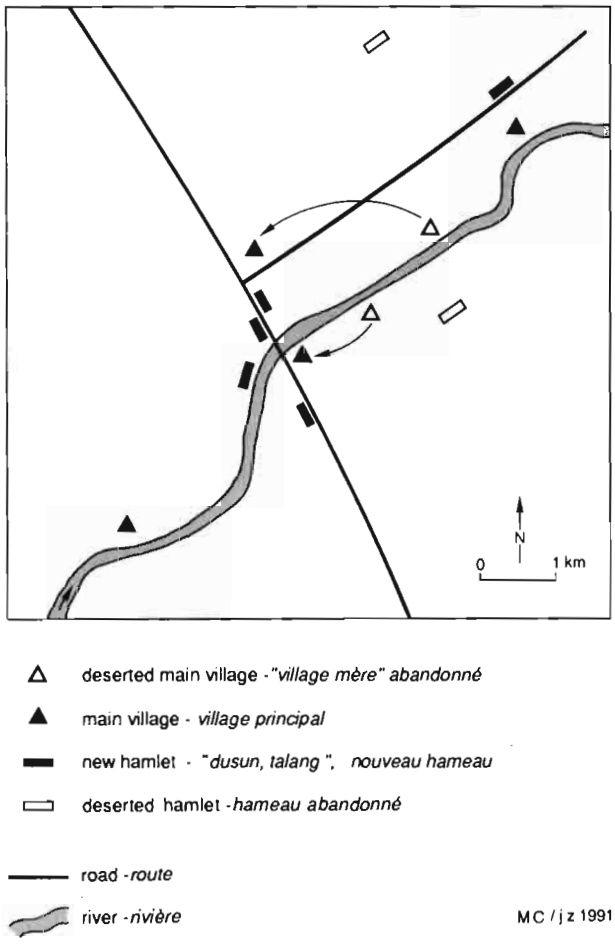
In the context of a process of land development, roads are the critical element in both the stabilising of settlements and the expansion of farmed areas. They can be constructed straight away to elongate a settlement nucleus, or can even be a means of penetration which induces new clearing. With the increase in the density of agricultural settlements, roads are appearing as places of permanent dwelling and elements in the transformation of the spatial organization. They become axes of formation. At the end of its evolution, a road becomes a street lined with virtually contiguous villages and a place of significant activity, a reflection of the Javanese pattern that had already been observed in the territory of Lampung.

■ Road versus river

In the historical context of the province of Southern Sumatra, the formative role of roads only became apparent at the end of the 19th century, by being superimposed on and supplementing the extensive dentritic structure formed by the river network of the Musi, a key element in stabilising settlement.

The traditional establishment of villages along the river banks is encountered in all the natural groups of

Fig. 16
SETTLEMENT SWITCH FROM RIVER TO THE ROAD
DEPLACEMENT DE L'HABITAT : DE LA RIVIERE A LA ROUTE



dwellings in the region, be it in the mountain valleys, on the plains, or on the broad marshy coastal strip. These villages have always had a significant mobility, due to invasions by other groups, floods and evil spirits but principally due to the disastrous fires caused by burning-off carried out along the banks where the best alluvial soil is found. Up until the beginning of the century, before the introduction of rubber, this soil was used for rice growing.

The opening up of roads and tracks stimulated the removal of villages from the banks towards the road, wherever a road followed a water course for some distance, as can be seen in Figure 17 for the road following the Komering River. This displacement by a few kilometres was often carried out with the assistance of a fire or other incident. On colonial maps, Pagardewa was situated four kilometers down-stream on the Lengkayap River; in 1969, the village was sited two kilometers from the Lubukdalam bridge, and today, there is a Pagar Baru ("new" Pagar) on the road. This movement can be seen in the left upper corner of Fig. 17 and is simplified in Fig.16.

An examination of the location of villages on the maps from 1920 to 1930 shows that very few of them were established along any road linking two rivers. Even today, on the road linking Baturaja and Prabumulih, no significant native settlement can be found which is not at an intersection with a river. Along these roads, only a few simple isolated huts attached to their swiden fields, are observed, and these buildings will be relocated as soon as the new plantation (rubber in this case) is well under way. A few restaurants and small garages can be seen that have been set up on roads that are frequently used. These are run by immigrants to the region, often Minangkabau in the first case and Batak in the second. The Trans-Sumatra road is dotted with them along its whole length from the south to the north.

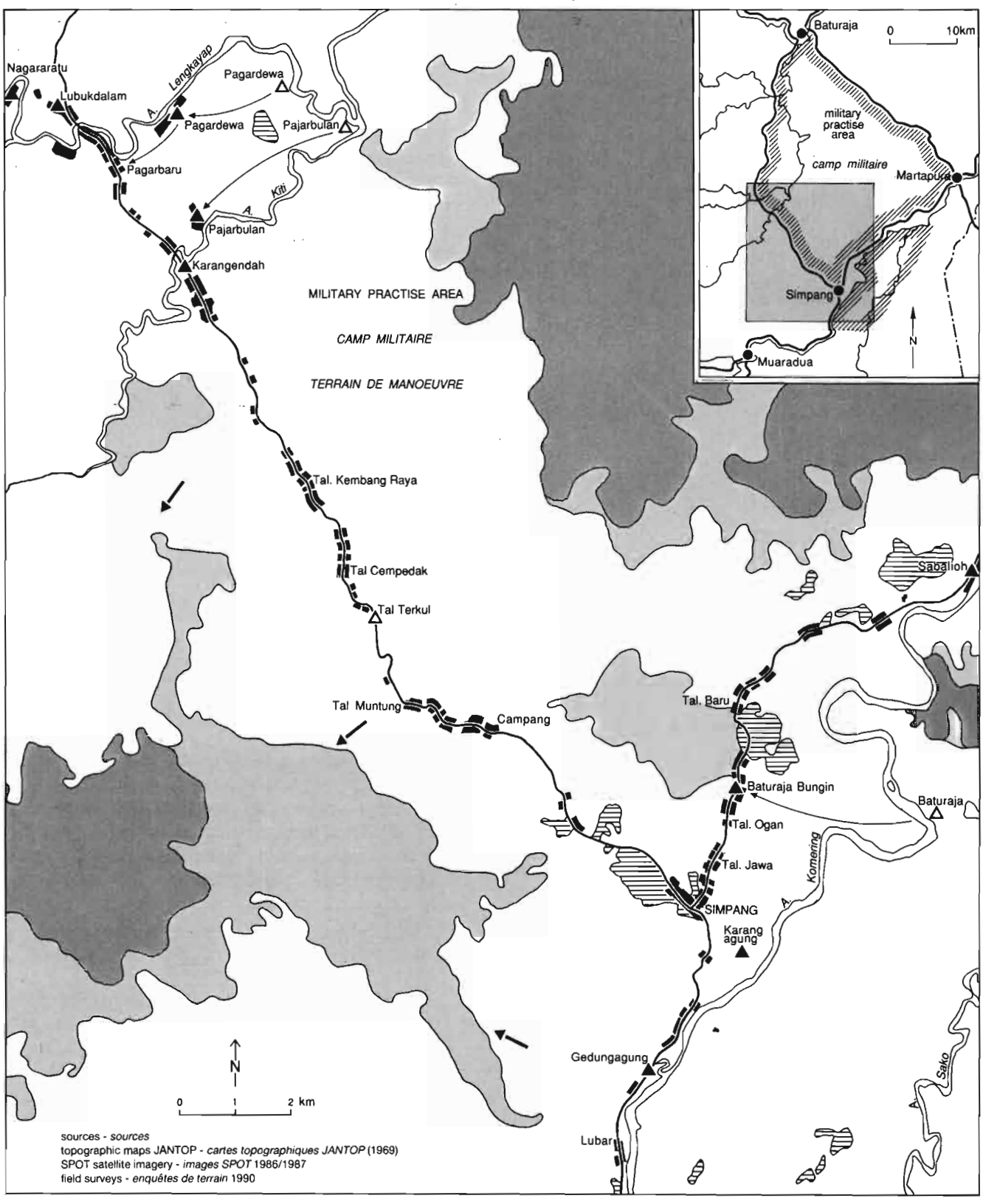
As part of the reorganisation brought about by the opening up of roads, a redistribution of the hierarchy of rural centres can be observed. The largest villages are now most frequently found at the intersections of roads and rivers. This is the situation at Lubukdalam (Fig. 17), which has become more important than Negeri Ratu, the historical centre of the *marga*.

■ From hinterland to village : the strategy of the natives

From the beginning of the century, new native settlements, which were satellite hamlets of village centres, clearly tended to be established along the line of those roads which followed rivers. This is demonstrated by the increase in the density of dwellings along the road from Muaradua to Banding Agung, along the roads to the north of Ranau Lake (Tsubouchi, 1980: 43-45), as well as on the Ogan River and on that section of the Trans-Sumatra road to the west of Baturaja (Fig. 15).

Amongst the native population (meaning those peoples long-established in the zone under study), little push was observed to build significant settlements in the hinterland more than two km from a road or river. The *ladang* or newly detached plantations set up inland, were often established by one or two families, often young couples. Housing here is primitive and not made to last: piles are made from thin roughly-hewn logs, roofs and walls from bark or palm leaves. The aim of these young couples is to be able to construct a house as soon as possible, no matter how simple, in their village of origin where the large family house, protected and maintained by one of the brothers or sisters, is located. Following this, they can open up land within a radius of two to five km from the village without building a new house. The father of the family

Fig.17 NEW SETTLEMENTS ALONG THE ROADS - KEC. SIMPANG, O.K.U.
NOUVELLES IMPLANTATIONS LE LONG DES ROUTES - KEC. SIMPANG, O.K.U.



sources - *sources*
topographic maps JANTOP - *cartes topographiques JANTOP* (1969)
SPOT satellite imagery - *images SPOT* 1986/1987
field surveys - *enquêtes de terrain* 1990

▲ existing villages at the beginning of century - *villages existant au début du siècle*

M P / j z 1991

△ site of deserted village (according to maps from colonial period).- *site de village abandonné (d'après cartes de l'époque coloniale)*

villages in 1969 (from topographic maps) - *habitat villageois en 1969, d'après cartes topographiques* JANTOP

new settlements, built between 1969 and 1990 (field survey) - *nouvelles constructions, apparues entre 1969 et 1990 (enquêtes de terrain)*

progression of new clearings in secondary forest (SPOT 1986) - *progression des nouveaux défrichements dans forêt secondaire (SPOT 1986)*

residual forest without trace of human settlement - *forêt résiduelle sans trace d'occupation humaine*:

clearings between 1969 et 1986 *défrichements entre 1969 et 1986*

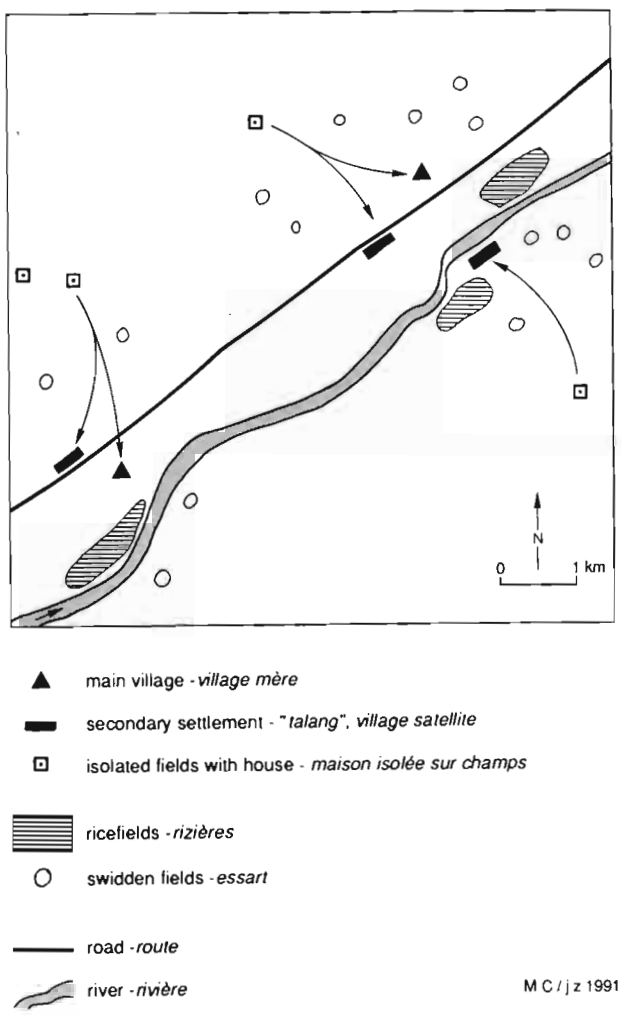
dense forest in 1986 - *forêt dense en 1986*

ricefields - *rizières*

never spends more than a few consecutive days looking after his allotment and living in a simple shelter, while the mother remains in the village to care for the children who can then attend primary school. This strategy is just as frequent in the rubber growing regions as it is in those where coffee is dominant.

With the native people, therefore, there is a tendency either to increase the population of their villages of origin or to develop new hamlets along the road as an extension, however, of the original village. Very few new hamlets are established along the rivers nowadays if there is a road or track nearby. As simplified in Fig. 18, the families without a permanent house in the main village, and living in a simple house on their swidden field, will try to build a house next to the road or any hamlet as soon as possible in order to get access to welfare services.

Fig. 18
FROM THE SWIDDEN FIELDS TO THE MAIN VILLAGE
DE L'ESSART AU VILLAGE



■ From hinterland to road : the strategy of the migrants

Migrants, whether they come from the local region (the province or the adjacent provinces) or from further away (the central part of Sumatra or another island), have for about 50 years been the real pioneers in the development of the hinterland, namely, the interfluvial zones and marginal areas.

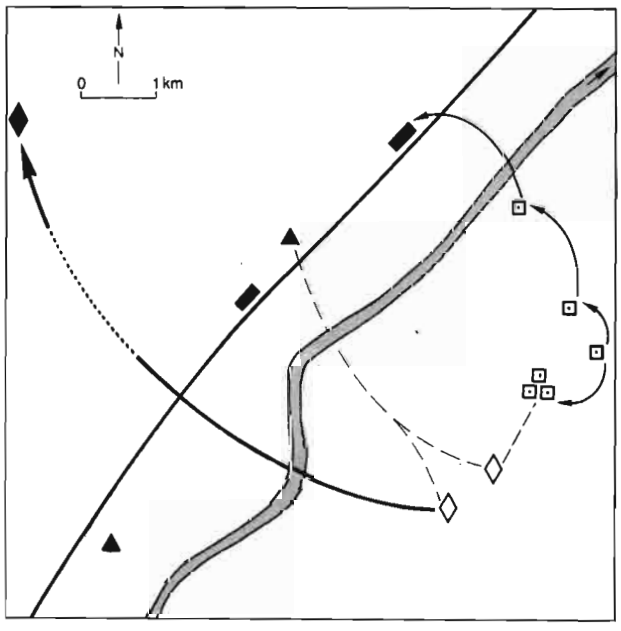
As they are not from the region, the only prospect of unoccupied land that is offered to them, and which comes within their financial means, is located at some distance (more than two km) from the native villages, roads and rivers.

The Ogan Ulu families emanating from the upper reaches of the Ogan, the Komering families from the middle reaches of the Komering, or even the Semendo, have all migrated since the beining of this century to the coffee growing region situated between Martapura and Ranau Lake. They migrated and settled as pre-established groups, and straight away set up hamlets with ten or so families. They maintain close links with their village of origin, which can sometimes be a former pioneer settlement in an intermediate region as is the case for the Semendo who come from Pulau Panggung in *kecamatan* Semendo, who settled at Bayur Tengah in *kecamatan* Muaradua Kisam around 1920, and finally at Danau Jaya in *kecamatan* Simpang in 1950 (second book, Chap.1). They go back regularly, hoping one day to be able to buy "good land" there, often irrigated ricefields. The new little village on foreign land is, however, made up of attractive solid houses built to last (Fig. 19).

By necessity, migrants coming from Java adopt a more individualistic approach. In the beginning, they arrive in the region to harvest coffee, in most cases through individual migration. Some of them stay on there with a parcel of land for which they hold a maintenance contract or even, after a certain period, a parcel which they are able to work in their own right. The only allotments available today, and which they are granted in return for a very small payment commensurate with their financial capacity at the beginning, are all located between two and eight hours walking distance from the principal communication links or centres of activity. Most of the time, whenever clusters of dwellings are possible, they are created randomly, and a tiny hamlet could equally be made up of Sundanese, central or eastern Javanese, or even Balinese. Sometimes, the most fortunate can quickly establish a hamlet which takes on a dimension such that a social life is rapidly instituted, or they may even be sufficient in number that infrastructure services are set up (a process which occurred on the Kotaway plateau).

In order to get closer to the hubs of activity, the roads and villages, the others never stop saving. The first plantation will be sold (most frequently to a new migrant) to buy a lot closer to the road, and so on until acceptable living conditions have been attained. These are, sufficiently fertile land or land with an adequate return, availability of local transport, a minimum social life, and access to those welfare services to which any and everybody in Indonesia aspires today.

Fig. 19
PIONEER SETTLEMENT AND MIGRANT STRATEGY
COLONISATION AGRICOLE ET STRATEGIE DES MIGRANTS



indigenous village - *village autochtone*

Sumatran migrants hamlet - *hameau de migrants Sumatranais*

inner migrants hamlet
hameau de migrants de l'Indonésie intérieure

inner migrants fields and house
maison et champs des migrants de l'Indonésie intérieure

origin village of Sumatra migrants
village d'origine des migrants Sumatranais

inner migrant strategy
strategie des migrants de l'Indonésie intérieure

Sumatran migrant strategy
stratégie des migrants Sumatranais

road - *route*

river - *rivière*

M C / j z 1991

The migrant settlements along the road going from Muaradua to Ranau Lake illustrate this strategy. In the north, native villages stop at Gunung Cahaya. After this, and as far as Simpang Sender, the dwellings are almost exclusively those of migrants. The first small hamlet, Marga Makmur, contains 16 houses and is a recent allotment (150,000 Rps per lot of 680 m² with certificate of title) developed on the initiative of the village chief in order to rehouse those citizens (Javanese and Balinese) whose plantations, located 7 km inland, were carried away by a landslide. Further along at Talang Bendi, where the weekly market is held, a few houses and a school vie for what little land is available due to the topography. All the inhabitants formerly lived in the hinterland. Pak X, born in Eastern Java in 1936, arrived at Belitang in 1958 and settled in a remote spot in 1961. He then put together about ten hectares of coffee. In 1978, he built two houses on the road, one a permanent structure and the other of wood, in order to accommodate his large family (ten children from three wives), while his sons looked after the plantations. Further along, Talang Manduriang today groups 130 families, 90% of which are Sundanese from Banten who were dispersed in an inland valley up until 1980. It was mainly the problem of the children's education which was behind their resettlement along the road. The primary school was constructed in 1984. Another school, 3.6 km before Simpang Sender, was built on the road in 1980 to accommodate the children of scattered planters. Of the 120 who attend school, 100 are Javanese.

The two roads which lead to Simpang, via Baturaja and via Martapura (Fig. 17), have been abandoned by the people from the area, not only on the stretches between the rivers but also because a portion of the land has been expropriated for a military camp which begins 500 m from the road. These two roads have, on the other hand, attracted outsiders. Coming from Baturaja, this road used to cross a forest-covered range and, at the beginning of the century, the population was low with only two *talang* (secondary hamlets) whereas the *dusun* (principal villages) of the Daya people were established on the Lengkaya River, the main village of the *marga*, which bore the name of the river, being Negeri Ratu. In this zone, the displacement of the villages was due mainly to a more effective supervision within the military area, whereas on the banks of the Komering, the transfer of the village of Baturaja Bungin was the result of the lure of the road. The native resettlement took place at the road and river intersection near Lubuk Dalam. Deprived of a part of its territory by virtue of the military camp[1], this region has experienced a significant exodus, either towards Palembang or towards Jakarta. In 1978, 26 families from the small *marga* of Lengkayap were resident in Jakarta (Tsubouchi, 1980: 12). Those who remained opened up new plantations to the west, on the slopes of Mount Nanti.

These two roads are, on the other hand, dotted with rudimentary houses belonging to migrants from Java or Bali. Most of these migrants are in a precarious situation as they live under a land-use agreement or a share-cropping arrangement made either with natives who are not resident in the region or with the military authorities who supervise the area.

Beginning in 1978, 25 Balinese families established a hamlet to the north of Sabah Lioh. They bought a strip of land parallel to but set back from the road to construct their houses. A small cement altar with floral offerings demonstrates their difference, the consecration and permanence of the site. Non-irrigated land is worked under a share-cropping arrangement with the military authorities or mandor *in charge of the zone, who take 1/10 of the harvest (soya, peanuts and vegetables). The irrigated rice fields (two crops of rice and one of* palawija*) belong to the locals who take 1/3 of each rice harvest. Only one young Balinese, who married a young woman from the native village, cultivates the inherited land of his wife for his family. A few kilometres away, six Javanese families operate under a share-cropping arrangement (1/3, 2/3) using a less intensive form of farming. The head of each family assured us that their situation was temporary, even though the longest established of them had been there for 17 years and the most recent arrival for four years. Their houses, which are built on the property of the owner who lives in Palembang, sit on the ground and are in the non-permanent Javanese style (roof frame built of wood, walls of woven bamboo, and the roof of palm leaves).*

To each class of road (from the track to the Trans-Sumatran) and to each type of settlement, a different level of permanence of dwelling and a different stage of difficulty of access is attached for new migrants arriving with little capital.

Development and environmental protection

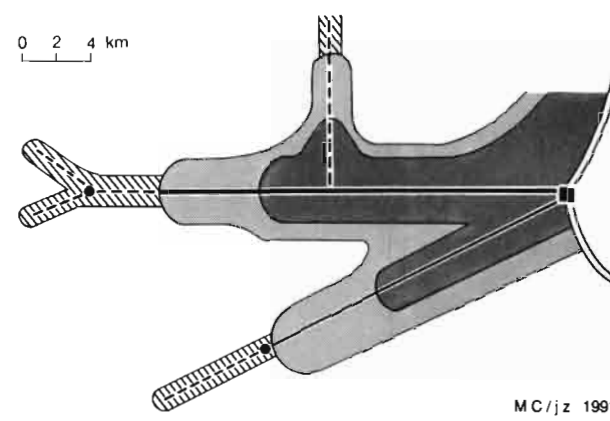
Roads appear to be vital whenever basic crops (food crops, rubber) are susceptible to predators. The native population overcomes this problem by erecting strong high fences, a capital investment made less frequently by pioneers from Inner Indonesia.

On the plains, individual spontaneous settlements are confined, in the first place, to the immediate vicinity of roads. Recent clearings are observed as bands of thinning on both sides of the access road leading to the Transmigration centres opened up in the forest. Agriculture is usually a secondary activity or is supplemented by other non-agricultural activities (retail trade, transport, or small industries). On the new section of the Trans-Sumatran linking Bakauhauni to Tanjung Karang in Lampung, primitive buildings can be noticed in rows along the road, while fields of cassava mixed with banana trees spread out immediately behind them. This settlement is not made up exclusively of migrants, but they were its main originators especially in the least desirable portions (furthest away from busy centres, limited quality or availability of arable land).

In the case of a resilient crop such as coffee, a road no longer seems to be a necessary factor, as evidenced by the inroads made into the slopes of Mount Nanti, notwithstanding the remoteness of roads. However, whenever one exists, it is without question a focal point for infiltration. The amount of energy that a migrant will commit to finding land has been noted. Starting on an access road or in a population centre, he is prepared to travel up to eight hours walking distance to open up a clearing (Fig. 20).

Within this framework emerges the aberration of the Transmigration centres situated in this mountainous region: Candi Rama (kecamatan Pagaralam, kabupaten Lahat) to the south of Martapura, straddling the border with Lampung and too close to Mount Pilamasin, or even the many locations in the *kabupaten* of Musi Rawas, to the south of Lubuk Linggau and close to the Trans-Sumatran on the border of the province of Jambi (separate sheet No. 5).

Fig. 20
STAGES OF CLEARINGS IN COFFEE PLANTATIONS AREA IN RELATION TO ROAD SYSTEM
RYTHME D'IMPLANTATION DES NOUVELLES PLANTATIONS DE CAFE PAR RAPPORT AU RESEAU DE COMMUNICATION.



first zone of land clearing - *première zone d'implantation des clairières* (before 1970 - *avant 1970*)
second zone - *deuxième zone* (1971 - 1980)
third zone - *troisième zone* (after 1980 - *après 1980*)
small urban center - *petite ville*
rural center - *bourg*
provincial road - *route provinciale*
asphalted quite good road - *route asphaltée en bon état*
bad condition asphalted road - *route asphaltée dégradée*
unimproved road - *piste*

sources - *sources*
field surveys (Muaradua valleys) - *enquêtes de terrain (vallées de Muaradua)* 1990

Notes to chapter 3 (continued)

(1) In Belitang, it was anticipated that one newly-arrived family would be fostered for each five families settled for more than three years.

(2) The "Palembang system" was subsequently abandoned for the "Lampung system", more concentrated at a single site, where new arrivals were disadvantaged by having to open up land quite some distance from their receiving families.

(3) During our investigations, we always felt a certain reticence on the part of those settlers who arrived between 1950 and 1965 to answer questions concerning the manner in which they migrated.

(4) Between Pematang Pangan and the coast, however, there remains territory which is almost totally empty and marshy.

(5) An experiment of this type is presently being carried out on the road from Palembang to Jambi, at the border of the two provinces.

(6) This is not the case for damar, *the resin-producing tree for which there is no market today, whose magnificent trunks, formed over a minimum of thirty years, are being replaced by the more profitable coffee.*

(7) Including Kotaway, data from district administration.

(8) Cultivation is permitted with right of user, but dwellings are forbidden here.

SECOND BOOK

THE NEW PIONEERS : THE " SPONTANS "

FIRST PART

Spontaneous migrant strategies and settlement processes in the plains and mountains

Glenn Smith

Hélène Bouvier

Introduction

During a period of sustained spontaneous migration from the islands of Java, Bali and Madura into South Sumatra Province in the 1960s and early 1970s, much of the movement was directed at towns and urban areas, particularly Palembang (Husin, 1978). From the mid-1970s on, increasingly migrants settled in rural areas. This movement was spurred by, among other factors, land fragmentation and crop failures in the sending areas and demand for labor and increased accessibility in the receiving areas. Agricultural modernization, a process which some saw leading to reduced migration (Ng, 1975), turned out to be responsible for sustaining migration flows. In this chapter, we focus on spontaneous migrants who settle in plains and upland environments. We begin with a look at the migration process itself in an effort to understand why migrants decide to leave their village of origin and previous settlement areas, and how they develop and manage what they hope will be successful migration strategies. The discussion then turns to the spontaneous settlements they have created or joined in South Sumatra.

One recurrent question in migration studies is whether migrants, particularly those of rural or peasant origin, should best be seen as "reactors," whose behavior is completely determined by forces beyond their control or even their understanding, or "actors" who create their own migration history. The migration of European peasants to the New World as described by Oscar Handlin provided a well known example of the peasants-as-reactors view, one in which peasants displaced by the evolution of agricultural techniques and land consolidation basically react to the offer of land, employment and a better life across the seas (Handlin, 1951). William A. Douglass criticized this and other categorizations of peasants as tradition-bound and reactive, and called for a revision of the view that peasant emigrants simply respond to conditions beyond their control. He considered peasant migrants innovative actors who, in using a combination of mobility and other ploys, "are regularly the architects, at least in part, of their own personal destinies" (Douglass, 1970:32). A basic assumption lying at the root of both of these positions is that a dichotomy must necessarily exist between reactors (largely tradition-bound) and actors (seen as innovative). The results of this study of spontaneous migration and settlement point to a different characterization of migrant/settlers, one of reactive actors. It is argued that the subjects of our study are innovative migrant/settlers who struggle to formulate responses to factors over which they have little influence. Such a model permits more precise assessments of migration determinants, migrant and settler adaptation and, in this particular study, aids in identifying the factors involved in agricultural colonization and tropical deforestation.

To arrive at this view of migrant/settlers, we synthesize several levels of analysis. Data sources, including published material, field observations and interviews with migrants, indigenous people and officials, are compared and bias controlled for. Migration and settlement decision-making are approached at the individual and group levels, and for this reason, extensive interviewing has been undertaken in the settlements and brief probes in selected sending areas. Concerning migration process, for example, among the basic aims are to elicit the goals the migrant has, his or her reasons for migrating and the factors influencing the decision to go to South Sumatra and to do so at a particular time or in a particular way, including through spontaneous migration rather than through the government-sponsored Transmigration program. Here it is important to determine, as Amos Hawley has suggested, "not why the migrant thinks he has moved but the conditions and characteristics common to all instances of migration and lacking in situations from which there is no migration"

(Hawley, 1950:328). In-depth migration and settlement histories provide information on a number of factors outside of the individual's control. Family considerations and interests, for example, may influence migration and settlement decisions (Schaeffer, 1987). Family or co-villager sponsorship possibilities and migration returnees provide other important influences (Fuller, Kamnuansilpa and Lightfoot, 1990; Sripraphai and Sripraphai, 1983).

Wider group factors must also be taken into account in any study of migration streams and especially settlement processes. Every migrant is part of a migrant cohort group and an ethnic group. Groups such as these are characterized by particular historical experiences and endowments, resulting in specific patterns of behavior and values, all of which must be considered if illegitimate attributions of irrationality are to be avoided (Wells, 1991). "Choice" is a factor to be employed with care since its role in migrant and settler decision making is to a large extent determined by economic, social, familial and chance factors. The concept of purely voluntary migration, in light of the influences at work, would seem to merit reassessment. In their settlements, migrants must usually choose from different sets of choices from those available to indigenous ethnic groups. The range and quality of choices open to all groups evolve as new variables intervene, as settlement population rises, soil fertility declines and land becomes scarce. From a developmental point of view, whether settlement viability, sustainable agriculture and environmental conservation are attainable depends not only on initial conditions and local settlement history but also on institutional factors such as economic and land tenure security.

Assuming that spontaneous migrants do not simply flee a situation of imminent danger (as do refugees), but pursue a definite goal, push and pull factors constitute an inseparable pair. The former only partially determine a departure, and the latter contribute both to the departure decision and to the choice of destination; in short, they should be understood to be complementary forces interacting in migration decision making. In studying migrant behavior, the push-pull dichotomy could profitably be replaced by a cost benefit approach (Bogue, 1977; see also Rothenberg, 1977), since migrants weigh the benefits of migration against the costs of migration at each stage of their journey. Unlike the push-pull theory, which suggests that migrants are tossed about by the currents and eddies of the external environment without any game plan of their own, a cost benefit approach sees them as more or less autonomous actors either adopting a dynamic or static mode depending on their interpretation of external forces and their rational self-interests or well being. The cost benefit approach sometimes attaches research priority to the study of these forces as perceived and interpreted by migrants themselves, rather than to the examination of indices of external conditions (Bogue, 1977). Although the "migrant's eye view" is extremely valuable, and is used here to a great extent, an adequate model must be more encompassing in design if it is to deal with the underlying causes and dynamic processes involved in migration and settlement decision making. In this article, we employ an enlarged cost benefit approach applied to both migration and settlement drawing on migrant life histories, their interpretations of their migration and settlement, indigenous and official views, the history, development and organization of spontaneous settlements, and our own outsider's view of individual and group processes. The reader desiring a more complete survey of the conditions in South Sumatra and Indonesia having a bearing on spontaneous movements is encouraged to refer to the other contributions in this volume and key texts dealing with the phenomenon [1].

For the sake of clarity, this article is divided into two main parts, migration and settlement, each further divided into subheadings. No other consideration justifies this separation, not even chronology since settlement is often simply a prelude to further migration. The background and goals of spontaneous migrants are dealt with in the first section on migration. This is followed by an attempt at a typology of migrants and their strategies. The part devoted to settlement opens with a description of the sites under study and their recent history. Land, housing, infrastructures and services are explored here. Farming systems, on- and off-farm employment terms and opportunities, and household nutrition and economic conditions are described and analyzed in the following section which includes a look at social and cultural life in the communities and interethnic relations.

A selection of extracts from individual migration and settlement case histories is presented in boxes throughout the text. They may be read at any convenient time, with the main text or grouped together. When an item in the main text can be illustrated by one or more of these histories, reference is made to the case(s) in brackets (e.g., [Case 1]). We are thus reminded that migratory movements and settlement phenomena are derived from a multiplicity of individual, family and group histories,within which we may identify key recurring elements.

The discussion is based on field studies carried out between May and July 1990 in South Sumatra. The sites were located in two districts, Ogan Komering Ulu (OKU) and Ogan Komering Ilir (OKI). Farming systems found in the field sites were based either on food crops or highland *Robusta* coffee. Below are brief descriptions of the research sites, beginning with food crop areas.

Sabutan, located 12 km south of the town of Muaradua on the road to Danau Ranau, is a non-contiguous neighborhood *(dusun)* of Bumi Agung village (Muaradua sub-district, Ogan Komering Ulu district) located on the outskirts of Muaradua. As can be seen from this example,

the village in South Sumatra, or *desa*, may often be more an administrative unit than a village in the usual Western sense. The predominantly Javanese population here cultivates rice *(padi*, some of it in irrigated fields, or *sawah)* and non-rice food crops *(palawija)* in dry fields; a few of them are involved in brickmaking along the road. In contrast to most of the Muaradua valley region, coffee is a minor crop in Sabutan.

Cahaya Mas and *Kampung Baru* are two organized spontaneous villages located in Mesuji sub-district (Ogan Komering Ilir district) close to the border of the Belitang sub-district (OKU district). Spontaneous settlements neighboring these two villages were also investigated. Most farmers in this area cultivate *padi-palawija* on dry fields, often using the mixed cropping *tumpang sari* system.

A large percentage of spontaneous migrants to South Sumatra settle the highland coffee areas or pass through them at one time or another. This project has chosen to center part of the field studies on these often remote settlements on which little has been written previously. Several sites have been selected, all of which have in common an almost complete dependence on coffee, with few other crops of any importance.

Sukorejo is a *dusun* of Pedataran village (Pengandonan sub-district, OKU district) located 3 km south of the Trans-Sumatran Highway. It is one of the few areas having a majority Javanese population in the upper Ogan river country of Pengandonan.

Danau Jaya, a non-contiguous *dusun* to the west of the Saka River attached administratively to Kotaway village *(Perwakilan kecamatan* Buay Pemaca, Simpang sub-district, OKU), is composed of a main Semendo neighborhood and several scattered hamlets *(talang)* with predominantly migrant populations.

Air Bunga and *Tunggal Jaya* are two other distant satellite *dusun* of Kotaway to the east of the Saka River. Another area visited was *Tunas Mudah* (administratively referred to as an *RT*, or household grouping) Stretching all the way to the border with Lampung, these isolated areas of Kotaway are covered with coffee plantations largely owned and worked by migrants.

As a complement to the receiving area research in Sumatra, several weeks were spent in sending areas in East Java in October and November 1990. There, studies were concentrated on the districts of Jember (Ambulu and Uluhan sub-districts), Banyuwangi (Pesangaran and Glenmore sub-districts) and Sumenep on the island of Madura (Gili Genting, Guluk-Guluk, Ganding and Pasongsongan sub-districts).

Information was gathered primarily on the basis of informal interviews with over 300 spontaneous migrant households in the sample villages. For 136 of the household heads, a complete migration history could be pieced together [2]. Those interviewed include Javanese, Sundanese, Madurese, Balinese and Sumatrans. The Sumatrans include members of various ethnic groups originally from the province of South Sumatra (such as Ogan, Komering, and Semendo) and from other provinces of the island (notably, Batak from North Sumatra, Padang from West Sumatra and ethnic Lampung migrants). Of the Javanese and Balinese, some were born in Sumatra; the largest group represented, however, remains the Javanese born in Java. Other data was sought through discussions with neighborhood, village and sub-district officials and informal leaders, as well as local residents encountered in the course of the studies.

It should be noted that the process of female migration (including their situation in the sending area, their motives, routes and plans) remains somewhat unclear. It was impossible in the framework of this project to complete an adequate study of women and migration. The interviews on which the findings here are based were carried out primarily with male heads of family, and the data on woman migrants were too scattered to be treated in a systematic manner. Their experiences and opinions were, however, solicited wherever possible.

Notes to introduction

(1) For a bibliography of publications on the subject, see Spontaneous Transmigration Project (1990); one of the most recent and comprehensive studies on Sumatra is Pain (1989).

(2) Generalizations drawn from these interviews are based on a minimum of 67 cases for each specific question or topic. The size of the sample group on which specific assertions are based is noted in italicized brackets in the text (e.g., [N=136]). We cannot claim formal statistical validity for the results due to the small sample size and the difficulty of determining the extent to which the chosen sites provide a representative picture of all spontaneous migrants in South Sumatra. Nevertheless, our interviews with non-migrants, officials and local people, and discussion with other team members suggest these general trends are encountered in other areas of South Sumatra.

Chapter 1

Background and goals of spontaneous migrants

1. Economic difficulties

The vast majority of migrants in the sample villages selected for this project are of peasant background; only a few have other occupational skills, such as cabinet-maker, carpenter, barber or tailor, for example. Some were traders in agricultural commodities or livestock at the level of their local community.

In the overwhelming majority of cases, the economic factor [1] is invoked to explain the migration decision. The main goal of most spontaneous migrants is to amass capital, an impossible undertaking in one's village of origin, the plan being to use it to acquire land in the receiving or sending area, or set oneself up in trading. Only those who are the first to open up new settlements have an opportunity of access to almost free land. Wherever the land is located, it is hoped that it will insure both the immediate future of their children, who can then be educated beyond the primary school level, and, if possible, their long-term future by providing them with an inheritance.

Generally, those who leave are rarely landless peasants or the most impoverished, but rather the level just above them. They are the small landowners with less than 0.5 hectares (ha), insufficient for the present and future needs of the whole family.

Case 1

S., 38, left Surakarta, Central Java, in 1984 with his wife and two children who now are 7 and 10 years of age. His parents own an infertile 0.25 ha upland dry field planted with mixed cropping and tobacco, and a 0.15 ha house lot. There are few opportunities for daily agricultural work, sharecropping or land rental. He is the fifth of eight children. The three youngest still live with the parents and are unmarried, he says, adding: "for the poor, there are no sweethearts" (untuk orang miskin, tidak ada jodoh"). *The family plans that one of the two youngest daughters will stay with the parents, and the other will follow her husband. The youngest boy, 17, will look for work. S. has no idea whether this brother wants to come to Sumatra. "I don't know his thoughts," he said. "He won't have any plans so long as he doesn't have capital"* ("tak tahu pikiran adik saya; ia tak punya rencana, kalau tak punya modal").

His four elder brothers and sisters went through Transmigration to SP3, Pematang Panggang, close to ***Kampung Baru****. An encouraging letter from one of his brothers clinched the decision to follow them. In 1984, the future village chief of Kampung Baru, then in charge of "security" at SP2 and SP3, was seeking families to settle land on a new site he was opening. They decided to join the first settlers. Now there are only two brothers left at SP3, the sister having followed her husband to Semarang and one of the brothers having returned to Java with his wife.*

In Kampung Baru, S. and his wife were able to acquire two parcels of 2 ha each, so that their eldest could later have a parcel in his own name. They also have two cows.

S. returned once to Java for twenty days in 1989, but he said of this trip: "I no longer feel at home in Java; I have neither house nor land, I just stay at my parents' place" ("tidak kerasan lagi di Jawa, tak punya rumah, tak punya tanah, hanya numpang di rumah orang tua"). *He also sent a letter once, and received a response, but has never sent money home. He is the only one from his village of origin to come to Kampung Baru, even though he has told others they could find land here.*

According to him, people are happy in Kampung Baru, and feel at home. The rare families who leave do so because they have an opportunity to acquire land elsewhere.

The poorest migrants are more likely to apt up for a government Transmigration program. *"Kekurangan,"* "there was a lack (of subsistence)," *"tidak cukup,"* "there was not enough," or *"kurang hasil,"* "the earnings were insufficient," are expressions constantly offered by spontaneous migrants to explain why they left home or a past

residence. At the time of their first departure, half of the migrants questioned in Sumatra had inherited or could expect to inherit less than 0.25 ha from their parents once the family land had been divided between each child. One fifth of the migrants are children of landless peasants *[N=67]*. The high price of land in Java [2], and also in places like Belitang [3], make owning enough land impossible for those without capital or a sizeable inheritance. That is why migrants often give the following reasons for leaving their homes: *"kesempitan di sana,"* "it was too crowded there," or *"cari tanah luas,"* "I wanted a large piece of land."

It is understandable under these conditions that landless or land-poor peasants need to find additional farm work for themselves and possibly for their children in order to make ends meet. Most migrants work as agricultural workers *(buruh tani)* before their departure, in a permanent or intermittent manner. Besides the problem of land, and low agricultural wages [4], the limited opportunities for day work *(harian)*, the season of economic difficulty (before the harvest, *musim paceklik)* and a slow season for employment *(musim penganggur)*, are all determining factors in the decision to migrate.

For those who first plan a temporary migration, they generally choose to leave during these periods of unemployment and economic difficulty to look for work, by the day, by contract or by the job in the regions of Sumatra that are still in need of labor.

In addition to all these "normal" conditions, which peasants expect from year to year, there are the inevitable years of agricultural shortfall. Seasons when harvests are destroyed by an extended dry season, an invasion of *wereng coklat* (Brown plant-hopper), grasshoppers or rats, especially if this repeats itself several times in a row, may force peasants who in normal years would have been able to get by to undertake a migration experience.

Sudden impoverishment may also force a family to migrate. One who goes broke following an expensive and unsuccessful attempt to enter the civil service, even at a low level (village head or school guard, for example), might be forced to migrate in order to save face and retrieve a former economic level. It is also quite common for people to go broke and into debt to pay medical expenses.

Migrating in order to reimburse a debt is frequent in the villages on the north coast of Madura, though in this region fishermen generally go to Kalimantan or abroad (Malaysia, Singapore and Saudi Arabia), and poor peasants sign up for Transmigration. Surprisingly, this cause for migration, debt-reimbursement, went unmentioned in the interviews conducted with migrants in the sample areas of South Sumatra. Probably those who need to earn substantial sums of cash and have little interest in land procurement in itself are more likely to seek urban employment. International migration is costly and proper contacts are required to take part in official labor exchange programs or the often illegal contract work. An extrapolation from our sample would lead us to conclude that one type of migrant under-represented among spontaneous rural migrants is the "debt migrant," who would tend to seek solutions to his or her problems through urban or international migration.

2 . Family and personal problems

Ninety percent of the spontaneous migrants come from families having more than three children *[N=80]*, and one third of male migrants are the eldest of their siblings *[N=74]*. Taking into account that some of the second, third and later children (who are left out of this last proportion) are the eldest male children, we can detect a tendency toward the migration of eldest male children. For a more precise analysis, it would be necessary to look at the age and gender structure of a larger sample of migrant families, a task which was beyond the scope of this study.

In any event, children never migrate all together at the same time, and the parents rarely remain alone in the village of origin. The choice is almost always made by the family as a unit depending on, for example, the age and sex, marital status and physical condition of the children.

As the migration plans are formulated, three decision patterns generally emerge:

- the parents persuade one or two children to provide, through their migration, a solution to the economic difficulties the family is currently experiencing; the one who leaves will redistribute some or all of the earnings, most often to pay the school fees of a younger siblings or family medical expenses;
- the parents encourage one or two children to migrate to make their own living, as they can no longer take care of the needs of the entire family. They have no expectation of financial aid in return, and the child, usually male and either single or married, will not necessarily share the earnings with parents or siblings;
- the child or young adult leaves to escape a difficult familial or economic situation without any pressure from parents. Migrants in this situation mainly work for themselves. Sometimes they bring back part of their earnings to the family, but this is far from being the rule.

The problems of family misunderstandings linked to precarious living conditions, situations of dependence and personality clashes are sometimes mentioned as main or contributing causes of migration. If one takes into account

the understandable reticence informants have to discuss family problems with a stranger, such factors must have a greater impact than the interviews would suggest.

To run away from a step-mother, a step-father, in-laws or natural parents with whom one has been living with since marriage is a recurring motive for migration. It is hoped that the move will solve economic and personal problems in one stroke. Second and third wives sometimes talk their husband into leaving with them in order to escape from the first wives, sometimes divorcing them.

For young unmarried children who yearn to be free of their parental bonds, migration offers a solution that avoids conflicts. Moreover, although they may hesitate to do degrading manual labor for low pay *(kerja kasar)* in their community of origin, they are more likely to accept it far away. The oft-used expression *"cari pengalaman"* (literally, "to seek experience"), should thus be seen more as a short-cut explanation rather than the key motive behind their migration.

3 . Conflicts in the native community

"They made a mistake, were ashamed, and thus were forced to run away": this cause for departure is only mentioned in interviews with members of the sending area community, not by the migrants themselves. The most common incidents mentioned are stealing, adultery, and youthful indiscretions *(anak nakal)*. The guilty ones leave themselves or are driven away. Village heads often urge young delinquents to leave, and the poorest to sign up with Transmigration, reasoning that "it's better to migrate than become a thief." According to them, the wide socioeconomic disparities (less evident in Transmigration settlements) and the display of consumption goods by the privileged encourage juvenile delinquency, and absolute poverty drives people to steal. Village heads serve as intermediaries between parents and children and between co-villagers, and sometimes clinch the decision by paying the journey.

Most of those at fault stay away from the village, but some benefit from special circumstances if they return. In one village in East Java, the story of a man who fled to Sumatra with a married woman was recounted. Once a huge fortune had been made in coffee, he no longer was afraid to return to his village of origin: "since he was rich, he was no longer ashamed" *("karena kaya, tak malu lagi")*. He built a house there and would return frequently to look for workers for his plantations; his neighbors accepted him again.

4 . When spontaneous migration is preferred to Transmigration

With few exceptions, migrants choose spontaneous movement over Transmigration because only spontaneous migration (often referred to as *person)* allows them to choose the destination and moment of departure. Once in the receiving area, the migrant can reunite with friends or family, shop around for a suitable settlement, change settlements, or return to his or her place of origin without the constraints imposed by the Transmigration administration.

Choosing the right moment to leave is particularly important for those who are awaiting the profits from a harvest or from the sale of property; it is also important for those who resign themselves to migration following a series of crop failures. The moment of departure is critical when the wife is expecting, when children are too young to travel, when someone is sick, or when the departure is to be synchronized between family members or neighbors.

Spontaneous migrants also want to be able to change regions in the event a difficulty arises, freedom of movement that government-sponsored Transmigration cannot offer. Their greatest fear is that they will have to stay in an inhospitable or unproductive region. Everyone has heard reports of Transmigration failures.

No restrictions as to age or marital status exist for spontaneous migration. Administrative formalities are reduced to a minimum. The future migrant applies for a travel permit *(surat jalan)* from the village head indicating in general where he or she is heading (for South Sumatra, most village officials simply register "Sumatra"). A moving permit *(surat pindah)* will be required once the migrant has decided to settle elsewhere, most often after a month staying in the region of migration. The worker's permit *(surat buruh kerja)*, theoretically valid only three months, is commonly used as a travel and even residence document; a migrant rarely if ever returns to have it extended.

In effect, spontaneous migration offers in addition to the freedom to choose one's moment of departure, freedom of choice throughout the migratory period, whether or not it concludes with a return to the sending area or not. The choice is of course a relative one constrained by the information, contacts and capital at the migrant's disposal.

5 . Economic attraction

The regions which attract spontaneous migration are of course those which have the economic opportunities to meet the needs of the migrants. Migrants look for the following in potential migration areas:

- access to relatively fertile land at reasonable cost (if not free). This goes mainly for land which migrants themselves open (such as at Cahaya Mas, Kampung Baru, and in certain coffee-growing zones), or re-open and plant for a fairly low price (as at Sabutan and in certain coffee areas);
- the possibility of rapid or sizeable profits, as in the coffee plantations. Compared with the large plantations in East Java, for example, where daily wages are low, the small plantations acquired or opened by the migrants themselves in Sumatra still offer the possibility of relatively large and rapid profits (with a time investment of at least three years);
- the opportunity to readily obtain work on a daily basis either in the plantation or food crop areas. Factors which increase the need for agricultural laborers are the larger surfaces cultivated by local or migrant landowners, in comparison to Java, and the constant opening of new land;
- daily, monthly, yearly or piece-work salaries that are relatively high or include attractive fringe benefits (meals, housing, tobacco, medicine, clothes). In the regions of South Sumatra under study, daily wages remain at or above Rp 1250 with meals, while in Java the minimum effective wage is lower, fringe benefits are often lacking, and the security of long-term employment is difficult to come by;
- in many cases, paradoxically, an isolated area where the rarity of distractions and other occasions to spend money enables saving and the amassing of capital. This is especially true for young unmarried male migrants, who often mention the importance of resisting the temptation to spend in order to save. Geographic and social isolation is difficult to bear in the long term, especially if health problems arise. Migrants having lived many years in isolated areas (including mountain coffee plantations) in a state of social abstinence, eventually seek to reconstitute a network of social relations.

From a temporal point of view, the harvest periods in the coffee plantations and the rice-producing areas attract an influx of circular migrants. Some of them will return to the sending area after working in one neighborhood and some will continue to circulate to slightly later harvests in the region.

6 . Information, contacts and sponsorship in the area of migration

In turning his or her attention to potential zones of migration, and focusing hopes on still unknown regions, the future migrant sifts through whatever second-hand information is available, looking for what might correspond to personal needs and aspirations. This is a risky exercise because it will at least determine the conditions of the first departure.

More than three quarters of the migrants questioned *[N=136]* already had a contact in Sumatra the first time they came. Many followed their parents or an employer, others first came as part of an organized Transmigration settlement program, some had the address of another migrant they could stay with, some were called to join family already in Sumatra, and the children of migrants who migrate in turn were born in Sumatra.

Case 2

S., 25, was born in Cilacak, Central Java, the last of a family of five children. After his father died, his mother married again and had a child from the second marriage. In 1971, at the age of 6, his whole family, except one brother, followed neighbors who were leaving for Natar, Lampung Selatan. There they shared a house and in the market sold teak leaves and fish they caught in the river. S. soon got a job as an agricultural laborer hired by the day in Lampung, and later in Kotaway, hoeing the soil (nangkol). *In 1979, at the age of 14, he was hired with a brother (the third eldest) by a Javanese in the highland* dusun *of Tenam, at Talang Tebing Angin, attached to Kotaway village, to weed under the coffee trees. They were paid Rp 30,000 per weeding, and would do 4 to 6 per year. He continued to do this work for 9 years, until 1988, when he was able to buy a plot covered half with* alang-alang *and half with forest regrowth. He cleared it and planted 3000 coffee trees.*

S. married a Javanese this year who went to school up to the fourth grade (he stopped at the third grade). His mother lives with them in their house built of wood planks and shingles, with a dirt floor. It is situated at the entrance to a large talang *with about 10 houses aligned on each side of a central square used for drying coffee. Exclusively Javanese, the* talang *was opened in 1978. Now there are two televisions and three motorcycles. Unless he is chased out by the creation of a forest reserve* ("kalau tidak kena kawasan"), *S. wants to remain here.*

The brother he followed to Kotaway, now 35, is back to live again in the talang. *In 1971, at the age of 16, he and three friends followed a Sundanese with a plantation in Gunung Raya who was looking for workers in Lampung. He remained in Gunung Raya until 1976 working annual or piecework contracts, then returned to Lampung to help his parents for two years. There he married a Javanese, now 27. In 1978, he returned to Gunung Raya for six more months of work paid as per contract. In 1979, he learned that there was "a new clearing of forest here," and "moved in"* ("bukaan baru di sini, masuk"). *His wife arrived and they opened 2 ha for a fee of only Rp 3000* (pancong alas) *paid to the head of the hamlet at the time. With only 25 families in the area, his wife "did not feel at home"* ("tidak kerasan"), *so*

in 1981 they sold everything for Rp 60,000 and returned to Lampung to work the parent's land. They had their first three children there. In 1987, they returned to Kotaway once again, buying 2 ha of land covered with alang-alang *for Rp 150,000, and built a house in the* talang. *Now they have four children with them, aged 5, 4, and 3 years and one aged 18 months. With all these young children, he is unable to care for the whole 2 ha himself; only one is planted with coffee, the other remains to be cleared. As for health problems, he says "here everyone gets malaria"* ("di sini, biasa, sakit malaria").

S.'s eldest brother, 43, just spent ten days in the talang *and on the day of the interview was on his way back to Lampung Selatan. He has 0.25 ha and a house, with land ownership papers. He plants beans and rice, and rents a 1 ha plot for Rp 50,000 on which he plants maize and beans. He went up to the first year of advanced secondary school (SMA1) in Java, before the departure of the family to Lampung. His wife, a Javanese of 42 years of age, has never been to school. They have eight children, all in Lampung except the eldest, 20 and married, who came to Talang Tebing Angin in 1984 and bought a 3000-tree plantation. To fill in his meager agricultural gains, the brother also works in a* gaplek *(dried cassava) and coffee factory in the city of Bandar Lampung. He works there about 10 nights a month, from 4 p.m. to 4 a.m., with two one-hour breaks. He makes about Rp 3000 a night, on a piecework rate. At the present time, he is in debt 25 kg of rice. He borrowed the rice to feed his family after having spent all their savings for his wife's last delivery three months ago. Between the Puskesmas health clinic (Rp 25,000) and the midwife, the birth cost them Rp 70,000. He has no wish to settle in Kotaway because there is no school or other services. He might come by himself to increase his earnings, but for the children, "it's no good." The primary school is a two hour walk, and he already has six children of school-age. For the market and medical clinic, it is necessary to go to Talang Karet, because a nurse passes only once a month in their area. He admits that he has no plan for the future. He leaves the* talang *perched atop a 100 kilo sack of coffee. None of these three brothers has ever returned to Java.*

Only two out of 136 migrants questioned clearly stated that they arrived alone and had no address; among the one fourth remaining who provided imprecise responses, it is likely that most, if not all, had an address before their departure.

One key to migration success, recognized by migrants themselves, lies in disposing of information at the right time. A main activity and concern of migrants, before the departure and during the migration period, is the search for information on the possibilities for employment and access to land, and on the agricultural, climatic, and demographic conditions in the new regions.

This sheds light on two aspects of spontaneous migration. First of all, though they go far from their village of origin, sometimes opening or settling new lands, migrants are hardly adventurers or wanderers. Secondly, the role of contacts established prior to departure to a large degree determine the routes that are taken.

Those with migration experience have important influence, both voluntary and involuntary, on others from their community of origin. Whether they return to their village or not, their success or failure will encourage or discourage migration. This holds true both for spontaneous migration as well as for Transmigration.

Yet, those remaining in the village of origin have more knowledge of the successful migrations, simply because successful migrants return home more regularly and in a more visible manner to reinvest in the village or help their family. The failures and limited successes of the majority of migrants is less well known to those who remain, since these migrants often have no desire to return, or at least they wait until they have something better to show for their experience.

Despite this uncertainty that often exists concerning the situation of those who have left, the name and first destination of the migrants serve as a compass for future candidates. Even without having a precise address, they know that fellow villagers or people from neighboring villages went to a certain region, and they have an idea concerning the land available to settle and farm. Having an address, however, does not mean that the migrant automatically makes a transit at the home of his or her predecessor in the new territory, since other opportunities and information which can influence the migration may be obtained along the road.

Many of those questioned said they were reluctant to have others follow them to Sumatra or even to accept a relative or friend at their home, out of fear that they would be held responsible for any difficulty that might arise. Failure to write or return home is often justified by such worries or by the fear of being asked to move back home *(takut disuruh pulang)* to help the family in difficulty. This behavior is more frequent among spontaneous migrants than among transmigrants. The latter seem more inclined to encourage other members of their family to settle the Transmigration reserve land *(tanah R)* or take over lots from transmigrants who leave.

Even if they are living in a precarious manner, family or friends living in the migration area are expected to provide at least free housing while the arriving migrant begins to look for a first job. Meals are offered without compensation for several days to several weeks or more. Basically, the most important service is putting the new migrant in contact with potential employers, landowners, local formal and informal leaders contacts which will increase chances of gaining access to steady employment, or even better, to land.

New migrants who arrive without capital borrow from those who arrived before them, seek day wages to get started, and then longer-term sharecropping, annual or piecework engagements.

Local and regional authorities as well as migrants often play an important role in stimulating spontaneous

immigration. They do so either through the voluntary search for inhabitants or for manpower, corresponding to the migrant's quest for land and employment. Those who initiate such movements of several migrants at a time are called *sponsor* in Indonesian, irrespective of their status (as a private individual, neighborhood leader or village head) and the scope of their action.

A search for inhabitants is undertaken to populate an existing village or a new settlement. Numerous heads of sparsely-populated villages are currently aiming to reach the mark of 250 or 500 households to qualify for future village development allowances to be attributed to "bona-fide" villages. For this, new residents are sought in Lampung and Java. Pedataran is one such predominantly Sumatran village that has been trying to attract settlers since the early 1980s.

In the case of a new settlement, the recruitment is organized by the small group that undertakes the land clearing and the future village chief plays a decisive role. The residents return to Java to look for followers in their own villages of origin. They also go to regions of potential emigration (areas having recently experienced natural catastrophe or ruined harvests or areas where land access is virtually impossible). In Kampung Baru, the news of a landslide in Blitar sent the village chief there to recruit new residents. This voluntary search ends once the operation has been accomplished and enough households have moved to the new settlement. Migrants continue to arrive spontaneously, as word of the new settlement area gets around.

Sometimes the desire to increase population and the collective search for land coincide, as when one village head contacts another concerning the possibilities of relocation. In 1988, a village head from Lampung Tengah met the Kampung Baru leader in an effort to find land for twenty Javanese families expelled from land marked for a forest reserve. Similar contacts have been noted between village leaders of the Lampung regions recently closed for reforestation and village heads in Muaradua Kisam sub-district. This process might best be labeled "spontaneous translocation," an unofficial variant of the government *Translok* relocation scheme.

The search for manpower is carried out mainly by large landowners for the development and maintenance of their own and sometimes neighbors' lands. In the regions studied, they are usually local Sumatrans or migrants who have been in Sumatra for many years and have acquired vast coffee plantations. They look for workers in neighboring regions or directly in Java. Those in Pengandonan or Muaradua might look for anywhere from two or three persons to a few dozen in, respectively, Pulau Panggung and Semendo or Belitang and Lampung. The workers are offered an annual contract or piecework and set up their homesteads at or near the first job. The search for workers rarely continues several years in a row; the returning migrants transmit information on the possibilities of work and the landowners can count on spontaneous arrivals or returnees from one year to the next.

Notes to chapter 1

(1) Faktor ekonomi *is a term used by the migrants themselves.*

(2) Java is often used here as shorthand for Inner Indonesia or the principal sending islands of Java, Madura, Bali and Lombok.

(3) Belitang, located in South Sumatra Province, has been one of the main sending areas in Sumatra developed for organized migration programs since the colonial era.

(4) Agricultural wages in Java are usually below Rp 2000/day without meals. Some plantations and factories in East Java pay their workers as low as Rp 750/day without meals. In 1990, 1 US$ was worth about Rp 1900.

Chapter 2

Migrant trajectories

Through examining the correlations between migrants, their trajectories and their goals, we can attempt to identify certain types of spontaneous migration. Although it seems clear that almost all migrants share a common goal—the search for capital that will guarantee long-term security for a family—this goal is insufficient to explain the diversity of migrant trajectories. Furthermore, the relationship between migration stages and migrant types is a loose one; various combinations between these two variables are found. Under these conditions, the multifarious and changing nature of spontaneous migrations can best be analyzed through the identification of, on the one hand, migrant types (Table 16) and on the other, migration pathways.

Table 16. MIGRANT TYPES
TYPES DE MIGRANTS

1. Second-generation migrants
2. Unmarried male migrants
3. Migrants as part of families, including:

- Household heads
- Young couples
- Incomplete nuclear families
- Complete nuclear families

1. Migrant types

Based on interviews carried out in this study, 68% of spontaneous migrant families have been through a family migration experience, whether it be through Transmigration or spontaneous *[N=127]*. If they were born in Java, they often followed their parents in Transmigration or spontaneous migration to Sumatra, and began their own movement in Sumatra while still a bachelor or once married. Others were born in Sumatra from migrant parents *(kolonisasi*, general Transmigration, or spontaneous), who in some cases have returned to Java since. If they were children of sedentary parents, they quite often had a migrant relative with whom they could stay at first (uncle, aunt, grandparents or step-parents, for example). Born in Sumatra or in Inner Indonesia, many of these "spontaneous" migrants belong to second and third generations of migrants.

The spontaneous migration of young unmarried males *(bujang)* may be temporary, circular, repeated, and sometimes permanent. Based on the interviews conducted for this study, more than half of the male migrants are unmarried when they first leave their village of origin *[N=87]*. Similarly, three fourths of the male migrants are under 30 years of age when they first leave their village, and half of these are under 20 (all unmarried).

Young bachelor migrants are often called on to occupy a special role in rural spontaneous migration, that of agricultural workers hired on a yearly *(tahunan)* or sometimes monthly *(bulanan)* basis. These types of constraining engagements are seldom sought by married men or families. Bachelors also take advantages of other oppor-

tunities such as working day by day *(harian)*, a piecework contract *(borongan)*, or a sharecropping arrangement *(paroan)*.

These unmarried males almost always depart with just enough money for the trip to Sumatra *(ongkos jalan pas)*, without any capital. Their family, in Java or Sumatra, sometimes helps with the transportation cost.

The first migration often is undertaken before the age of 15, especially if an older brother or neighbor is leading, or if the youngster has the address of family to stay with. Young bachelors usually leave in a group of two, three or four, led by one who has been to the region before. These small groups often split up at one stage or another depending on the fortunes of each. Some continue to work in Sumatra, often after changing jobs; others are unhappy *(tidak kerasan)* in the new environment and return with their first earnings which they tend to redistribute immediately among other family members or invest in livestock, a machine or a small parcel of land.

Many *bujang* work in the coffee plantations during the picking season, and some remain year-round to maintain the plantations belonging to locals or migrants. One frequently finds an elder brother working a yearly contract who calls one or more younger brothers to come for the harvest. The two to four youths will share the rudimentary shelter in the middle of the plantation occupied the rest of the year by the elder; alternatively, in the case of Javanese (or Balinese or Madurese) owners living on their own plantation, the young workers are all grouped together in the owner's house. During the high season, the young migrants voice enthusiastically the phrase *ramai sekarang* ("it's animated now"), in cheerful contrast to their picture of the atmosphere that reigns the rest of the year, one in which the isolation is oppressive, far from family, friends and the towns.

Bachelors seem to have more difficulties in their migration than married men. They readily admit that they "miss their parents" *("rindu orang tua")*, and that they have a long migration road behind them, that they "have suffered a lot" *("banyak menderita")*. Clearly, broken contracts (landowners appear to be less scrupulous with young workers), overwork, sickness (especially malaria attacks), isolation and poverty can make the migration experience a trying one.

Case 3

S., 20 and unmarried, was born in Madiun, East Java. His parents have two rice fields, totalling 0.5 ha. He arrived a month before the interview (June 1990), from Lubuk Linggan, Musi Ulu Rawas district. This was the third time he had come to **Danau Jaya** *as a seasonal worker* (musiman). *His elder brother came before him and indicated the way. Usually, he goes from one coffee or rubber plantation to another between Bengkulu Province (Suhayan, Curup, Pagar Dewa), Kota Lubuk Linggan and Danau Jaya. Once he went home to Java for a year, worked in construction, and then left again for a year of migrant work in Sumatra. He wants to return to Java next year for good with his earnings. From the work he has done in Sumatra, he has been able to buy a* sawah *plot (irrigated rice field) measuring 8 x 20 meters and two buffaloes.*

Those who are determined to avoid returning home pursue their goal with willpower and endurance. Some are able to work steadily one piecework job after another and make out better financially and psychologically since they retain more liberty of movement and decision than those who work a yearly contact for one boss. Numerous are the *bujang* who circulate for years between coffee and rubber plantations and food crop areas before deciding to return to Java or look for land in Sumatra [Cases 3 and 20]. Some try their luck in the factories or the informal sector in Jakarta or elsewhere. Unable to save and build capital, they decide to go farther west, to Sumatra [Cases 4 and 22].

Case 4

S., 23, is unmarried. He was born in Cilandak, Central Java, the fifth of six children. His parents have one bau *(0.8 ha) of rice field in their village. He finished primary school, but was unable to continue to secondary school for lack of means (one of his brothers was able to continue). At 16 (in 1983), he decided to leave the family circle to "find friends and a future"* ("ingin mencari kawan-kawan, masa depan"). *He left for Jakarta with Rp 20,000 in his pocket, Rp 7000 of which remained after bus fare. He sought work for a few days before finding a construction job; on the average, he says it takes about one week to find a job in Jakarta. His salary was then Rp 1500 per day without meals. At that time, a plate of rice, vegetables and fermented soybean cakes* (tempé) *cost Rp 200, leaving him with Rp 900 a day. He would sleep at the work site. In time, he found that he could put nothing away once deductions were made for cigarettes and an occasional movie. He did construction work for several periods of time lasting from one to five months. He also worked in a shop, sold bread door to door and worked as a porter* (kuli). *He would sometimes go a month without work.*

When asked if he was afraid to migrate alone to Jakarta without any address, to a city reputed to be "crueller than a mother-in-law," he replied laughingly that he "was forced not to be afraid" ("terpaksa tak takut"). *For five years he worked in this informal manner in Jakarta, returning to the* kampung *(neighborhood of origin) whenever he was homesick for his parents, sometimes bringing them a little money, sometimes not.*

After five years of battling with life in Jakarta, he finally came to the realization that he was unable to make a living and build up any capital. He decided he was ready for a change. Returning to his kampung, *he met the son of the leader of* **Danau Jaya**, *who was a neighbor in his village of origin. Sure that he would have an opportunity to work, he "entered Sumatra"* ("masuk Sumatra") *in May, 1990, paying his own way. He was hired by the neighborhood head for a year, but they have yet to discuss the conditions* ("belum ada janjian, cari consensus"). *He will be paid only at the end of the contract. If he is unhappy after five months, he can leave. During the harvest season, the house of the neighborhood head is full of young unmarried men on short- or long- term contracts and housed under his roof, but in a few months it will be calm again. Is he happy here? "We have*

to like it here" ("terpaksa kerasan di sini"), *adding "I miss my friends"* ("rindu kawan-kawan").

All his brothers and sisters are already married. One of his elder brothers left for Transmigration in Jambi, but S. has no plans yet to go through Transmigration or acquire land in Sumatra. The family lands remain to be divided among the children.

Few hazard to project long range plans into the future: "it's too far away" *("terlalu jauh")*, they say. Most hope to be able to make their home near family in Java (perhaps Lampung or Belitang if they were born there) with the capital they raise. If, however, the possibilities of obtaining land are better in Sumatra, they will return home for short trips or to marry before returning to Sumatra to settle down. A few end up marrying the daughter of a local landowner, thus gaining access to coveted land [Case 5].

Case 5

Born in Blitar, East Java, S., 32, is the eldest of seven children. His parents have 0.5 ha of sawah *and 0.5 ha of dry land. He left Java at the age of 21 because it was too "crowded"* ("padat") *and because he wanted to "obtain experience"* ("cari pengalaman"). *He left for Sumatra in 1979, arriving with Rp 50,000 in his pocket. He first stayed a month with family in Belitang who had 3 ha of* sawah. *But the rice harvest provided meager earnings, so he decided to go to Pengandonan to work in the coffee plantations. He found work there as a laborer for Rp 1000 per day with meals. When he arrived in* **Sukorejo** *in 1979, there was only one other Javanese (from Central Java), who had arrived in 1964 and married a local woman. "In time, those who work as laborers want to marry"* ("lama-lama yang ikuti upah, mau kawin dengan perempuan"), *as he says, and in November, 1980, he married one of the daughters of his boss. In effect, his boss had been looking for a Javanese son-in-law because they are reputed to be strong and hard-working: it is said that they can carry 50 kg of coffee to the local's 30 kg. The girl's family only asked S. to pay Rp 10,000 for the bride price. His wife is 29 and was educated up to the fourth year of primary school. They now have four children, aged 8, 6, 4 and 2. The two eldest go to school in Pedataran.*

He acquired his coffee plantations in the following manner. His wife brought them 3000 trees through her inheritance; it was the same plantation he had rehabilitated in 1979 when still an unmarried worker. The trees were seven years of age and the plantation had virtually returned to forest. With the earnings from three years of harvests from this plantation, he bought 3500 trees (1 year old) for Rp 300,000 in 1982. This coffee is now nine years of age, and the plantation is sharecropped out. With the earnings from the harvest of the second plantation, he bought another 3500 trees (2 years old) for Rp 400,000, in 1985. This plantation is sharecropped by his third brother. At present, his entire 10,000-tree holding procures him three tons of coffee per year. He has just built a house along the road which cost a total of Rp 700,000. The other house, amid his plantation, was in poor shape. He also possesses a coffee huller and a four-wheel-drive Toyota Landcruiser.

His youngest brother has been here for six years, the next oldest for three years, and a sister with her Javanese husband for two years; "they no longer want to go home" ("tak mau pulang lagi"), *he says. The three other siblings remain with the parents in Java.*

S. returns every year to Java, following the coffee harvest, for ten days. When he goes home, he quickly sees his parents and friends, so anxious is he to return to Sumatra: "I think of the work there is to do here and I worry [the plantation] here might get ruined [overgrown]" ("ingat kerja di sini, takut rusak di sini"). *Concerning his migration and his success, he declared with a smile: "I couldn't become a normal civil servant, so I became a plantation civil servant"* ("tak bisa jadi pegawai, jadi pegawai kebun").

The dominant impression is one of a group which strives to improve an initially unfavorable economic condition so that as adults they can escape the poverty of their parents, and if possible allow younger siblings to benefit from their success.

It is often said in the sending area villages of East Java that there are more families than young single men who migrate spontaneously. This is explained by the perception that a family can obtain more income by working together. Many parents are unwilling to allow their young children to migrate alone since they will then relinquish control over their income and expenditures.

Other reasons are also mentioned by the migrants themselves, for example: the requirements of enough labor to carry out rapid agricultural work at the opportune moment; the necessity in coffee plantations of having enough help available to harvest under the best conditions, leaving a member of the family to watch over the beans drying in the sun, rake them regularly and protect them from rain; the possibility for a married man to devote himself to strictly productive work if his wife is there to assume household chores, such as cooking and washing, and help with part of the productive work; and the importance of having family who can be counted on if they fall ill or need support.

In fact, based on data collected from 222 migrant households (bachelors, complete and incomplete nuclear families), only one fourth are composed of one man, single or married; the remaining three quarters are composed of couples with or without children. As would be expected, it is in the coffee-producing zones where one finds a few more men by themselves (a little more than one third of the households *[N=67]*), than in the food crop areas (a little less than a fourth of the households *[N=155]*). True, the migration of young single men is a dominant phenomenon for the first migration, both in the food crop and in the coffee areas. Taking into account that this sample group includes migrants on their first migratory trip as well as those who are repeat or long-term migrants, there is a strong tendency, once the first migratory stage has been accomplished, for all or a part of the family to be reunited

in the new area. This results in more than three quarters of the long-term migrant households being composed of a couple with or without children.

Family migration is obviously more difficult to manage than bachelor migration. For this reason, families rarely leave together for the first time (less than 10% of the cases studied *[N=87])* [Case 1]. Most often, the wife and children arrive after the family head, who comes earlier to prospect or verify the possibilities in the receiving area, and prepare for the move if it seems prudent [Case 6].

Case 6

A., 39, a Balinese from Bangli, is married with three children. He has six brothers and sisters still in Bali and his wife five. A. attended school up to the fifth year of primary school, his wife up to sixth grade. In Bali, they were landless but had three cows of their own. He had been working in the coffee plantations in the hills near Singaraja since 1973 on an annual contract paying a mere 25 kg of coffee for weeding 1 ha three times a year. He built his home with an alang-alang (Imperata cylindrica) *roof there and lived with his wife and children. In 1989, he followed his brother-in-law to* ***Cahaya Mas*** *for 24 days to have a look at the situation. His brother-in-law, once a plantation worker in Singaraja himself, had already been in nearby Nusa Bali for 13 years, and had just moved to the new Cahaya Mas site with seven Balinese families.*

Upon his return to Bali, A. spoke to his wife, sold his three cows for Rp 1 million, and left with other Balinese families. Each family paid Rp 100,000 for the trip by a specially chartered minibus. Once they arrived in Cahaya Mas, they got to work clearing the alang-alang *and planting with the help of draft cattle.*

To this day, he retains his house in Bangli, now inhabited by his elder brother. He was unwilling to sign up for Transmigration because he wanted to choose his own destination. Many transmigrants he knows of returned to their village of origin because they loathed day to day life in the pasang surut *tidal swamp areas of South Sumatra. He returned last year to Bali for a temple ceremony* (upacara lancong pura), *and plans to return next year for the same reason.*

Rp 150,000 has already been paid toward his 2 ha lot. He also rents land from the village for Rp 10,000 per year, and owns a cow. For shopping, he goes to Nusa Bakti or Nusa Tenggara and for the health clinic to Nusa Bakti, at four hours on foot or 1.5 hours on bicycle. Here, he says, "one is sure to get sick, to come down with a fever, and right away with malaria" ("pasti sakit, pasti kena panas dingin, langsung malaria"). *For injections, he prefers to go to a "genuine" doctor in Gumawang, the main town of the neighboring sub-district of Belitang, because he feels one gets well quicker by seeing a private doctor.*

In this way, a family changes its configuration and geographic dispersion as it migrates. The organization of such families is changing and often complicated because it follows the growth and evolution of the family, the growth of the children and the migration of the eldest children. Now we may turn to a discussion of the most commonly-found migration patterns.

Married men most often begin their migration while they are still single. They migrate in a temporary, circular or repeated manner, frequently with the aim of eventually bringing their family. While working temporarily, they prospect the possibilities of gaining access to land.

If the land is overgrown, or still secondary or primary forest, the father first clears the land, plants, and builds a rudimentary shelter before fetching his wife and children [Case 7].

Case 7

T., 35, comes from Blitar, East Java. His parents have 0.25 ha of dry land and a house. He is the second of seven children (the youngest is 25 years old). His father remarried and had a child with his second wife. T.'s entire family, save for one brother, is in Blitar.

T. got married in 1982, and has three children aged 6, 3 and 2. His wife, 30, has a 10-year old child from a first marriage. She is an only child; her parents are still in Blitar where they have 0.75 ha of coffee. In Java, T. and his wife stayed with her parents, since they had no land or home of their own. T. worked as a day laborer in the rice fields.

In 1989, T. decided to follow the child of a neighbor who was moving to ***Kampung Baru****. He left home with three other men. In the first four months in Sumatra, they cleared their land, planted cassava and built their houses. All that was left was to bring their families* ("tinggal masuk"). *In this way, ten families in all came directly from Blitar.*

He has a 2 ha plot (0.5 ha of house lot and garden and 1.5 ha of dry land), for which he has already paid Rp 100,000, or about half the price. He has already brought the garden and 1 ha of the field under cultivation.

He may or may not await the first harvest before doing so. He might also make a quick trip to his village of origin to sell some of his assets (rarely all of them) if his earnings as a migrant are insufficient for the acquisition of new land. This occurs in both the food crop areas (such as Cahaya Mas and Kampung Baru) and the coffee plantations [Case 18]. It must be noted that if the installation of a family is envisaged, most family heads orient their search toward the food crop areas to avoid the difficulties associated with life in the isolated plantations.

A father may leave alone, in a group with other adult men, or with one of his sons before deciding to bring his entire family along [Case 19]. If this is an initial migration experience, the father will invariably depart without capital, only the basic transportation fare in pocket, and will work in the receiving area for day wages, as a sharecropper or for piecework jobs.

Some family heads migrate only to increase their family budget, especially during the slack season in the sending area, without any intention of having their family follow. They return periodically to their village of origin with their earnings.

Still others, once they have acquired land, notably in the form of a coffee plantation, take a second wife who can

help them, and start a second family; part of the earnings thus obtained is generally redistributed to the first family [Case 23].

The migration of young couples is found in all regions of spontaneous migration, often as a follow-up stage to a preliminary migration by the man to the same region prior to his marriage [Case 2]. The difficulties of educating children in the coffee areas can be put off at the beginning, but the cold and humid climate, the malaria, and deficient nutrition are felt right away and often incite these couple to move elsewhere [Case 15]. It also happens that the young mothers depart from the area with the children, and return only on a seasonal basis to help the husband at harvests, leaving the children with family in the village of origin.

The problems of education and health result in many parents migrating without some or all of their children. School-age children are left with their grandparents, uncles or aunts wherever they may be, in Java, Lampung or Belitang, in the regions of Transmigration, *kolonisasi* or spontaneous settlement [Case 8].

Case 8

In the absence of her husband, S. gave the story of their migration and settlement. She was born in 1955 in Madiun, East Java. In 1970, she married H., 45, from her same neighborhood, and they had two children. She is the youngest of six. Her five brothers and sisters are in Madiun, all married, farmers and owners of their land. Her parents still own and cultivate 1 ha of sawah *and 0.5 ha of dry land. The rice field will be divided one day among the six children, giving 0.2 ha for each.*

Her husband is the last of three children. His parents have 0.5 ha of sawah *and 0.5 ha of dry land which will be divided in three. The two eldest are married and live near their parents. S. and her husband themselves bought 0.8 ha of* sawah *and 0.25 ha of dry land in Java. Their two children were born in 1972 and 1976.*

On August 10, 1977, they left for a year and a half in Belitang, at BK10-Gumawang. They had family there and wanted to increase their income. They bought right away 2 ha of dry land and 0.25 of garden with a house for Rp 250,000, and still had Rp 350,000 left over. They rented out their rice field in Java for that year and a half for a total of Rp 400,000. In 1979, S. returned to Java for two months and sold the land and house. Returning to Belitang with the Rp 2 million proceeds from the sale, they built a house, and bought two cows and a motorcycle. But their field in Belitang was barren. After two or three harvests, it produced hardly anything. Worrying about how they were going to find the money to educate their children, the father started looking for work on the side. Beginning in 1979, he would go to the coffee plantations for a month, three or four times a year. S. stayed with the children in Belitang.

At that time, two locals from Pengandonan came to look for workers in Belitang and hired eight men. From then on, he could return whenever he wanted or send others. In 1986, S. and her husband decided to move together to Sukorejo because their earnings were too low in Belitang. They still have their house, their garden and their land, which they have taken care of by a Javanese. In their house, they leave their two children alone (the eldest is 14). One of the two parents returns every month to see them. The youngest is in his second year of junior high school (SMP2). The eldest girl has just finished secondary school and wants to go on to college at IKIP in Surabaya to study mathematics and physics. Her father is going to accompany her this week (June 1990). S. has a nephew who teaches at IKIP Surabaya. As for the parents education, S. went up to the third year of secondary school and her husband finished primary school.

The first year in Sukorejo, S. and her husband sharecropped 2500 coffee trees. Since 1987, they have been sharing 4250 trees belonging to a local trader. The harvest is shared in half, but they receive neither meals nor rice. The small house on stilts they live in was already built when they arrived. It has bamboo walls, plank floors and a corrugated iron roof.

To increase their earnings, S. and her husband work about a week every month as day laborers. They have never been sick from malaria here, but S. has been undergoing treatment for hypertension at the Pengandonan health clinic. Wild pig eat everything, including vegetables, pineapple, and papaya, making it impossible to plant anything but coffee. Upon their arrival in Belitang, there were still wild pig, but they have completely disappeared now. Since their house is located near the market, the family can eat fruits and vegetables, which they must forego in Sukorejo. With her hypertension, S. cannot eat meat, but her family hardly eats any either (at most, they eat chicken four times a year). S. sometimes plays volley-ball or the flat rebbana *drum in a women's musical group, when her husband allows her to. Neither of them has been to Baturaja, except in transit to and from Belitang.*

Their desire is to plant rubber on their land in Belitang. They are waiting to see how the planned irrigation program in that zone of Belitang will be carried out. The education of their two children is their primary concern.

Between once a month (for children left elsewhere in Sumatra) and once a year (for those left in Java), the parents shuttle between their children and their place of residence. This allows them to leave to look for land or work in regions offering higher earnings but inadequate infrastructures and environment for "normal" family life, as defined by the migrants (lack of schools, roads, health centers, and presence of endemic malaria, for example). Sometimes one child will follow the parents.

This family configuration is also adopted by parents who leave their children on land acquired through spontaneous migration, or on their Transmigration parcel, and leave to seek other land or employment to increase earnings otherwise insufficient for the entire family.

Efforts are made to retain contacts with the village of origin and avoid liquidating all assets to pay for the migration. A family member occupies the house or rents it out, and land that is retained is sharecropped out, rented or left to be cultivated by family. Quite often, however, livestock, motorcycles, bicycles, or farm machinery are sold to put together the capital necessary for acquiring a new plot of land.

This concern with retaining a link with the village of origin is due mainly to the uncertainty of success in the receiving area and also to the possibility that the children will eventually want to return. Families liquidate all their assets for the new investment if they feel that their migration is irreversible for the parents as well as the children owing to the acquisition of land that is clearly superior (in size or quality) to what they had before. This behavior is more frequently encountered when the investment is made in land suitable for food crops rather than for higher-risk coffee-growing.

As can be seen by the large proportion of couples and migrant families, migration can scarcely be understood as a strictly masculine experience, though women experience it in different ways than do men. Though this question necessitates more study, it is clear that women play a fundamental role. Although the husband almost always determines the migration destination, the wife determines the migration viability and duration. In effect, because of the division of labor within the family, whereas men find a relatively more attractive situation in the receiving area with regard to land access and employment opportunities, women must adapt to an environment generally quite unfavorable for the sorts of chores under their responsibility, with problems for water, nutrition, shopping, child education, health and transportation. Within the couple, it is common to note differences of opinion on the migration experience. The husband appears more optimistic as to the results obtained; the wife expresses more criticism of her new environment and more often desires to return to a previous home, in the village of origin or an earlier migration area.

2 . Migration pathways

The material conditions of departure are similar from one case to the next. Material aid available to migrants at their departure is virtually nonexistent, except for young males leaving alone. Their parents or certain village chiefs in Java pay for their transportation. Private organizations *(yayasan)* have also been cited as possible donors but few migrants seem to have been aided by them. Sponsors only sometimes pay the travel costs of the migrants they bring.

The trips to the migration area are always made by the least costly method, almost always by bus. Here are some examples of bus fares (mid-1990) per person, per trip:

- Martapura - Jakarta - Malang (East Java): more than Rp 30.000, 2 days and 2 nights.
- Bali - Cahaya Mas: Rp 35.000, 2 days and 2 nights.
- Cahaya Mas - Banyuwangi (East Java): Rp 35.000.
- Muaradua - Ponorogo (East Java): Rp 22.000, 2 days and 3 nights.
- Sukorejo - Sukoarjo (Central Java): Rp 20.000.

Numerous routes are taken by migrants (80 different routes were found out of 136 migration histories analyzed). Their variety reflects a correlation of many variables within each life history and the networks used throughout the migration. For this reason, the pathways presented below can only offer general tendencies.

Direct spontaneous trajectories, migration directly from the place of origin to the site where the migrant was interviewed, account for one third of the pathways studied if departures from Sumatra are taken into account (such as a departure from a Transmigration site or from a place of birth in Sumatra), and only one sixth of the routes taken from Java or Bali to Sumatra.

When a migrant arrives at the final spontaneous migration site without passing through an intermediate stage, he or she almost always knows the destination before leaving, joins a family member, friend or neighbor, or leaves with someone who already knows the site such as a migrant who has acquired land or worked there before, or a sponsor [Case 21]. Direct migrants are usually young bachelors or married men who leave their wives and children in the village of origin, rarely entire families [Cases 6 and 23].

The importance of intermediate stages within individual migration histories has been recognized in the literature (Conway, 1980). Within the same sample group of migration trajectories above, aside from one third that are direct, 40% include an intermediate stop between the village of origin and the site where the migrant was interviewed, and the remaining 30% include at least two

intermediate stops (without counting returns to the village of origin).

Out of all the migration histories collected, half mention stops in Belitang or Lampung before continuing to other sites. This ratio underlines the importance of a parental or an acquaintance network to spontaneous migrants and is related to the familial migration background mentioned earlier. When there is only a single intermediate stop, it is more than half of the time in Belitang or Lampung [Cases 8, 14 and 17]. One remembers relatives who left many years earlier with a *kolonisasi* or Transmigration scheme, or by spontaneous migration. An uncle, aunt, grand-uncle or grandparent may provide valuable material and moral support and their home may serve as a base for gathering information and planning the next steps in the migration.

Many Javanese are also living in the region of Muaradua following their participation in various construction projects (the NRC road project in 1968 and the construction of various governmental buildings in Baturaja and Batumarta, for example). The men first came alone, then remained to add to their earnings and eventually settled down in the region before bringing their families from Java or founding a family in Sumatra. Others, dissatisfied with the Transmigration sites in Mesuji, Lampung or the Pasang Surut tidal swamp area, migrated spontaneously in search of more fertile land or a more healthy environment [Cases 9 and 11].

Migrants coming from Lampung without having passed through the Transmigration or Translocation zones seek more fertile or less expensive land, or flee cultivated areas that have been declared protected and off-limits. They are looking in South Sumatra for land which they can cultivate without fear of being expelled [Cases 10, 16 and 24].

Case 9

K., 47, is a Balinese from Singaraja. He came with Transmigration to Nusa Bali in 1963 following the eruption of Gunung Agung. His wife also hails from Singaraja. K. finished primary school, and his wife went up to fifth grade. They have seven children, the youngest in the fifth grade. To pay for their education, they sold 1.5 ha of their 2 ha originally given by Transmigration. They had to look for land outside of Nusa Bali because for two years in a row their field was devastated by rats that ate everything, including the rice and corn on the stalks. They could no longer survive, even working as farm laborers on the side. Even if there were no pest problems, yields were scanty without fertilizers.

A younger sister of the wife came to work seasonally in ***Kampung Baru*** *before moving there for good four years ago. It was she who told K. and his wife about the availability of land in Kampung Baru. They were the first to arrive in Neighborhood 8, in 1989. Everything was covered with* alang-alang, *and some trees. They acquired 2 ha, payable by installments. The land and land-ownership papers* (sertifikat) *cost Rp 275,000. They have just opened a* warung, *with plank walls, a dirt floor and an* alang-alang *roof. Three of their children are still with the eldest daughter who, married, lives in their house in Nusa Bali and tends their land. One son followed them here, another son works in Bogor, West Java, and another daughter is married.*

Case 10

W., 29, was born in Bali of a Balinese father and Javanese mother. He is the eldest of five children. His parents, landless, went to Lampung in 1962, leaving him in Bali with his paternal grandmother. At the age of 14, in 1979, he went to Talang Padang, Lampung, to work in the coffee plantations. He had "the soul to migrate" ("jiwa merantau"), *he said. Returning, he had an argument with his mother, so he asked the neighborhood head to find him work. He signed up for an annual contract sawing wood for Rp 170,000. He went to Bengkulu for eight months in 1981-82, but unsatisfied with the work he looked around for something else. In 1983, he was in Sekaca, Bukit Kemuning, where he planted potatoes and cabbage, as a sharecropper.*

From there, he went directly to ***Danau Jaya*** *in 1985, a year when the price of coffee was high and its transport down the mountain cost up to Rp 250 per kilo. Since he could drive a trail motorcycle, he became a* tukang ojek *and spent four years transporting coffee. He returned to Sekaca in 1989, bought a plantation (3000 trees) for Rp 2.6 million by selling 1.5 ha he had acquired in Lampung. But by the end of the year, the zone was closed to settlers* (kawasan). *He lost everything. Returning to Danau Jaya, he went back to driving motorcycles, giving half of his earnings to the owner of the bike. He has bought nothing yet in Danau Jaya. His house is on land belonging to the hamlet* (tanah talangan). *He preferred to build his house in the hills rather than below in Talang Karet, because on top during the off season one can still find work by the day. He married a Javanese in 1985. She is 19 and stays in Lampung with their child of 2. Away from Bali for the last 12 years, his family has been asking him to return home.*

He shares his house with his younger brother, who has been following him since 1983. He was born in Lampung in 1965. The younger brother also drives a 125 cc. trail bike and shares his earnings with the owner. Like his brother, he began driving motorcycles at Sekaca. He married an 18-year-old Javanese whose parents had migrated to Lampung. She stays in Lampung with their 10-month-old baby. He prefers Danau Jaya to Lampung, because here it is more peaceful ("tenang"). *He already bought a cow and a little land in Lampung, which his sister-in-law looks after.*

With their earnings since 1985, they have been able to pay for the education of their younger brothers, contributing a total of Rp 700,000 over the last three years. One is still in Lampung, the other two in Palembang.

Their long-term plans are, in order of preference, to buy land here, a move they "really want to do" ("ingin benar"), *to return home to their mothers-in-law in Lampung and open a motorcycle repair shop or another kind of store, or to buy their own motorcycles. The younger brother declared that he would go along with whatever his brother decides, but the decision will be made by consensus.*

Other step-wise migration pathways are adopted by a number of bachelors and married men without their families. Before returning to the village of origin, or acquiring land, they go from one coffee plantation to another depending on the harvest and weeding season or the opportunities available for forest clearing [Case 3]. This multiple step migration, which may proceed for several years before a return to the sending area, has become less prevalent with the falling price of coffee.

A variety of circular migration types are found at two distinct periods in the migration process:

- before the migrant has made the decision to set up a permanent home at the new site, or before he has access to land. Such migrants, bachelors or men who have left their families in the sending area, return home following each work contract or after the harvests.

- once the migrant has acquired productive land in Sumatra. He shuttles between two residences (sometimes two households), one in Sumatra and the other in his village of origin, sometimes holding on to the idea of coming back ultimately to live or retire in the latter.

The region of Belitang furnishes a large portion of the seasonal workers in the more accessible coffee plantations of the Muaradua region [Case 13] and the rice fields belonging to the locals (in Pengandonan, for example). These are almost all young unmarried men who return to their family once the coffee harvest or the work in the rice fields is completed. In the isolated highland coffee plantations, the migrants are mainly Javanese from Gunung Raya and Lampung, few from Belitang. The food crop areas such as Sabutan, Cahaya Mas or Kampung Baru hold little attraction for this sort of migrant. For the most part, the routes followed are Belitang - Muaradua - Belitang, or Java - coffee plantations - Java.

One person interviewed migrated in this manner from 1978 to 1987 between Gunung Raya and his village in Java. He would leave with a group of about ten men from his village in Java once the rice harvest was over and the slack agricultural season began, and return from Sumatra once the coffee harvest was over. When he finally acquired a coffee plantation of his own in the Kotaway highlands, he brought his wife and children. All along he has invested his earnings in Java in anticipation of returning for good one day.

In practice, migration pathways may be more diverse and complex than the types presented above, and be combined during a migrant's lifetime. The distinction between transmigrant and spontaneous migrant is difficult to apply in certain cases. For example, parents who arrived in Sumatra through Transmigration sometimes leave the allotted land to their children, and migrate in a circular fashion to pay the costs of schooling or to try to acquire other land. They might also seek to obtain land outside of the Transmigration site, or transfer ownership of their lot (*ganti-rugi*, "with compensation," outright sale of Transmigration parcels being forbidden) in order to buy better land elsewhere. This happens in the event the family goes bankrupt in Transmigration, or if they judge the Transmigration land insufficient to provide a future for their children.

Case 11

B., 60, and his wife, 40, are Madurese from Sampang, Madura. B. attended school for three years; his wife has had no formal education. An only child, B. first migrated to Surabaya and then in 1959 signed up for Transmigration with his wife and son. They were sent to Labhuan Maringgai, Lampung Selatan. They received a house, 1.75 ha planted with dry rice, and food aid for the first eight months. But the land turned out to be barren, so they were transferred to Gaya Baru, Lampung Tengah in 1969 and given 1.75 ha to plant with maize and dry rice. They also received maize and gaplek *(dried cassava) for the first four months. There, the harvests always fell short and over the long run the sandy soil could hardly even produce cassava. In looking for a way out, he came to Sukorejo with his son in 1986. He found work sharecropping for 1.5 ha (3000 trees, harvest shared 50/50) belonging to a local. He still holds on to the lot in Gaya Baru, which is cultivated by Javanese who take the meager harvest. If he cannot buy land in Sukorejo, he will go back to Gaya Baru.*

B.'s son, S., aged 40, and his son's wife and three children share his house along the road. S.'s first wife, met in Lampung Jepara, died after giving him four children, one of whom died. His second wife, 23, married at Gaya Baru, also bore four children, one of whom died. His children range in age from 3 to 18. His wife's parents were landless in Java, so they and their four children went through Transmigration to Gaya Baru in 1964. His wife has never been to school but S. reached the second grade. Neither have any land at Gaya Baru. In Sukorejo, they work 2 ha (5000 coffee trees) belonging to a local.

"If we weren't so tired, we would go more often to Gaya Baru," the father and son agreed. Neither have ever returned to Madura.

Furthermore, the distinction between lifetime, or open-ended, and circular migration is even less clear since many spontaneous migrants begin their movement with a circular or temporary voyage before settling down for a long-term stay. Rarely can one be sure if this settling-down will be permanent, meaning no eventual return to the village of origin to live. Much of course depends on whether the individual migrant or the family (and its ever-changing form) is the focus of analysis [Case 8].

It is also difficult to distinguish between migrants choosing the food crop regions or the coffee plantations, because these two destinations are frequently associated during a migration history [Cases 12, 17 and 20]. In one third of the cases *[N=136]*, the migrants went through both Belitang and Lampung and through one or more zones of coffee cultivation.

Case 12

S. was born in 1948 in Madiun. He followed his parents and his three siblings to Belitang in 1953 to a Transmigration site. They received 1.5 ha of sawah, *a garden, rice for one year and seed for 0.5 ha. But the rice field was unproductive; the rust-colored irrigation water destroyed the crops. They finally acquired an additional 2.25 ha, but even that was destroyed by the water. In 1977, he went to Banding Agung to work as a sharecropper in the Ranau coffee plantations. The landscape was rugged and he lived far from the road.*

In 1982, he moved to Gunung Raya where he lived in an elevated shelter in the middle of the plantation. Troops of thirty or more elephants would tramp about the pondok *every month. He sold 0.5 ha in Belitang to buy 3 ha of plantation (6000 trees) from a Javanese for 1 ton of coffee when the price was Rp 800/kg. He had up to 16 workers on his plantation during the harvest season. He married and had 5 children. The first and the second are now in Banding Agung, the third died in the plantation, the fourth is at Gunung Raya, and the youngest is in Belitang attending primary school. He lives with his maternal grandmother near their 1.5 ha rice field that yields only 500 kg of* padi *at one yearly harvest.*

Visiting **Sabutan** *where his brother lives, he was debating whether he should sell his plantation in Gunung Raya to move there. His coffee trees are already old, there are still elephants roaming about, and the area might eventually be closed by the government.*

Lastly, for those who make their final home in Sumatra, circular migrations may be considered, in addition to their economic purpose, trial periods which permit the migrant to test his or her faculties for adaptation to the new human and agricultural environment, and as opportunities for learning new agricultural techniques and gaining knowledge of soil and plants that will be even more precious once sufficient capital has been gathered to buy land.

Here are some examples of complex migration routes :

Java - Metro (Lampung) - Belitang - Gunung Raya - Belitang - Gunung Raya - Sabutan

Java - Belitang - Kalimantan Barat - Java - Belitang - Danau Jaya

Java - Belitang - Pasang Surut - Belitang - Kampung Baru

Java - Muaradua - Bali - Muaradua - Sabutan

Java - Sabutan - Java - Belitang - Lampung - Sabutan

Java - Jakarta - Bengkulu Province - Lampung - Java - Belitang - Cahaya Mas

Java - Belitang - Metro - Gaya Baru (Lampung) - Sukorejo.

3. The case of Semendo migration

The Semendo are one of the many Sumatran ethnic groups known for their high rates of out-migration. They provide an example of the importance of social and cultural factors for an understanding of migration dynamics.

Most of the Semendo settled at Danau Jaya come from the village of Lawang Agung, Muaradua Kisam sub-district. This village, like others in this area known as Bayur, was founded at the beginning of 1900 by Semendo migrants from Pulau Panggung, Semendo sub-district, an area that at the time had reached a saturation point. In Bayur, permanent residents are those who own a rice field *(sawah)*. With the current price for one hectare of sawah in Lawang Agung averaging about Rp 10,000,000, each Semendo who wants permanent resident status has to try to open as much land for coffee planting as possible in the hope of being able to acquire a rice field with the earnings. The ideal procedure is to plant coffee, then buy a rice field, and finally build a house; only then can one feel at ease *(tenang)*, as the saying goes.

Males are under pressure to become independent. The relationship between inheritance custom and migration has been pointed out for the Minangkabau of Western Sumatra (Kato, 1982) and for the Semendo (Sevin, 1989; Scholz, 1983). According to Semendo inheritance practice, the eldest daughter receives the house and fields and must take care of her parents in their old age. Males, though they may stay at the family home when necessary, are expected to seek a living on their own. Furthermore, many Semendo in Bayur are forced to migrate outside because land suitable for coffee in their area is said to produce sparse yields of the preliminary rice crop planted under the growing coffee trees. Farmers in Lawang Agung say they are unable to live off the rice harvest while waiting for a coffee plantation to mature.

The price of uncleared land in Bayur is almost twice the price of land in Danau Jaya which the Semendo consider more fertile (Rp 300,000-350,000 compared to Rp 500,000-600,000 in Bayur; the latter, however, is *tanah marga)*. The result is that male Semendo who have inadequate capital or *sawah* to support themselves for the three years before coffee maturity must migrate out of the area or work for others.

The Semendo in Danau Jaya plan to leave their forest clearing eventually. They each have plans to return to Bayur, to Lampung or (the preferred solution) to live in the town of Muaradua, "in the middle" as they say, between their original village in Bayur and Danau Jaya.

4. Recurrent strategies of migration

Several behavior patterns may be identified which, more often than not, insure a degree of success in migration. A forced return or other major problem may thereby be avoided, especially for families for whom migration carries additional risks. Below are what might be referred to as techniques for successful spontaneous migration.

- Inform oneself constantly of the opportunities for employment and access to land by taking advantage of all close and distant contacts;
- Send an active member of the family (father or son) on a scouting mission to the place of potential migration;
- Accept to separate members of the family depending on the situation and needs for periods of from a few months to several years;
- Retain, to the extent possible, land and housing (even if rudimentary) in addition to that possessed at the most recent migration site. Unproductive land in a Transmigration settlement, for example, which one has to leave because it cannot satisfy the family's needs, might still be worthwhile keeping for a family member who could take in a child in need [Cases 9 and 11]. The same goes for holdings in the place of origin; one must prepare for the possibility of migration failure or a future need to send a child there for more adequate schooling [Cases 6 and 19].

Dispersion rather than concentration is the rule. This goes for the members of a family and for the places of residence and land. This perhaps suggests that spontaneous migration is only a partial success, since migrating families are unable to assure the support of all members at one place. A migrant can scarcely risk calling his family until he has reached a certain degree of economic stability, usually including access to land judged sufficient for his children. In the frequent instances where the family is incomplete, the geographical spread of its members is striking. The parents of the migrant remain in the village of origin, with one or several of their children, and perhaps grandchildren; brothers and sisters of the migrant are relocated to various regions (Sumatra, Kalimantan or Sulawesi) either through Transmigration or through spontaneous movement; the spouse follows the migration intermittently; or the adolescent or married children of the migrant are encouraged to search for a living themselves through a new migration [Cases 1, 9, 10, 12 and 17]. This practice of dispersing family members also spreads the risks of failure.

Another striking aspect of spontaneous migration that distinguishes it from Transmigration, the young age of migrants at their first departure, cannot be explained entirely by the need to be strong and in good health to face the rigors of migration. Other factors intervene. As far as educational level is concerned, 45% of the migrants interviewed failed to complete primary school, 34% did not continue their education beyond the primary level, and 13% never attended school. For those under 31 years of age, the figures were approximately the same [1]. These youths from 15 to 25, whose families lack the means to educate them further, are expected to make a living for themselves and help their parents or younger siblings. Whether they are children of transmigrants or not, if they have to migrate they will do so as spontaneous migrants because only families or married couples can join a Transmigration program. Where the land in a Transmigration scheme is insufficient for the needs of two generations, one could say that Transmigration produces spontaneous migrants.

In a more general sense, one can say that the difficulties of educating children above the primary level encourage the migration of youths, by combining the factors of unemployment, a possible adolescent need, difficult to isolate and quantify, to "get away," and the family pressure to be self-sufficient or to contribute to the family's budget.

To sum up, it would appear that instead of a certain mentality orienting people towards spontaneous migration, the conjunction of specific and evolving living conditions and opportunities to be seized at specific moments creates the driving forces behind the movement. Various migration patterns are found among spontaneous migrants, and are often combined during a single life history. A spontaneous migrant may have experience as a transmigrant, be at the same time an open-ended and circular migrant depending on the opportunities that present themselves, or even consider signing up for a Transmigration program if he or she runs into difficulties as a spontaneous migrant.

Note to chapter 2

(1) The sample group is composed of (all ages): 77 cases, 35 women and 42 men. Out of these 77 cases, 42 were under 31 years of age (24 women and 18 men); among those under 31, 14% never attended school, 43% were unable to complete an entire primary cycle and 38% did not continue their education above the primary school level.

Chapitre 3

Organization of spontaneous settlements

1. Origin and development

The sample settlements chosen for in-depth study were classified earlier into two groups: food crop and highland coffee areas. Another typology can distinguish three settlement varieties according to their structure and status.

Within the first category could be put the organized and independent schemes which resemble in many ways government-financed Transmigration villages. These settlements usually become villages *(desa)* in their own right and residents obtain legal title to their land. *Cahaya Mas* and *Kampung Baru* fall into this first category.

A second category comprises the many scattered, independent and mainly coffee-growing settlements in hilly areas whose residents have little hope of obtaining land certification in the near future. Such settlements, exemplified by *Danau Jaya*, *Air Bunga*, *Tunggal Jaya* and *Tunas Mudah*, are linked for administrative purposes to an established village but their isolation allows them to retain an autonomous character.

A third type of spontaneous settlement covered in this chapter includes those which are directly dependent on and linked to original local Sumatran settlements. These settlements may be primarily based on food crop production, like *Sabutan*, or coffee as in the case of *Sukorejo*. Though the links with an established village are strong, both geographically and socially, land title may be possible (Sabutan) or impossible (Sukorejo) depending on the area.

We may now turn to a discussion of the factors determining how settlements are established and develop over time, by referring to the case study areas (Table 17) and other settlements.

Table 17. FIELD RESEARCH SITES
LIEUX DES ENQUÊTES

Status of settlement and Population		
Field Site	date of first migrant influx	(1990) *
Sabutan	*dusun*, pre-1960	150 hh
Cahaya Mas	*desa*, 1980	1823 hh
Kampung Baru	*desa*, 1984	4226 hh
Sukorejo	*dusun*, 1979	61 hh
Danau Jaya	*dusun*, 1977	500 hh
Air Bunga	*dusun*, 1979	**
Tunggal Jaya	*dusun*, 1979	**
Tunas Mudah	*RT*, 1979	**

* If total population is unavailable, the approximate number of households (hh) is given.

** According to the Kotaway village head, about 1500 households live in the highland area composed of Air Bunga, Tunggal Jaya, Tunas Mudah, Giham I, Giham II and Giham III.

The selection of sites for spontaneous settlement calls into play a number of factors such as the migration history of the pioneer group, information networks, land fertility, market accessibility and the possibility of obtaining authorization for clearing. A new settlement often represents an incremental extension of already existing settlements that have reached the point where they are no longer able to provide new land for their increasing population (due

mainly to continued immigration and family division), or an extension of settlements that have experienced diminishing soil fertility and crop yields. The expansion of coffee-producing areas is brought on by in-migration and the declining productivity of soil and older trees which provide impetus for opening primary or secondary forest to plant new coffee.

Progressive spontaneous settlement expansion in food crop areas is exemplified by Cahaya Mas and Kampung Baru, opened in the early- to mid-1980s in the southwestern corner of the Mesuji sub-district (Fig. 21). *Cahaya Mas* was in part an extension of the Nusa Tenggara (Belitang sub-district) settlement area which, in the early 1970s, resulted from population increase and land shortage in the Belitang irrigated perimeter, itself comprised of settlements dating from the *Kolonisasi* and later periods of government-organized migration.

Cahaya Mas was first opened in 1980, when 40 families were given the authorization to settle by the *pasirah* Haji Surul Alam P.I. The settlers had no fee to pay to open the land, and were allocated 2 ha per household. After several years of planting they were able to have land-ownership papers drawn up at a cost of between Rp 15,000 and 25,000 (price range 1981-1986).

Many of the lowland settlements have sprung up along or near roads recently built through forest areas. An example is Cahaya Mas, which has developed along one of the roads connecting the Belitang and Mesuji sub-districts. After PT Way Hitam received a 20-year forest concession in 1972 to run the sawmill east of Cahaya Mas, it contracted the building of a road from Nusa Jaya (Kec. Belitang) to Pematang Panggang (Kec. Mesuji) completed in 1974. This unpaved road facilitated spontaneous settlement of the forested region and was to serve as the primary link between Pematang Panggang and the many general Transmigration schemes which were to be opened in the 1970s and 1980s.

The first people to open the forest at Cahaya Mas came from Nusa Jaya and Nusa Tenggara. The leaders of this movement were people who were familiar with the area, having worked on the road project or cut wood in the forest. The parents of many from Nusa Jaya came in the early 1960s as official transmigrants. Some of those interviewed said that little or none of their parents' land remained since it had been sold off little by little over the years. Once the area was opened for settlement, farmers would come by bicycle to Cahaya Mas in the morning to work their land and build their houses, returning home in the evening [Case 13].

Case 13

Born in Telungagung, East Java, S. is 35 years old. The second of four children, he finished primary school. His parents had 1 ha of dry land in Java. In 1963, when he was eight, his parents sold their land in Java and came with seven other families to Nusa Jaya. The whole family followed, grandmother, parents and children. They bought 2 ha of dry land from transmigrants who "couldn't endure Transmigration" ("tidak tahan di Trans"). *His father was also a cabinet-maker and carpenter and he taught him his art. S. worked his parents land and worked for day wages about one week a month. He also went to do the coffee harvest in the Pulau Beringin (villages of Pecah Pingan, Simpang and Cukuran) and Muaradua sub-districts in 1977-78. He lived in the plantation shelters* (pondok) *during the picking months, and was given Rp 150 per* kaleng *(10 kg), rice, salt, chili peppers, and dried fish by the owners. He could pick from 5 to 7* kaleng *per day. Big landowners would come to Nusa Jaya looking for manpower for their coffee plantations.*

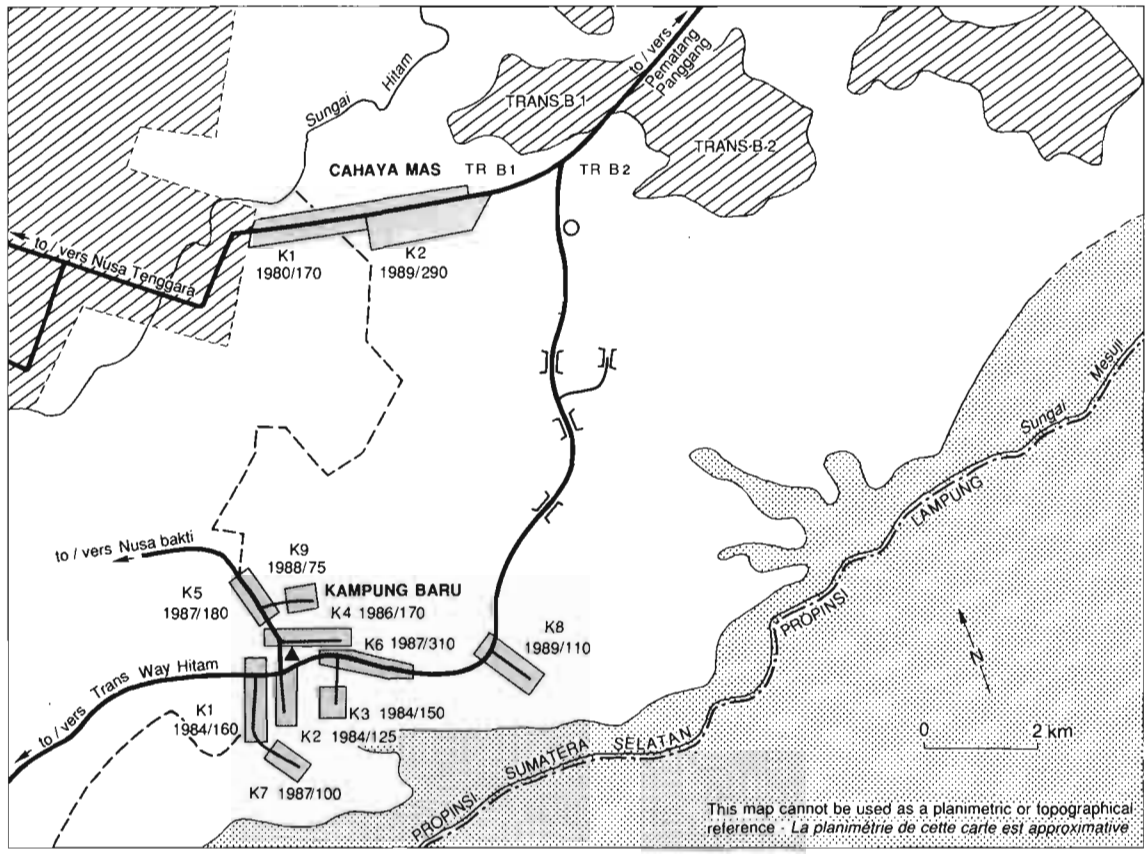
In 1979, S. married a 30-year-old woman from his hometown. She was the last of seven children and had a fourth-grade education. Her parents went to Nusa Jaya as transmigrants in 1961, receiving 1 ha of sawah, *0.75 ha of dry fields and 0.25 ha of garden around their house. Her mother is still in Nusa Jaya. S.'s parents have since passed away.*

In 1980, S. decided to look for land in **Cahaya Mas**. *One of his wife's sisters and an older brother of hers also followed. In Nusa Jaya, there was no longer any land available for the many offspring of the residents. In 1980, the area around Cahaya Mas was still forested. The new settlers used the trees to build houses or simply cleared them. The first settlers who came with S. from Nusa Jaya would shuttle between the two, leaving in the morning on bicycle and returning to their homes in the evening. Once their homes were built, several at a time, they would bring their families. Each person was allocated 2 ha. While awaiting the first harvests, S. hired himself out as an agricultural laborer. When there was no work available, he went by bicycle to collected wood that could be resold in Nusa Jaya. He would return pushing the overloaded bicycle with wood strapped to the frame. Since the PT Way Hitam sawmill nearby, owner of the forest, forbid the cutting of trees exceeding 25 cm in diameter, houses were built with posts measuring as little as 10 cm. His own house measures 6 m x 11 m. It is built on the ground with plank walls, baked tile roof and a dirt floor. Recently he physically moved it with many helpers, changing locations with another settler.*

S. has two children, aged 12 years and 17 months. The dusun *he heads is composed of 4* RT *or about 60 families. S. has 2 ha, and rents in 2 ha of the "village land"* (tanah desa), *to cultivate dry land rice, maize, cassava, peanuts, peppers and yard-long beans. He has two IFAD bulls and one cow. His chickens were killed off recently by disease. As far as other possessions, he has a motorcycle, a bicycle and a clock. S. gave up his part of the inheritance from his parents, because he "could support himself"* ("usaha sendiri"). *He has been able to save money from the sale of his harvests. In the future, he wants to "build a house"* ("bikin rumah"), *by "house" meaning a brick and cement structure, and stay in Cahaya Mas.*

Cahaya Mas received many new settlers in 1987. Since 1988, about 25 Balinese households have arrived and formed an *RT*. At present most migrants come from other parts of Southern Sumatra, especially Belitang, Air Sugihan

Fig. 21 LOWLAND AREA : TWO SPONTANEOUS MIGRANT VILLAGES IN THE INTERSTICES OF TRANSMIGRATION PROGRAMS (CAHAYA MAS AND KAMPUNG BARU, KEC. MESUJI, OKI) - *REGION DE PLAINES : DEUX VILLAGES DE MIGRANTS SPONTANES DANS LES INTERSTICES DES PROGRAMMES DE LA TRANSMIGRATION (CAHAYA MAS ET KAMPUNG BARU, KEC. MESUJI, OKI)*



Transmigration settlement - *villages de la Transmigration*

TR Transmigration reserve land, partially occupied
Terre de réserve de la Transmigration, partiellement occupée

K village neighborhood (*kampung*) - *quartier d'un village* (kampung)

1987/310 date of official designation as a neighborhood / number of families resident as of 1990 - *date de constitution officielle des quartiers / nombre de familles recensées en 1990*

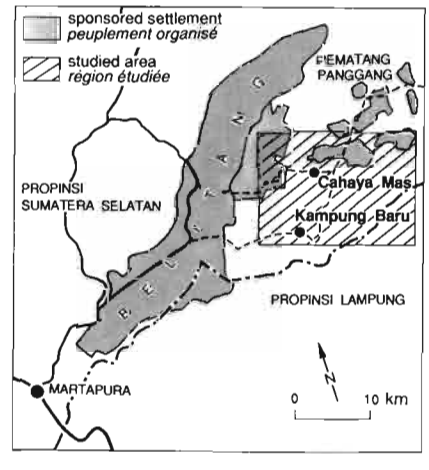
▲ market - *marché*

○ sawmill - *scierie*

trail - piste

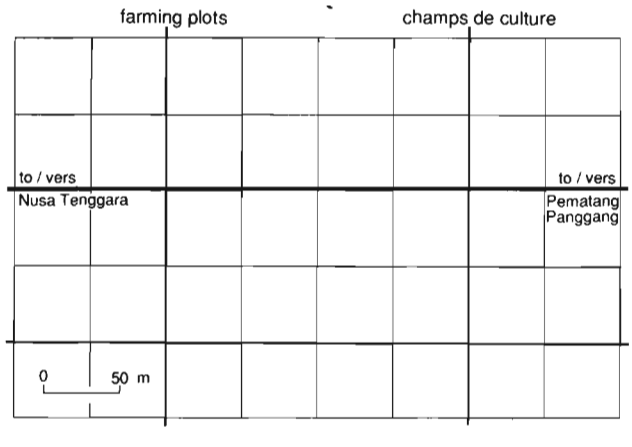
wooden-bridge - *pont en bois*

dense forest - *forêt dense*



sketch of location - *croquis de localisation*

CAHAYA MAS : A VILLAGE SET UP USING THE TRANSMIGRATION GRID MODEL OF PLANNED SETTLEMENT - *CAHAYA MAS: UN VILLAGE BATI SUR LE MODELE DE LA TRANSMIGRATION*



Sources - *Sources*
Field surveys - *enquêtes de terrain* 1990

home plot and garden (*pekarangan*)
parcelle d'habitation avec jardin (pekarangan)

trail - *piste*

path - *allée*

side path - *contre allée*

HB - GS / j z 1991

and Lampung. Cahaya Mas has about 500 households in all as of mid-1990. The village plans to close to new settlers in 1991.

Kampung Baru was first opened in 1984. A former village head from Nusa Bakti, to the west in the Belitang sub-district, got the idea of settling the area while fishing there one day with his wife. He went to see the *camat* of the Mesuji sub-district to ask permission to open the land. The *camat* granted him permission, and once a population of 50 households had been reached in 1986, made him village head. The first settlers were Javanese who came from Nusa Bakti, Nusa Bali and nearby villages in Belitang. Like Cahaya Mas, this settlement received many of its charter residents out of the many people seeking larger, more fertile parcels than what they had left or could stand to inherit in Belitang. Subsequently, a large percentage of settlers were recruited directly from Java by these first pioneers. Through massive sponsorship, the population has grown rapidly. Kampung Baru had a surge of new arrivals and development in 1989, during which year groups of Balinese also entered. With a population of over 4000, Kampung Baru has been officially closed to further settlement since July 1990 by order of the *camat*, so that remaining land may be set aside for the offspring of the present residents (Fig. 21).

Sabutan, a *dusun* relying on food crops in a predominantly coffee-growing region, provides an example of an evolving settlement. The land around Sabutan was originally owned by local Daya people, though it had been left to return to secondary forest since before the Second World War. By the 1960s, several families of Sundanese had already set up small brickmaking factories along the main asphalt road. In 1959, a government irrigation project was begun just to the interior, run by and incorporating Javanese. The land was measured, maps were drawn up and the beginnings of an irrigation system were established over 135 ha, only to be abandoned entirely in 1965. In 1975, still covered with *alang-alang* weeds *(Imperata cylindrica)* and large trees, the land was declared unused and parcels were given to armed forces veterans and retired government officials. Although six of the twelve original veterans still remain in the area, most of those who received land were absentee owners who eventually sold their parcels to Javanese who increasingly were coming into the area. One of the first Javanese to settle in the interior of Sabutan became familiar with the area while working on the Muaradua to Danau Ranau road paving project. He came to settle in 1975-76. Many workers on this road project *("Jalan NRC")*, underway in the early 1970s, ended up staying in villages along the road from Muaradua to Danau Ranau. Several who now own land first started as agricultural laborers for veterans or locals. These new migrants, along with the West Javanese brickmakers along the road, served to impart a Javanese character on the area which had the effect of attracting others. It would be difficult if not impossible, of course, to determine when the first wave of migration occurred, but there is evidence of previous assimilation of Javanese into nearby Sumatran villages. People along the road speak of four or more generations of Javanese present, married to locals and already possessing grandchildren. The use of Javanese plantation workers in the colonial tea and coffee plantations around Danau Ranau (Gunung Raya, Sipatuhu) also encouraged spontaneous movements in the past.

Some local settlements have been encouraged to accept large numbers of migrants by village or sub-district officials intent on increasing their populations in order to qualify for the status of full-fledged village (a minimum of 250 or 500 families is required). With such status, an area becomes eligible for development aid in the form of roads, schools, and other services. District administration policy now is also aimed at filling in areas of low density rather than opening up new tracts for exploitation. The population of one such settlement in the Simpang sub-district, Serekat Jaya, grew from 359 to 1460 in the space of only one year (1988) following arrangements made between the village head and his counterpart at Air Nandingan village in South Lampung (Pulau Panggung sub-district). The village provided 2 ha of unused land suitable for food crops to each of the 150 families that arrived. Cost of the formalities resulting in the issuance of land titles *(SKT)* amounted to Rp 25,000 per parcel. Serekat Jaya, like other indigenous villages, had long sought to augment its population. Efforts were made as early as 1964; between 1969 and 1974, one of the neighborhood heads *(kadus)* made four trips to West Java to bring back a total of forty families.

Many other sparsely-populated indigenous villages in South Sumatra have accepted groups of migrants looking for new homes following the closure of upland settlements in Lampung, such as Air Nandingan mentioned above. In some instances, the migrants and their village leaders had time to scout out suitable areas in advance, such as Serekat Jaya, but in others the migrants had to flee with little warning, to embark on an urgent search for new homes and livelihoods.

For the sake of efficiency, the coffee-growing areas we have concentrated on are located in the OKU district. Cursory examination of other districts where coffee growing is important would indicate that the processes we noted are fairly representative of South Sumatra coffee belt.

In *Danau Jaya* and other highland areas attached to Kotaway village in the Simpang sub-district, one finds illustrations of the role played by local peoples in opening up forest land to subsequent Javanese settlement. Danau Jaya first began to be cleared by Semendo from Bayur,

Muaradua Kisam in 1977. They received permission to open the land from the Bupati and other officials at the time. [1] A few Javanese, who had been agricultural workers for the Semendo in Bayur, were brought to Danau Jaya to aid in the land clearing for Rp 500 daily pay at the time. Many of them, and then other Javanese, opened land for themselves, spreading out to new areas which would later be populated mainly by Javanese. This colonization resulted in a "filling in" of the remaining forested land between the long-established coffee areas of Kotaway and Gunung Raya. The Semendo had chosen Danau Jaya because of its lake and its geography. Being a highland plateau *(datar tinggi)* it was a choice location for a village and promised high-yielding coffee. The first settlers made their way to Danau Jaya from Gunung Raya passing through primary and secondary forest (Fig. 22).

Other migrants were interviewed in the far-flung *talang* lying to the east of the Saka river and connected administratively to Kotaway village. These areas, including *Air Bunga, Tunggal Jaya* and *Tunas Mudah*, were first opened in 1979 by people from Gunung Raya. This area was also heavily forested, and early settlers even had to contend with troops of elephants. By 1982, however, there was no longer any primary forest left and by 1985 the communities were more or less stable following the arrival of families.

A common method of opening forest land was to form a group, usually composed of four men, which would work together to open a vast area and plant *padi* and coffee. In this system, known as *kungsi*, the men would share the rice harvest and then divide the area into equal parcels [Cases 14 and 23].

Case 14

S., 40, is originally from Ponorogo, East Java. He is the fourth of seven children, three of which are in Java and three others in Lampung since 1972. His parents in Java have a house and one-eighth ha of garden. In 1977, at the age of 27, he followed a man who offered him work in Belitang. He was paid Rp 500 per day without meals for hoeing. He only stayed two weeks, because he "was discontent, the salary was too low" ("kurang senang, hasil kurang").

He heard from a big landowner (tuan tanah) *he met in Belitang that in* ***Danau Jaya*** *"there was empty land"* ("ada tanah kosong"). *He looked up his address in Talang Imus and worked for him for one year. Fed by the* tuan tanah, *he and three other men opened 4 ha. Once the rice and the coffee were in the ground, the group obtained half of the land, or 2 ha, which they divided into equal 0.5 ha parcels. The rice harvest was enough to feed them for a year and they worked on the side by the day. Over the years, without buying any more land, S. enlarged his half hectare on the fringes to where it measured some 4 ha, containing 10,000 coffee trees. The plantation was bordered by forest with large trees. Each of the others did likewise, opening up whatever they were capable of* ("sekuatnya tenaga"), *without having any* pancong alas *to pay or land to buy. In this* RT, *there is no longer any forest, all land is planted. He now employs day workers on his plantation. He met his wife here. She is 30, from Jember, and she followed her parents to Sumatra. They have one child.*

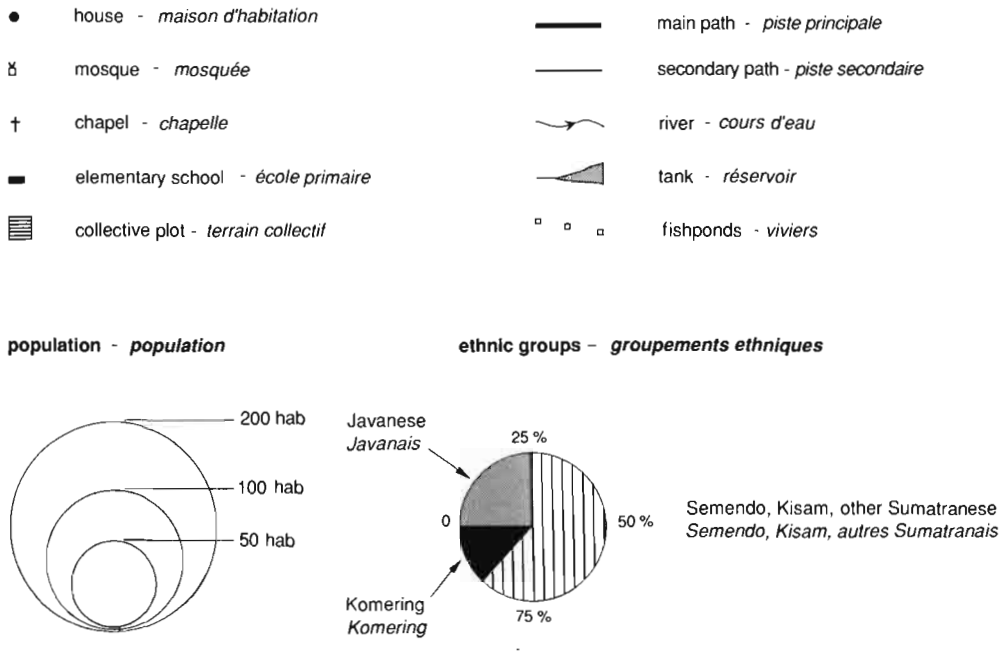
S. returns every year to Java.

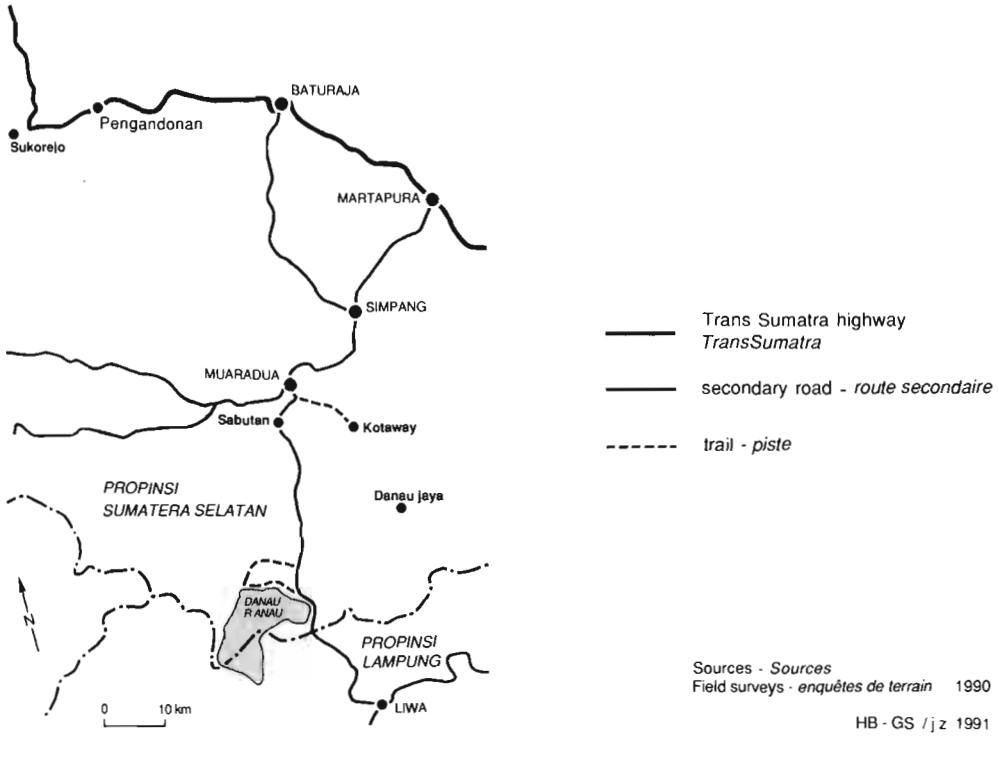
An average-sized parcel opened up in this way worked out to about 2 ha per person, enough for 3-4000 coffee trees. In time, the first farmers enlarged their holdings by opening up more forest, sometimes on the edges of their original parcels, and by purchasing established plantations from others.

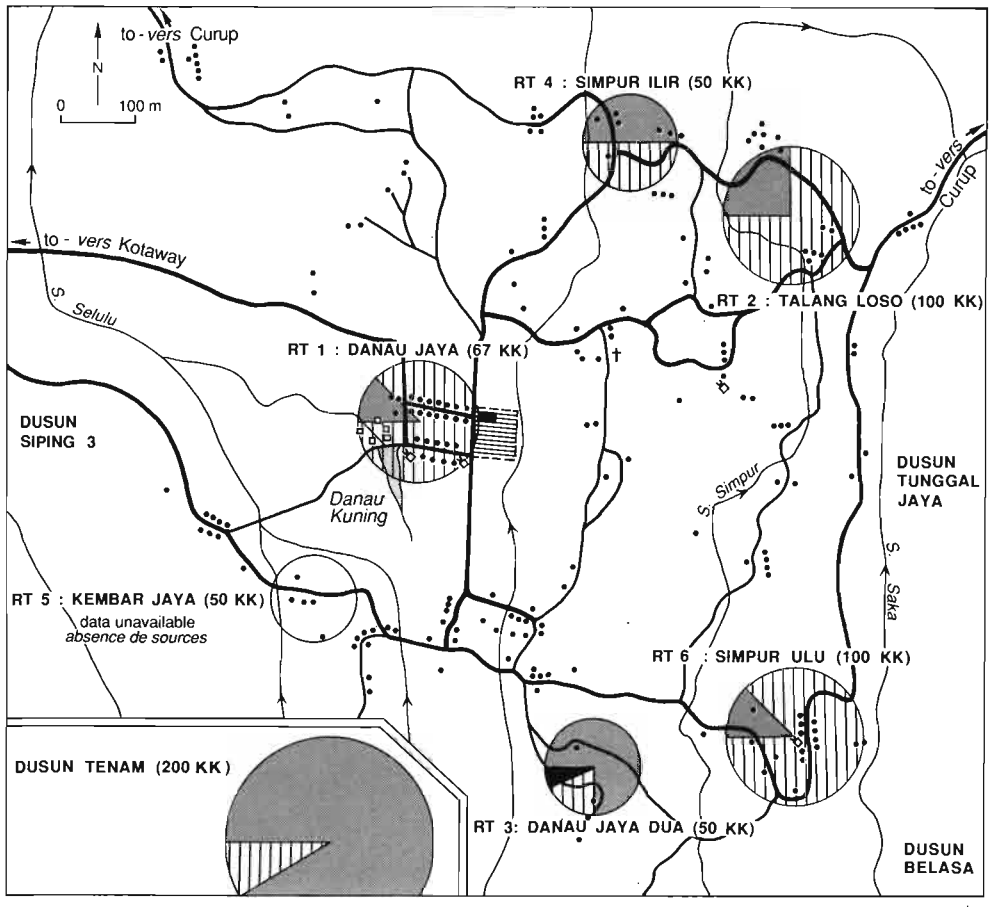
Sukorejo is an upland *dusun* of Pedataran village in the western part of Pengandonan sub-district. Coffee was planted in Sukorejo in about 1979. At about this time, the *desa* head began to seek to increase the village population. Sukorejo became especially active in 1986-87. One of the first to plant there was a Javanese who three years earlier had married a local woman from Pedataran village [Case 5]. As the need for plantation workers in the area increased, he brought several of his own family members. Many other Javanese subsequently came to Sukorejo to work for the local landowners, usually on a sharecropping basis. A few married into local families, but most of the others have remained agricultural laborers for the locals. Sukorejo is a special case of a coffee-producing area with a relatively small and isolated Javanese population. The bargaining position of these Javanese is rather weak. For many, Sukorejo is the last in a series of migration failures. A number of them fled unfertile Transmigration areas in Lampung. Others ended up in Sukorejo when employment opportunities were exhausted elsewhere. At present, most are barely able to assure their own subsistence and therefore have little chance of obtaining land.

Migrants opening up new land for spontaneous settlement or planning to do so sooner or later find the need to appoint themselves formal leaders in order to deal effectively with administrative authorities at the sub-district levels. The first men to take the initiative to contact the authorities and organize the settlement of Cahaya Mas and Kampung Baru eventually came to be named village heads *(kades)*. In other spontaneous settlements, whether they be in food crop or coffee areas, the formal leaders *(kades, kadus, RT)* are usually drawn from the instigators or else from among the first settlers who have land and some financial means, especially those who have experience in dealing with the immediate higher authorities. The authorities one has to deal with are usually the *kades* to open a coffee *talang*, or the sub-district head *(camat)* for a larger village-type settlement. In a new settlement, someone must be delegated to take care of the clearing authorizations or, later on, routine administrative affairs with these

Fig. 22 HIGHLAND COFFEE AREA : MAIN SETTLEMENT GROUPINGS BY ETHNIC GROUP
HAMLET OF DANAU JAYA, KOTAWAY, KEC. SIMPANG, OKU
REGION PRODUCTRICE DE CAFE: PRINCIPAUX GROUPEMENTS ETHNIQUES - HAMEAUX DE DANAU JAYA, KOTAWAY, KEC. SIMPANG, OKU







Field survey sketch : this map cannot be used as topographic reference - *Croquis établi d'après observation de terrain : la planimétrie de cette carte est approximative.*

Danau Jaya : a highland coffee-growing community
Danau Jaya : une communauté de planteurs de café sur les hautes terres.

Planters rake part of their coffee harvest as it drays in the sun. Dried and hulled, the beans will be transported down the mountain on trail motorcycles to be sold to traders in Talang Karet and Kotaway.
Les planteurs passent le rateau dans leur récolte de café qui sèche au soleil. Séchés et décortiqués, les grains seront descendus sur des motos tout-terrain, pour être vendus aux marchands de Talang Karet, à Kotaway.

higher authorities. It is quite often that person who, having gained the confidence of the officials, is offered a formal administrative position if the neighborhood or village becomes sufficiently large.

Spontaneous settlers generally accept the need for local leaders, whether they be *kades*, *kadus*, *RT* or farmers' group head *(kepala kelompok tani)*, since the future of the settlement depends on their success in seeking out sources of credit and financing for infrastructure and services, obtaining land certification and protection from the threat of land eviction, planning the village layout and organizing collective work on roads, houses and land clearing.

Case 15

S., 50, is a native of Banyuwangi, East Java, and the eldest of seven children. All of the others are deceased except one younger brother. His mother is in Java, "divorced, lives on someone else's land and is penniless" ("janda numpang tanah, tidak ada nafkah"). *In Java, S. was a sharecropper receiving one fifth of the harvest to the owner's four fifths. He married in 1963 with a woman from his village, whom he divorced soon after. He married again with a woman from Yogyakarta and they had a boy who is now 15. They divorced in 1968. He remained single for the next 11 years.*

During that period, in 1976, his father, who had left in 1965 to join his parents-in-law at Lebak Kunir, asked him to come live with him, and sent the money for the voyage, Rp 25,000. His father had gone to Sumatra after two months of deliberation following reception of a letter from the parents-in-law, in Sumatra since 1964. With responsibility for many children in Java, he wanted to improve the family's situation. For his departure, he sold a 1 ha coconut grove, 1 ha of dry land, 1.6 ha of sawah, *12 goats and his house. With this he acquired a* pancong alas *for Rp 12,500 per ha, 15 ha of land belonging to the community* (marga), *and a swamp forest covered with rattan and palm trees. He still has about 4 ha of rain-fed rice fields, the rest having already been divided among his children. He also remarried in Sumatra and has two children from that marriage.*

When S. arrived in 1976, his father's land was already planted. He stayed six months or one harvest period. He then followed a friend to Muaradua Kisam with the money earned from the rice and cassava harvest. There he worked as a day laborer and for piecework for two years on a plantation belonging to a Kisam. For three weedings a year, he received 100 kg of coffee. Seventy Javanese families were already living there, not counting the unmarried youths. Javanese were also married to Kisam women. With his earnings, he bought land for Rp 150,000 from a friend who had to return to Surabaya to take care of his sick parents. The land had been newly cleared and the debris burned, ready for the planting of 3000 coffee trees.

He was a day's walk from the nearest settlement. A cholera or serious diarrhea epidemic broke out in 1978, and claimed victims for a year (health care was 23 km away in Tenang and expensive, with injections costing Rp 500). He married for the third time, in 1979. His wife and their first child were (and still are) constantly sick. "The soil was fertile, but we were far from everything" ("tanah subur tetapi hubungan jauh"). *In 1980, a friend from Ponorogo, a 60-year-old member of his wife's family, came to visit him in Kisam. Too old to work, but eager to move to* ***Cahaya Mas****, the elder man spoke to him of the possibility of acquiring 2 ha there, urging "come if you are no longer happy in Kisam"* ("datang kalau tidak kerasan di Kisam"), *and leaving his address. S. thought about the proposition for three months, then went to see for himself the situation at Cahaya Mas, staying two nights. His opinion: "it's dry, and the earnings are less, but the land is flat and easy to work and the place is accessible"* ("kering, hasil kurang, tetapi tanah datar dan gampang, dekat hubungan"). *Returning to Kisam, he sold his 3000 trees for Rp 500,000 and came to Cahaya Mas. He lived for the first two months with his wife's relative and acquired 2 ha for a Rp 27,500* pancong alas *payment which provided ownership papers* (akte). *The land was covered with* alang-alang *and a few trees.*

He planted in his 0.25 ha garden about 40 coconut trees. Other trees planted were banana, pineapple, mango, jackfruit, coffee, cengkol *and* petai, *part for sale and part for household consumption. Out of his 1.75 ha, he cultivated maize, soybeans, green gram, rice, cassava and peanuts. Three weeks before the interview, he exchanged his house and garden with a trader who wanted to be along the main road, and bought his current house and 0.25 ha plot (unplanted) on a secondary road. This transaction allowed him to pay off a debt of Rp 800,000 accumulated from his son's circumcision ceremony two years earlier, losses caused by rats which destroyed his 2 ha of rice, and the death of his poultry from disease. He also possesses a cow, a bull and a bicycle.*

His third wife is 27. She was born in Telungagung, East Java. She is the second of three children. One of her younger sisters, married to a Madurese, also lives in Cahaya Mas. Her parents signed up for Transmigration in 1963, and received 2 ha in Nusa Jaya. They are still there, aged about 75. Following the divorce from her Sundanese husband, she had to begin selling dried and salted fish (ikan asing) *door to door with other friends to support herself and her son. Now S. and his third wife have added a son, 10, and a daughter, 4, of their own. S. also lives with a half-brother, 25 and single, who followed him since his departure from Java in 1976. The land is in the name of S. but in fact 1 ha is worked by the brother. In all, six live in this house built of wood planks, with a roof of baked tiles and a dirt floor.*

Upon his arrival in 1980, there were only six other families settled. In 1983, he became neighborhood head (RT), *and in 1989,* dusun *head. Since 1976, S. has yet to send a letter or return to Java. The trip would be too expensive (more than Rp 200,000 for the whole family), and he's afraid that if his mother decided to follow him back to Sumatra, she would be a burden. Asked what he thought was necessary for his community, he said: "I want it to be active, secure and beautiful"* ("Minta ramai, aman dan bagus").

A respected or charismatic leader is also one responsible for encouraging people to come settle in the first place; his or her parting may cause uneasiness, as in Kampung Baru following the death of the *kades* when people started leaving the settlement.

Where migrants live in predominantly local Sumatran communities, they often have little voice in the affairs of the community, unless they are landowners. In Sukorejo, the vote for *kepala dusun* in 1987 was conducted by consensus with only "official" male residents (male landowners) allowed to take part, preventing almost all migrant workers from having a say in neighborhood affairs. There are also incidents where village or sub-district

officials impose a neighborhood leader of their own choosing, sometimes hailing from a minority group.

Others who are recognized by settlers to be formal or informal leaders when they become a part of the community are the school principal, teachers, health workers, agricultural and animal husbandry extension workers, and religious leaders. The leaders with whom settlers interact most often on a face-to-face basis are naturally those within their own neighborhood or within the parameter of their day-to-day activities: *kepala dusun, kepala RT,* farmers' group head of the embryonic *KUD* farmers' collective (if any), school teacher, and prayer group organizer.

In all areas, but most notably where land title is secure, one hears feelings voiced concerning the future of the settlement and the hope for eventually developing into an active village. It is common to witness impassioned discussions among village leaders and residents where the yearning "to become a real desa" *("jadi desa betul"),* and "to become full of people and activity" *("jadi ramai")* is repeatedly expressed. Some migrants from Inner Indonesia would eagerly accept a government-run Transmigration project in their backyard if it would accelerate development and activity, pointing to vacant land nearby that could be used for such projects. Behind these pronouncements lies also a conviction that the more Javanese and other migrants present in the area, the faster change and development can occur, less hindered by what is seen as local Sumatran conservatism and passivity. Such beliefs are only partially shared, however, and many recognize the importance of local capital for the creation of transportation and market infrastructures. Kampung Baru is a notable example of a settlement that has developed almost overnight largely as a result of the influx of local capital.

Like indigenous communities, spontaneous settlements evolve over time. Settlements carved out of forest for coffee planting may develop into stable communities integrating food crop and home garden *(pekarangan)* cultivation with tree crops. Sipin village (Simpang subdistrict), for example, is composed of older neighborhoods (first opened in the 1940s) where residents have legal title to their land, and recently-opened settlements (10 to 20 years old) where legal title is unavailable. The residents themselves recognize distinct differences in behavior that characterize people in each area. In the upper hilly areas, settlers adopt an attitude of temporary residents practicing coffee monoculture, seeking short-term returns without stocking their harvests. Below, in the older neighborhoods (Sipin 1 and Serumpun), the settlements have evolved to where more long-term strategies can be adopted by residents. With their land tenure secure, they have diversified out of a strict dependence on coffee to include pepper, rubber and cloves in their plantations, and to plant food crops and develop home-gardens. With income from other sources, the coffee harvest can be stocked in anticipation of higher prices. The same person may use different ploys, since many Sipin villagers possess land in both areas. This is just one example of a finding that clearly applies to all spontaneous settlements: secure land tenure is a precondition for the development of diversified communities based on sustainable production systems.

2. Access to land

Broadly speaking, migrants who enter spontaneous settlements in food crop areas buy their land, either from the village administration at a fixed price or from residents based on market value, while migrants in the coffee-growing highlands open secondary forest or, increasingly, purchase established plantations from former owners. The first type of migrant can expect to obtain some sort of legal title for their land, usually the *SKT;* most owners of recently-opened coffee plantations cannot.

Migrants who enter established communities on their own must purchase land at market rate, unless they can accede to land ownership through marriage or a land-sharing arrangement. The majority of migrants living in predominantly Sumatran communities sharecrop or work as agricultural laborers. If they own land, their holdings are usually small. It is exceedingly difficult for them to obtain prime land or *sawah* in some areas, especially if such land is rare. Often, however, a movement to open forest or other unused lands begins and is planned from an established Sumatran village. Migrants present at this moment may follow the movement and amplify it, creating in the process new settlements with a distinctive migrant flavor.

Where migrants are offered land in or near established local communities, as in the case of Serekat Jaya, terms are usually quite attractive for the migrant. Village and subdistrict officials, seeking the long-term benefits of increased population and economic activity, together strive to minimize formalities. This enables migrants to own land at a reasonable price (usually between Rp 25,000 and 50,000 for a 2 ha parcel).

In some areas, indigenous residents are quite open about their practice of retaining the choice parcels, offering or selling marginal or leftover land to new arrivals. This results more from the fact that prime land is beyond the means of most migrants than from a deliberate policy on the part of locals to restrict migrant access to the best land, though such policies do exist in a few villages.

The administrative process involved in receiving new residents is essentially the same in the two Mesuji villages

studied, Cahaya Mas and Kampung Baru [2]. A person interested in acquiring a parcel reports to the *Kepala RT* (a low-level neighborhood leader responsible for several dozen household units), who transmits the application to the neighborhood head *(kadus)*.

The migrant is shown the available parcels by the *kadus* and other settlers. Once he or she accepts a parcel and pays a down payment *(uang muka)* or registration fee *(uang daftar)*, the parcel is measured, the village head is informed and the migrant becomes a resident. From early to mid-1990, the cost for a 2 ha parcel ranged from Rp 200,000 to 275,000 in Kampung Baru and Rp 150,000 to 180,000 in Cahaya Mas, including *SKT* for both house lot *(pekarangan)* and agricultural plot *(ladang)*. The first to open the land at Cahaya Mas received official title only in 1985-86, paying about Rp 25,000 at that time. In Kampung Baru, early settlers in the first few years (1984-85) paid Rp 50,000 *pancung alas* (land ownership fee) for their 2 ha parcels. Though the going rate for parcels in any one settlement rises over time, we found no evidence of any sizeable variation in the rates charged different settlers arriving at the same time. Most new arrivals are unable to pay a lump sum right away, and are therefore allowed to pay installments (generally on the order of 20%) each year after harvest, until the land is paid off.

The rule is that one household receives one parcel. If one has the means, however, it is often possible to obtain additional parcels in the name of other family members, including older children who will soon marry and form their own households.

In the first years of settlement, the fee for opening the land was paid directly to the sub-district head *(camat)*. In return for this payment *(pancung alas)*, the migrant received title to his or her land (the document was referred to as an *akte)*. Now the proceeds from the sale of village land are divided between the various levels of the local government. Depending on the settlement, the shares work out to roughly 35% for the *camat*, 20% for the village head, 20% for the community chest *(kas desa)*, and 15% for the neighborhood head *(kadus)*. Of the remaining 10%, about half goes to the team measuring the parcel and half towards the purchase of clothes for the village security squads *(hansip)*.

Cahaya Mas allows yearly rental of unused land, with the proceeds going into the *kas desa*. The current price is Rp 10,000 per hectare per year for residents and Rp 20,000 for nonresidents. Many residents rent additional land each year to allow sections of their own land to remain fallow, thus replenishing soil fertility. The availability of this reserve land is important as there is uncertainty regarding the capacity of the soils to withstand continuous cropping.

Most people obtained their land in Cahaya Mas and Kampung Baru through the standardized system of allocation drawn up by the local and sub-district officials (migrants still refer to the system, or the fee involved as *pancung alas*, the name of the defunct *Marga* government's license for land exploitation). This process will continue as long as land is available for the resident's progeny. Others have in the past and will still obtain land through buy and sell operations on the open market *(jual-beli)*. Land purchased in this way is expensive: Rp 1.5 million for an average 2 ha parcel in Kampung Baru, 4 million for a 0.25 ha home site near the market (mid-1990 prices). Settlers with financial means sometimes obtain one parcel from the village and then purchase additional land from those departing. One parcel being about as much as one household can manage, additional land is used for fallow rotation and set aside for the children. To the purchase price must be added the cost for changing the owner's name on the *SKT*, which in 1990 amounted to about Rp 35,000 in the Mesuji villages.

Spontaneous settlement has also long occurred along the road from the PT Way Hitam sawmill to Pematang Panggang. Some of the people along this road have been in the area since the mid-1970s and early 1980s, either working at the sawmill or drawn by the Transmigration schemes nearby, the first of which, Surya Adi, was opened in 1974. Over the last few years this movement has accelerated with several Transmigration schemes putting sections of their land reserved for expansion *(lokasi tanah kepecaan KK)* up for sale to spontaneous migrants. Typically, the parcels measure 1.25 ha, and prices have ranged from Rp 50,000 in 1985 to Rp 200,000 to 300,000 in 1990. The B2 "Bina Tani" government Transmigration settlement turned over a large portion of its reserve land to a *Swakarsa* non-funded government-organized Transmigration scheme in 1988 which has provided land to 500 households[3]. This figure includes offspring of B2 families excluding those who are more or less temporarily working land belonging to others *(penumpang)*. The 1.25 ha allotment may be increased to 2 ha in the future. Through a personal contact with the B2 village head, an agricultural laborer from Wonogiri ended up head of the *Swakarsa* project and made some 15 round-trips to Java in the space of less than two years to seek farmers for the project. By mid-1990, there was a waiting list of 25 families, thus regular allocation of parcels (at a cost of from Rp 65,000 to 115,000 each) is no longer possible and new settlers must purchase from departing families at much higher prices, between Rp 400,000 and 500,000 for an average parcel and up to Rp 750,000 near the crossroad entrance to B2. The leader of the project is confident that a prosperous future lies ahead for his settlement.

Not everyone is pleased with the way this settlement came about. Migrants who had spontaneously settled prior to 1988 within the limits of the new *Swakarsa* project complain that they were forced to pay the going rate for the land they occupied or risk eviction. Others worry that transmigration projects which divest themselves of their

reserve land mortgage the future viability of the settlement, since second-generation out-migration will have to provide the solution to the inevitable land shortage.

There is another category of spontaneous migrants comprising those who are integrated even more closely into general Transmigration schemes without necessarily obtaining land from the project. These migrants, known as boarders *(penumpang;* literally, "passenger"), live in the house or on the land of family or acquaintances who have been attributed land in a Transmigration village. Transmigrants in Batumarta, unable to cultivate their entire parcels (up to 5 ha of land suitable for planting rubber) at once, often offer family a portion of the parcel to farm, at least temporarily. These boarders maintain the hope that they will eventually be allocated plots from the scheme's reserve land.

Spontaneous migrants often mention that in settling near a general Transmigration scheme, they can benefit from more complete infrastructure and services, including roads, markets, schools and health facilities. Those living on the fringes of Transmigration schemes, on the reserve land or outside have access to such facilities.

Case 16

P., 38, was born in Jember, East Java. He has only one other brother. At the age of 21, in 1973, he went to Metro, Lampung, to look for work ("cari upah"). *He bought 0.25 ha of dry land and got married in 1977 to a woman three years younger. The zone where he lived was then closed to cultivation* (ditutup). *In 1978, he went to Gunung Raya and worked as a coffee sharecropper, eventually earning enough to buy 5000 coffee trees. Again, the zone was declared off limits, but this time he was lucky enough to sell his plantation just beforehand, in 1984, and move to* ***Sabutan****, where he was able to pay Rp 280,000 cash for a 1.25 ha overgrown dry field previously owned by a Javanese.*

P. has a child in Sabutan and another with the grandparents in Java.

Javanese land procurement in Sabutan operates on an open-market basis. Prices are substantially higher than in the lowland Mesuji examples above, ranging from Rp 200,000 to 600,000 per hectare of uncleared land. Since the land already had specific owners, either local people, veterans or government retirees, the Javanese who came had to purchase the parcels individually from them. Not all landowners have an *SKT*, but all can apply for it and in the meantime at least have a certificate of land sale *(surat jual beli)*. In Sabutan, cost of an *SKT* is Rp 20,000. One farmers' group head plans to obtain the *SKT* and *akte* for a group of 10 families at once at a reduced cost (Rp 15,000 for the *SKT* and Rp 35,000 for the *akte)*.

In the highland coffee areas, the first settlers ten to fifteen years ago simply paid nominal fees for a tree-felling authorization *(surat izin nebas nebang)*. The first Semendo in Danau Jaya paid only Rp 2500 per parcel *(bidang)* in 1977 to 1979. The same price (over time increased to Rp 20,000) calculated per parcel was noted for Sukorejo but it has been years since any land has been reclaimed in this way, at least in the settlements we visited. On the whole, this practice continued until the early to mid 1980s, after which time there were no forest areas left to open. From then on, all transactions were based on private buying and selling. Talk is sometimes heard of such and such village bordering on the forest where modestly-priced clearing authorizations are still being offered. Usually the exact location of the area is withheld or left vague; whenever an effort was made to follow up such indications, the information was vigorously denied by the local officials. Recent satellite photos of course show that forest clearing is continuing unabated in many areas. It would take some stretch of the imagination to believe local officials could be oblivious to such activities in their area, particularly as they are in a good position to profit from it.

Prices have always varied considerably depending on the location and accessibility of the parcel, the age and condition of the plants (if any), as well as the legal status of the land. Land characterized as *"tanah marga,"* [4] for which land ownership documents can be obtained, is understandably much more expensive than land in the insecure hinterlands, running about twice as much as comparable non-*marga* land in the same village. Usually the *SKT* is available in older, established coffee areas opened more than 15 or 20 years ago. It is difficult, however, to delineate an evolution of prices over time given their wide variation, controlling for age and condition of plantation, even within the same neighborhood. Much seems to depend on the personal relationship existing between a buyer and seller and how urgently the land must be sold. Neighborhood leaders and others with capital on hand can pick up parcels at exceptionally low prices when a local resident moves out in a hurry.

For a three-year-old, 1000-tree plantation, the going rate in Danau Jaya is around Rp 1 million, Rp 750,000 in outlying *talang* of the same neighborhood *(dusun)*. Before 1985, the same plantation could have been had for Rp 100-300,000. In the area east of the Saka River, land ranks among the most fertile and productive in Simpang, yet prices are a bit lower than in Danau Jaya. This is due to the distance from Talang Karet, raising transport prices, as well as to increased fears of being expelled someday (though this area seems clearly out of any protected forest according to maps analyzed by our Project). In the highlands, one hectare of secondary forest land (non-*marga)*, can be bought at prices ranging from Rp 300,000 to 700,000, though only small patches remain in the Simpang sub-district coffee areas.

Neighborhood and village administrative costs for land sales amount to an additional five to ten percent. Rarely is the entire price paid at once, but the down payment must be at least half the selling price with the remainder usually paid at the first harvest, depending upon the arrangement made. Occasionally, the agreement is broken by the buyer, in which case the parcel returns to the original owner who retains the down payment as damages.

In Sukorejo (Pengandonan sub-district), secondary forest land can be bought from local owners for as little as Rp 150,000 per hectare. Legal title is impossible to obtain and there are few Javanese there with sufficient means to purchase land, even at low prices, and put it into production. The Javanese who do own land bought it from locals who needed cash to pay for their children's schooling, or inherited it through marriage. Most sharecroped land is owned by locals.

Land rental in the highlands is almost nonexistent, if we can judge by our only finding one instance of tenancy in all the areas visited. An elderly Javanese was rented "as long as he wished" a 2000-tree coffee plantation for a one-time price of 200 kilograms of coffee (approximately equivalent to one year's yield). This attractive price was no doubt offered because he was the father-in-law of the landowner's daughter.

In all the coffee areas, the most fortunate are the ones who arrived in the beginning, those who simply paid the nominal fee for an authorization to clear land *(izin tebas)*. In addition, at some points in the late 1970s when many new areas were cleared, coffee prices peaked, reaching Rp 1800-2000 per kilogram at times. Though many of the early landowners worked plantations for others in order to accumulate the capital necessary to buy, they were able to purchase land when prices were still low. The opposite occurred in 1990: land prices were high and coffee prices depressed, as low as Rp 1000/kg.

In the lowland spontaneous settlements, earlier settlers were at an advantage also since they came when the cost of gaining legal access to the land was minimal and could choose the best sites close to the road and future services.

Spontaneous migrant creativity and innovation are nowhere more evident than in the settlements themselves, where development owes virtually nothing to State intervention. Housing, roads and schools have been built by spontaneous migrants with little or no government aid [5]. There is a limit, nevertheless, to what spontaneous settlers can accomplish on their own. Markets and health centers are government-funded development items high up on their list of priorities. Spontaneous settlers have planned for them through setting aside or levelling land, while awaiting the indispensable government contribution. None of the spontaneous settlements visited has running water. The only electricity available is supplied by one or more village leaders in the major settlements who have a small generator sufficient to provide electricity for their house and perhaps a few neighbors. In the rest of this section, the discussion will focus on shelter, transportation, schools, health care and markets as they pertain to the settlements.

3 . Shelter

Providing themselves with shelter and getting the first crop in the ground are the first two urgent preoccupations of spontaneous migrants, whether they are pioneers opening forest for a new settlement or migrants newly arriving in an "established" settlement. In the first months following their arrival, the two tasks must be carried out simultaneously. Exception is of course made for those who stay in the home of their boss, friend or family. Agricultural laborers usually are housed and fed at the home of their employer. If the worker is hired to watch over a distant plantation, a small shelter on stilts *(pondok)* is provided. Only in the uncommon event a worker's wife and children were brought along would a new house be built, if there was no unoccupied one available. Friends or family may also agree to put up a new arrival on a temporary or permanent basis, allowing energies to be put right away into planting the first crops.

For those who buy or settle their own land, erecting a rudimentary shelter is the immediate priority in the first few days after arrival. Once protection from rain is assured, agricultural work is begun as soon as possible, with home improvement dependent on the results from the first crops unless other earnings from paid labor are available. Sometimes a plain shelter serves for a year or more. Being extensions of the Belitang area, the first settlers in Cahaya Mas and Kampung Baru were able to commute from, or at least return regularly to, their homes or their parents' homes in Nusa Bakti, Nusa Bali, Nusa Tenggara and other nearby communities.

Residential patterns differ between field sites. In Cahaya Mas and Kampung Baru, the general Transmigration model of planned squared-off parcels is used, differentiating between home and field plots. This planning intervenes before massive settlement is underway, and land is set aside for future development of roads, schools, markets, and other community services. In Sabutan, habitat is more or less dispersed, with farm houses located in the midst of their fields, or regrouped along paths but near their agricultural parcels. In the Kotaway coffee areas, habitat is dispersed, at most partially regrouped in small hamlets, or *talang*.

Similar to general Transmigration schemes, some spon-

taneous settlements are planned according to a logical layout, at least one neighborhood at a time, with maps drawn up as the settlement grows to delimit individual home-garden and agricultural plots. In a settlement opening new land, the first dwellings are constructed in or near the fields. With growing population and diminishing pest problems in the fields, there is a tendency to build homes closer to the roads and centers, to move from isolated farms to a denser environment (Fig. 23 & 24).

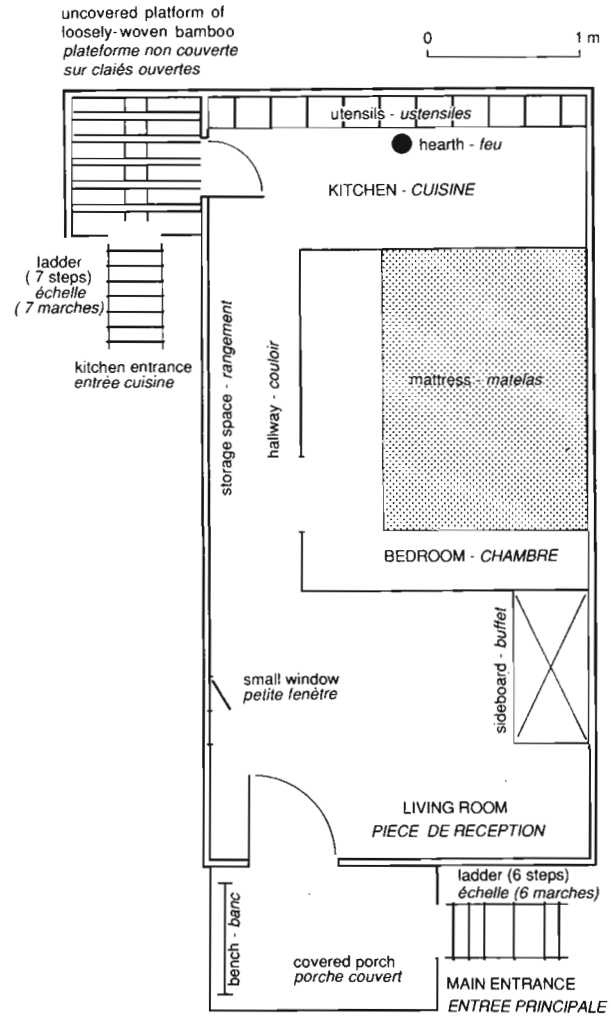
What free or inexpensive materials are available locally determines the sort of house that is built. In lowland and upland food crop settlements, or in areas where land is farmed temporarily without expectation of long-term settlement, a rudimentary shelter may be simply a frame construction without walls measuring 3 m x 4 m, with an *Imperata* roof. The occupants sleep on a raised wood and bamboo bed (Fig. 25). Such a shelter may be improved through the addition of woven *Imperata* or bamboo panels for walls. The next step is to build a more permanent house with wood planks for walls and a tile roof. A simple, but typical house of this sort in Sabutan suitable for a large family (8 m x 3.5 m floor space) would cost about Rp 165,000 (60,000 for planks at 1000 each, 6000 for 6 kg nails and 99,000 for 1650 roof tiles). Bamboo or wood for the frame and supports can be collected in the forest. Neighbors help in the construction and need only be provided meals, refreshments and tobacco (Fig. 26).

In the isolated coffee region, or in areas recently reclaimed from forest, where wild pig and other pests are still a major problem (including forest-border areas of Kampung Baru), most houses are constructed in local Sumatran fashion, though less elaborate, on stilts. Walls and floor of a temporary elevated house make use of interwoven, or split and unrolled bamboo, or wood planks, depending on the relative cost of the materials in each particular area. For a rudimentary raised house, nine to twelve square meters is considered sufficient floor-space for a family. Such "temporary" shelter may be deemed sufficient for quite a few years, particularly if one's farm or plantation is small. Increasing holdings, however, bring on the need for larger housing in order to put up hired laborers. In the isolated regions, large elevated houses provide up to fifty square meters of living space and are always constructed out of wood. One large tree provides more than enough wood to construct a large house with plank walls and wood shingles, but the cost of having the work done (sawing the boards, carpenters) in the highlands ranges from Rp 250,000 to over one million. Usually people makes their own wood shingles, a time-consuming job. Even in the better coffee plantation homes the temporary nature of the construction is evident; there is little effort made, for example, to finish the wood or furnish the dwellings. Whether the dwelling is a simple or improved, settlers often refer to it as a "shack" *(gubuk)*.

In all areas, where grouping of houses is possible and

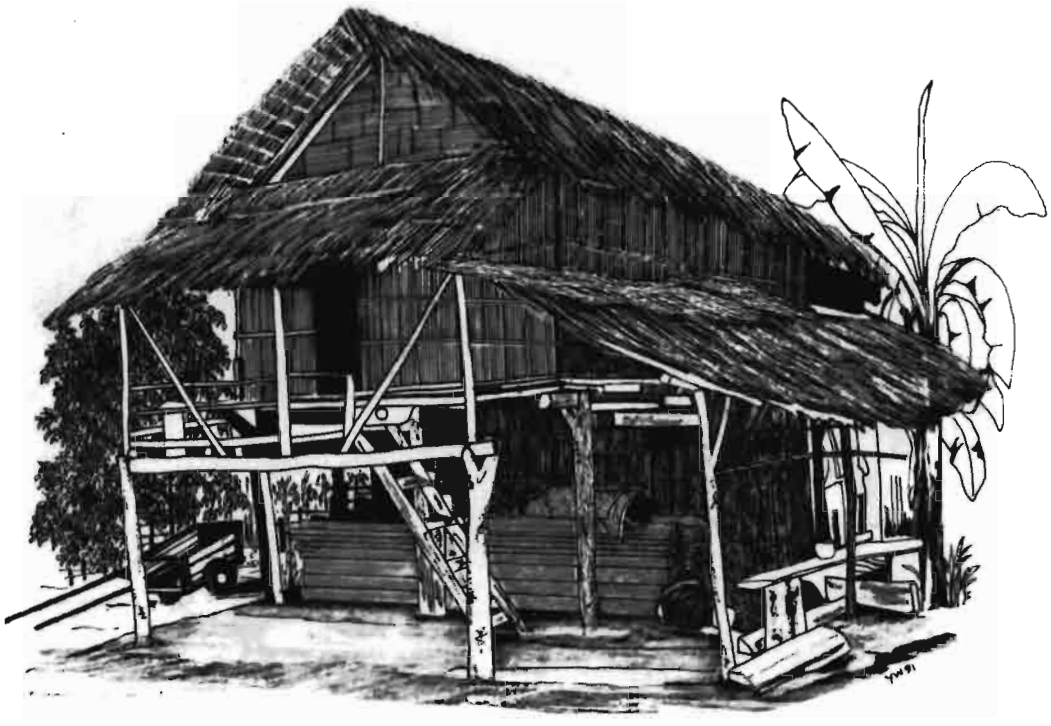
Fig. 23 FLOOR PLAN OF AN ELEVATED HOUSE IN SABUTAN BELONGING TO A JAVANESE COUPLE - *PLAN D'UNE MAISON SURELEVEE OCCUPEE PAR UNE FAMILLE JAVANAISE A SABUTAN*

floor is two meters above ground
plancher à deux mètres du sol
floor and walls : split and opened bamboo
plancher et murs : bambou refendu
roof : *Imperata* - *toit* : Imperata
frame, supports : wood - *charpente : bois*



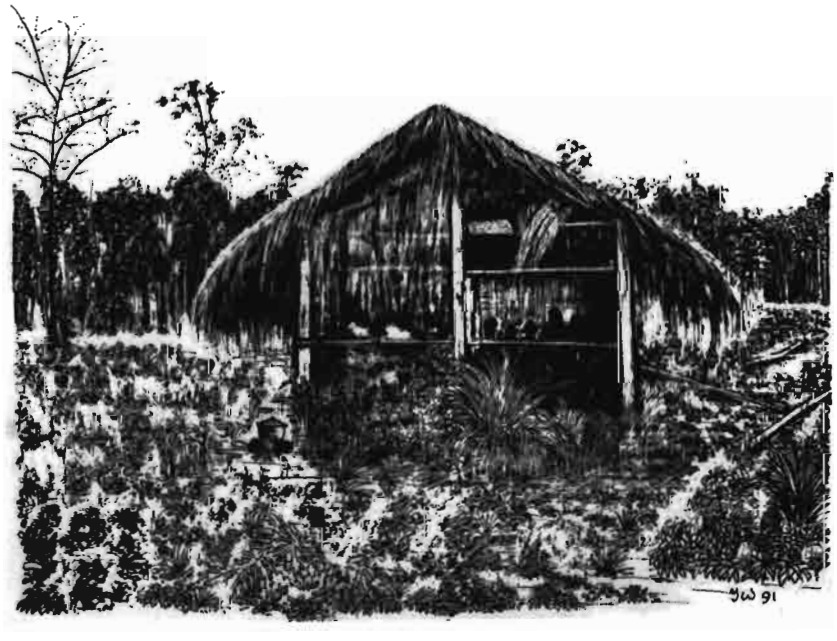
Sources - *Sources*
Field surveys - *enquêtes de terrain* 1990 H.B. - G.S. / j z 1991

Fig. 24 ELEVATED HOUSE BUILT ON THE SUMATRA MODEL
MAISON SURÉLEVÉE, CONSTRUITE SUR LE MODELE SUMATRANAIS.



Where wild animals still pose problems, houses are often constructed above ground, in Sumatran fashion, using materials avalaible locally. In this house built during the early years of settlement in Sabutan (Muaradua, OKU), bamboo and wood are used for the frame, the walls are made of split bamboo and *Imperata* grass provides roofing - *Là où passent encore des animaux sauvages, les maisons sont souvent construites sur pilotis, à la façon sumatranaise, en utilisant les matériaux disponibles sur place. Dans cette maison construite pendant les premières années d'installation à Sabutan (Muaradua, OKU), le bambou et le bois sont utilisés pour la charpente, le bambou refendu pour les murs, et l'herbe* Imperata *pour le toit.*

Fig. 25 RUDIMENTARY SHELTER IN THE FIRST STAGES OF SETTLEMENT
ABRI RUDIMENTAIRE POUR LES DÉBUTS DE L'INSTALLATION



Simples constructions, similar to the above near Cahaya Mas (Mesuji, OKI) afford temporary shelter for new arrivals. In this example, a loft serves as sleeping quarters - *Des constructions simples offrent un abri provisoire pour les nouveaux arrivants. Ici (près de Cahaya Mas, Mesuji, OKI), la couchette est surélevée.*

animal pests are less a problem, houses are more often constructed on the ground and in a fashion resembling simple rural dwellings in the sending areas of Java. The rudimentary house has a bamboo or wood frame, interwoven or split and unrolled bamboo walls, *Imperata*, bamboo or corrugated iron roof, and dirt floor. Wood planks may replace bamboo walls. Only in the larger towns and market centers accessible by truck are there any number of permanent urban-style homes *(rumah batu)* incorporating cement and even floor tiles. Among indigenous Sumatrans, a slow but growing trend is apparent away from wood houses on piles, owing to the comparative cost of such homes and reduced pest problems in many areas.

Migrants in the early stages of colonizing an area usually place a high value on mutual help *(gotong royong)*, particularly in the collective building of homes for arriving settlers. A dynamic leader may encourage people to work together so that the housing problem for new arrivals is quickly solved. One farmers' group leader in Sabutan boasts that his group can construct a house for a new family in one day (wood frame, interwoven bamboo walls and *Imperata* roof). In Cahaya Mas, after about two weeks of collecting wood and cutting boards, the early settlers worked together building semi-permanent wood plank houses one after the other, ten men taking an average of three days to erect each house. Since the wood was free for the collecting and the planks could be sawn by the mutual help group, the only outlays were for worker's meals, nails and possibly roof tiles. A growing community in search of additional settlers indeed has an interest in maintaining a high level of *gotong royong* since few new settlers can afford to expend sums for their initial housing. As the community becomes larger and more spread out, community-wide *gotong royong* becomes a thing of the past, but neighbors to a new arrival will lend a hand (Photo. 21).

As far as household composition is concerned, it is quite common to have two or more nuclear or extended families in the same house. People often share houses with family or neighbors when they first arrive in a new settlement, before they build their own house. Family members who visit or come to stay and work temporarily, a frequent occurrence, are put up in the same house. On the other hand, it has been noted that men rarely bring their wives with them if they lack land of their own. Consequently, men who work in coffee plantations are either put up at the house of their boss or live in a *pondok* by themselves. Two or more young men sometimes share a *pondok* and the responsibility for the coffee plantation.

Fig. 26 HOUSE BUILT ON THE GROUND IN SABUTAN - *MAISON CONSTRUITE AU SOL, À SABUTAN*

As a settlement matures, residents increasingly opt for more permanent ground-level housing usually built with wood plank walls and tile roofs, where such materials are obtainable - *Dans un espace plus maîtrisé, les résidents préfèrent des habitations construites au sol avec des murs en planches de bois et un toit en tuiles, si ces matériaux sont disponibles.*

4 . Transportation

Though some spontaneous settlements have developed along roads built by the government, spontaneous settlers themselves have had to undertake most if not all of the work involved in creating and maintaining access roads to homes and fields. Recognizing the importance of roads and trails for bringing agricultural production to market, one of the first priorities of a new community is to plan and begin work on secondary and tertiary roads. Most communities continue to have active community projects aimed at building, repairing and widening roads which as often as each week bring together dozens of residents for collective work.

Streets have been laid out in the Mesuji settlements to provide access to and mark off blocks of house and field plots. The main streets, unimproved for the time being, are wide enough to accommodate large trucks which come from Belitang, Lampung and Palembang to carry out agricultural produce. Within these spontaneous settlements, transportation and accessibility are problems which the migrants have to a large degree dealt with; what remains an acute problem is the inter-village road network. Difficulties arise in the rainy season: the trip to the district seat of Pematang Panggang which usually takes ninety minutes from Cahaya Mas by motorcycle in dry weather takes up to two and a half hours, if at all possible. Sometimes the rivers overflow, as they did for seven days in 1990, cutting the road to Nusa Tenggara and obliging residents to use bamboo rafts to cross them. Kampung Baru has no direct link with its district seat Pematang Panggang because bridges along the road through the forest concession P.T. Way Hitam were dynamited in 1990 to prevent illegal tree-cutting. To go to Pematang Panggang, one must take a long detour through Nusa Bakti, Nusa Jaya, Nusa Tenggara (Belitang sub-district), and then Cahaya Mas. Sabutan is fortunately located astride the main Muaradua to Danau Ranau asphalt road, and settlers there regularly widen and level the trails leading to the interior communities.

In the hilly coffee areas, transportation and marketing of crops depends on extensive systems of narrow trails measuring 0.5 to 2 meters in width which link each small settlement *(talang)* to the larger villages. Maintenance of these links is assured by the local communities without outside funding. In some coffee areas, including Simpang, specialized trail gangs are paid from the proceeds of toll gates set up along the major paths. Maintaining these trails is a demanding job, especially during the long rainy season. Trail motorcycles, used for transporting people, goods and coffee, frequently must use chains to be able to climb steep wet tracks, intensifying the need for regular maintenance.

Transportation in these areas has evolved rapidly over the years with the search for profit selecting for efficiency in locomotion. Prior to 1979, all coffee production from the Muaradua valley plantations was brought out by foot. From Danau Jaya, porters *(tukang manolan)* would leave at 7 a.m. and arrive at 3 p.m. in Talang Karet or go south to Gunung Raya, a 6 a.m. to 6 p.m. trek, earning Rp 125 per kilo. Their loads averaged 50-60 kg, but sometimes reached 90 kg. In 1979, horses were first used for coffee transport. The cost to planters was the same, Rp 125 per kilo, but horses had the advantage of supporting loads of 400-500 kg and more, for a trip down lasting 7 hours, the master walking in front of the horse. Many heavily-laden horses would fall on the steep inclines and descents. Nonetheless, by 1982, they had completely displaced porters in most areas up to Danau Jaya. Horses were still rare in the higher elevations. East of the Saka River, people would usually go on foot to Talang Karet to buy rice, a journey requiring 2-3 days round trip.

Trail motorcycles (referred to as Japanese horses, or *kuda Jepang;* the combination motorcycle plus driver is an *ojek)* were first introduced in 1985-86. Though their introduction along with rising coffee prices sent the transport cost up to Rp 250 per kilo in 1986 (again, using Danau Jaya-Karet as example), they proved to be a more efficient form of coffee transport, able to make three to four round trips to the horse's one (when a return trip was even possible). Average load was only 100 kg in the early days of trail bikes, but intrepid riders soon had little difficulty descending 2 and even 3 quintals at a time. Upkeep of each type of locomotion worked out to about the same expense, but profits were on the side of the *ojek.* At one point, with many *ojek* entering the area and competing for business, the per kilogram price from Danau Jaya even dropped to Rp 100. In 1988, only 10% of the region's coffee was still being brought out by horses, and by 1989, horses had completely disappeared. Although there is now the potential for rapid personal mobility throughout much of the hills, the shortage of trail bikes and the opportunity for handsome profits in ferrying coffee has meant that *ojek* passengers must pay dearly any trip to town or market. This results in a situation where the majority of people in the higher plantations almost never leave their neighborhoods. Six months between trips to the village market, two or three years without visiting the sub-district seat, such are representative frequencies for isolated adult male settlers who lack their own motorcycle. A woman venturing away from the home base is an even rarer occurrence. One motorcycle owner said even his wife only went to market six times a year. In the high plantations every basic need is provided for by the trusty *ojek,* so the market comes to the shopper with a hefty markup.

A great degree of foresight has been demonstrated by the leaders in the early stages of settlement in setting aside land for future development and expansion, including land

for roads and the widening of existing paths, as well as for possible school and market locations. Proud of their ability to develop and maintain basic road infrastructures in their settlements, residents still hope the government will take notice of their efforts and provide aid for projects that are beyond their means, such as building bridges and paving roads.

5 . Schools

Although the schooling of spontaneous migrants rarely exceeds the primary *(SD)* level, they harbor hopes that their children will be able to go further than they did. Most settlements, except isolated coffee-growing areas, have private schools entirely built and run by community contributions. The fees are much higher than for comparable government-run primary schools *(SD Negeri)*. The cost of erecting and maintaining the buildings and paying for the teacher salaries must be borne by the community, and this represents a burden for most family budgets. Yearly fees range from Rp 20,000 to 35,000 per pupil, and are known to reach up to Rp 100,000 in the isolated coffee-producing areas. Concern about the expense and also the quality of private education has caused many migrants in South Sumatra, particularly those in isolated highland areas, to leave their school age children with family in Java or Sumatra. Some isolated hamlets have no young children whatsoever, while in other areas children of age are unable to attend school because it is too far away and the families cannot afford to arrange schooling for them elsewhere. Secondary school students, though few, are sent to Java or put up *(kos)* in larger towns near their parents in Sumatra. Such solutions are also expensive [Cases 8, 17 and 19].

Case 17

W., 56, is from Trenggalek, East Java. His parents were peasants, owning 1 ha of dry land planted with cassava and soybeans. He is the second of six children. The first is in Sumatra. W.'s wife, 48 years old, also hails from Trenggalek. She was a seamstress, but in Sumatra she damaged an eye while manipulating the rib of a palm frond and can no longer sew. She was hospitalized in Palembang for one month.

Their land in Trenggalek being too small, W. left with his elder brother in 1961, at the age of 27, to stay with an uncle in Belitang who had come with the kolonisasi *program in 1939. He had a* sawah *and they were able to stay a year working agricultural jobs. They then returned to Trenggalek for six months because they "missed their parents"* ("rindu orang tua"). *With the gains from Sumatra, W. learned to make furniture with some neighbors. He married in 1963, then left with his wife for Belitang to stay with a cousin. This time, he intended to set himself up as a cabinet-maker and carpenter, and leave agricultural work behind* ("mau tukang kayu di Sumatra, tidak tani lagi"), *because the salary was better. He made furniture on order, but had no time or money to build his own house so they had to stay with his relatives. His wife sold snacks* (tahu *bean curd and* lontong *steamed rice) at the market with her sister. They lived this way until 1966, when with two children, they finally had enough of living with the cousin and went to look elsewhere for a place to build their own house. Belitang was too expensive, so with his earnings from cabinet-making, he moved to a cheaper area, bought a house plot and garden along with 4 ha of land, and built a home. There were already Javanese there, a few of them craftsmen but most peasants with their farms spread out in all directions. He hired Javanese to open his land for him, because at that time many migrants were coming from Java. He planted maize, beans, peanuts, cassava and rice. The village, Sumber Agung (Buay Madang sub-district) is now bustling, with a market and houses two stories high.*

In 1974, following a season of poor crop yields, he went to Muaradua to work on the NRC road and ended up staying two years. He left his wife and children in Sumber Agung; she continued her small retailing in the market and hired Javanese to cultivate their land. They now had five children. In 1976, he returned to pick up his family to move to Ruos which he knew was an area suitable for coffee growing. He and his family worked there as sharecroppers, dividing the harvest equally with the owner, and built a home on the main road where they stayed until 1982-83.

By that time, the family had grown to 8 children. Using savings amassed in Ruos, they bought a plot along the road in nearby Sabutan. *They cleared 16 x 60 m, planted a garden and built a house. In 1984, W. bought from the Veterans head a 2 ha plot of secondary forest. These lands, which were left fallow by the locals, were allocated to the Veterans and civil servants of Muaradua, many of whom sold the land off rather than cultivate it. On one hectare he grew coffee, on the other maize, green beans, yard-long beans, soybeans and fruit trees. He hired Javanese to work his land and build his current plank house, located off the road. In 1986, he sold his house and garden along the road to a Daya to try, unsuccessfully, to pay for his eldest son's schooling.*

Almost all his children were schooled in Java because here schools are limited and expensive. The eldest, born in 1964, finished high school (SMA), but without enough funds to continue into higher education, entered the Marines in Surabaya; the second oldest, born in 1966, finished junior high school (SMP) and works in a private company in Palembang; the third, born in 1968, finished junior high school also and works in a fashion house in Surabaya; the fourth, born in 1970, is still in a technical school (STM) in Trenggalek and is taken care of by his grandparents; the fifth, born in 1973, is still in a SMEA school and stays with an uncle in Trenggalek; the sixth, born in 1976, is in his first year of junior high school (SMP1) in Muaradua and lives in Sabutan; the seventh, born in 1978, is going to enter SMP in Muaradua and lives in Sabutan; the eighth, born in 1980, is in his fourth year of primary school in Sabutan. The ninth and tenth children died soon after their births in 1982 and 1984.

W. says that in Belitang one is limited to growing rice; here anything can be planted. In addition, there is a demand for craftsmen. He continues to this day to work as a cabinet-maker and carpenter. He has been the secretary of the farmers' group since 1987. His house is large enough to provide a practice area for their gamelan group. He also directs a new theatre group (ludruk) *which has already produced twice in public. There are thirty participants paying dues to buy instruments and costumes.*

Their land is not for the children's inheritance, he declares, but for the parents, for their retirement ("pension"). *All their money goes to the education of their children; the parents keep nothing for themselves, but the children must learn to find their own sustenance, "like chickens"* ("seperti ayam"). *They educate them so they will be able to stand on their own two feet.*

Community leaders uniformly express the hope that aid in the form of a government-run school will eventually be provided. Often when a school is built, however, the number of government-salaried teachers *(guru Negeri)* provided is insufficient for the ever-expanding population and supplemental private teachers *(guru honor)* must be paid for by the parents. Cahaya Mas and Kampung Baru have government-run primary schools and a pupil-year costs around Rp 20,000. With 275 pupils, Cahaya Mas feels its five *Negeri* teachers are insufficient, and has added three private ones. The three-classroom Kampung Baru *SD* has more than 600 pupils but only two government teachers to which the community has added three *guru honor*. Providing testimony of the willingness of parents to make sacrifices to ensure education for their children, five private schools are either under construction or have opened in 1990 alone in two neighborhoods of Kampung Baru.

There is a shortage of classrooms in all of the settlements visited. Teaching must be conducted in 2 or 3 shifts a day. In Danau Jaya, where some hamlets are located up to 7 km from the school, classes can only be taught in the mornings to enable older pupils to accompany youngsters to school. These factors reduce effective classroom presence to between 2.5 and 4 hours per day. Danau Jaya has four private teachers and three classrooms for its 110 pupils. As far as curriculum is concerned, the private schools tend to follow the government model and reading list. Each month the principal must make a report to the local Department of Education office.

Most of those who have children attending school at the junior or senior high school *(SMP* or *SMA)* level leave them in Java or their area of origin. The cost of sending a child to *SMP* amounts to at least Rp 100,000, more if the transport is expensive or if the child is put up in town. The high cost of secondary schooling is, in effect, the reason most often given for terminating a child's education at the primary level, followed by the problem of distance and transportation.

6 . Health care

Migrant health and health care accessibility pose major problems in all the sites visited. Migrants complain of more serious health problems in Sumatra than in the area of origin and lament that treatment is more difficult and expensive to come by. Serious health problems usually lead to financial ruin, since migrants usually have no assets other than their land or their manpower.

The number one medical problem is without a doubt malaria *(malaria, demam, panas-dingin)*, which few migrants can avoid if they stay in South Sumatra any length of time [Cases 6, 8, 15 and 18].

Case 18

N. and his wife come from the same village, Blambangrejo, in Banyuwangi district, East Java. He is 36 and she 27. Both went up to the fifth grade of primary school. He is the eldest of eight children (two brothers are in Sulawesi, another in Sumatra) and she is the second of three (the first is in Malang, East Java, on his land and the third has just arrived in Muaradua). N.'s parents have 0.5 ha of rice field in Java. When the father died, the mother remarried and had a second child. They have just acquired 1 ha of land near **Sabutan**, *after having spent two years in Lampung as sharecroppers.*

Landless, N. rented a rice field in Java. He also participated in the plantation and care of another rice field (ikut nanam) *with a share in the harvest of one part for the workers to four for the owner. He changed owners every year. N. also took care of a buffalo and worked in fisheries (earning Rp 2000 to 5000 per day). When he could find no other work, he would weave baskets out of bamboo. His wife also worked transplanting rice (Rp 500 in 1986 for four hours in the morning). During the rice harvest, both worked for the same pay (Rp 2000 per day, three meals, cigarettes and coffee, from 7 a.m. to 5 p.m.). Through all these agricultural jobs, they were able to buy a house in Java.*

In 1987, his half-brother returned from Sumatra and explained to him that a decent living could be made in Sumatra ("katanya bisa hasil di Sumatra"). *N. left for Muaradua and worked three months in the market with his half-brother. He then returned to Java and sold everything: the house, the buffalo he ended up acquiring, a bicycle, and poultry to amass the capital necessary for Sumatra. He stayed for nearly a year at the Muaradua market with his wife and two children. She sold sugar, beans and vegetables. He sold maize, beans, goats and cows. They were known as* "numpang jual," *sellers who depend on a wholesaler from whom they borrow merchandise to sell. N., would roam with his half-brother by motorcycle from market to market, transporting merchandise by pickup truck, returning to Muaradua often late into the night. They lived in the half-brother's house under construction. He encouraged them to look for land in Sabutan when their rental contract expired and trading becoming less profitable with the arrival of many new market people.*

After five months in the town of Muaradua, they acquired 1 ha of forest regrowth (tanah belukar) *in Sabutan for Rp 400,000 from a Bayur Semendo who had obtained the land from the Veterans Project. N. gave up trading to work his land. He hired help for the land clearing (at the rate of Rp 1500 and three meals per day or Rp 5000 without meals for clearing a 15 X 15 area). While he cleared the land and planted crops, his wife continued to work in the market.*

She came to join him in Sabutan for the first harvest and they built their house together. But soon after, five months pregnant with their third child, she became anemic and had to be hospitalized in Baturaja to receive blood transfusions, once for eight days and again for five days. She was not completely recovered until three months after delivery. This medical care absorbed all their savings and they went into debt. N., his wife and three children also suffer from malaria.

N. has reduced his debt to his brother-in-law to Rp 600,000. He plans to buy cows to till his land once the debt is cleared; in the meantime he has to rent a team for Rp 5000 the half day. He

gets one harvest of maize and two of soybeans (11 quintals per harvest), plants yard-long beans (Vigna unguiculata *[L.] Walp.) and plans to grow peanuts. He wants to plant dry land rice next September or October for household consumption. During the season, he sells his beans every other day in the Muaradua market; off-season he only goes once a week to sell maize and shop. He never goes to Baturaja except for medical treatment.*

He has 17 hens and one rooster; the eggs are used for reproduction and are rarely consumed. He feels that he has better nutrition here than in Java, where he ate neither eggs nor fish. Here, the diet includes rice, vegetables, chili, beans, sometimes eggs and fish, with meat only on important occasions.

N. built their first house on stilts (di atas), *but it was too small. He has almost completed a large house with wood planks for walls, baked roof tiles and dirt floor. The sturdy homes on stilts owned by the locals are too expensive, given the price of the planks and flooring.*

Water is drawn from a spring 100 m away. In an hour, five days worth of wood for the kitchen can be gathered in the forest nearby. What is lacking, he says, are cows, agricultural tools (such as a sprayer), and good roads. Malaria remains a problem. He sees no particular difficulties with the locals. He was used to associating with them at the Muaradua market. Outside of farming, he participates in the Bina Karya gamelan group and his wife takes part in a women's revolving-credit association.

While many areas of Java are relatively free of malaria-bearing mosquitoes, Sumatra has some of the most dangerous strains of malaria in Indonesia which are resistant to available prophylaxis. Yet, even health workers discount the gravity of malaria because of its commonness and inevitability. It is often said that every newcomer has to go through the malaria attacks during the first few weeks in the area. Afterwards, most get used to the regular more or less violent attacks. For some migrants, however, the attacks are unbearable and force a decision to return to their place of origin, as confirmed by talks with village chiefs in East Java. Some migrants maintain that there are more mosquitoes now than there were when they first came.

Serious outbreaks of diarrhea, perhaps even cholera (all grouped under the same Indonesian term *muntaber:* literally, vomiting-diarrhea) remains a danger in Sumatra, as in many of the migrant sending areas. In the eastern Pengandonan group of villages in which the field site Sukorejo is located, serious dehydration following diarrhea and vomiting is said to cause about eight deaths a year. There seem to be more outbreaks during the July to September dry season. In Kampung Baru village alone, there are an average of seven to eight cases a month out of a total *desa* population of 4226 (April 1990); arriving on the 18th of July 1990, we were told there had already been ten cases that month. Some of the cases reported have led to dehydration and death in as little as ten hours. Transport to medical facilities capable of administering liquid perfusion is often impossible if the illness is not diagnosed immediately. Village leaders are therefore being advised to treat *muntaber* as soon as possible with large quantities of salt-sugar solution administered orally. Women's groups *(PKK)* and officials have made efforts to inform villagers of the symptoms to watch out for and the importance of rapid treatment. New methods of treatment may indeed save lives, but it is clear that the root causes of these epidemics, poor nutrition, poor sanitation and inadequate prevention, are unlikely to go away by themselves.

Typhus is also present in lowland and highland areas [Case 19]. Beri-beri is another serious disease which has been a major problem in the past and is still common in the Simpang coffee area. We noted only one specific reported instance, in Sukorejo, a woman who lost her ten-year-old daughter several months earlier. This case points to another problem, the cost of health care. The mother explained that she was able to pay for two months of bi-weekly injections administered by a doctor near the Tangsi Lontar market for Rp 1500 each. The doctor then demanded Rp 20,000 for subsequent injections, and she was forced to stop the treatment.

Other common ailments include influenza *(masuk angin)*, fever *(sakit panas)* and coughs *(sakit batuk)* which strike people regularly in the cooler wet mountainous regions along with skin problems and infections *(sakit kulit, gatal)*, lung afflictions *(sakit paro-paro, paro-paro basah)*, and fatigue *(sakit leso)*.

Many women complain that birth control pills and follow-up are virtually impossible to come by in their area. We have spoken to many women who seek counsel on such matters, now that their family is complete, in order to avoid unwanted pregnancies and the burden they bring. Settlers have a pretty good idea of what their ideal family size is taking into account their resources and the potential for future settlement expansion, the productive capacity of their land, and emerging priorities such as education. The availability of convenient and inexpensive family planning services could help ensure that the offspring of these settlers will have alternatives to migration themselves. As elsewhere in Indonesia (Smyth, 1991), women have little choice over what contraceptive methods they can use, the government priority being to promote the use of implants, injectables and other long-acting contraceptives. Unfortunately, the preliminary examinations and follow-up necessary to control and monitor their use is lacking in or near all but a few spontaneous settlements.

Each *kecamatan* has a government-run health clinic *(Puskesmas)*, with a doctor on call and mini laboratory, and several smaller offices *(Pembantu Puskesmas)*, staffed with a nurse. Kampung Baru has had a *Pembantu Puskesmas* since 1989, only four years following the first settlement of the area. The facility was opened in response to the rapid population growth. Most people come for injections against

malaria, and treatment for the routine ailments noted above. It is able to treat most of the cases it receives locally, but if necessary refers patients to Gumawang (Belitang) to the government hospital *(Rumah Sakit Negeri)* or to the private hospital Charitas. Hospitals are found only in the district seats (Baturaja, Kayu Agung, for example) and a few major towns like Gumawang.

Aside from Kampung Baru, most of the other field sites are located between 5 and 11 km from the closest clinic. Cahaya Mas receives a medical worker *(menteri kesehatan)* on the 13th of each month who treats patients at the home of the village head. The nearest aid in the event of an emergency is at Nusa Bakti, a four-hour walk or ninety minute bicycle trip (Rp 500 if motorized transport is available) [Case 6]. In the highland coffee areas, those far from the main market towns can call medical workers to their home, provided they pay the expense of the *ojek* transportation, Rp 10-15,000 or more to some isolated areas.

With no shortage of wood, drinking water from rivers, wells and springs is nearly always boiled, if only momentarily. Bathing and washing of clothes is done at a river or, in highland areas, at one of the many springs dotting the landscape. In the hilly coffee areas, a source of fairly clean water is never more than a few hundred meters away. Wells are sometimes dug at the lower elevations. As for the lowland sites in Mesuji, many areas have wells for every couple of households. Wells here must be dug 7 to 9 meters deep and reinforced with bricks (1000-2000) to keep the sides from caving in. The total cost of a well ranges from Rp 75,000 to 150,000. Up until recently, wells were unpopular among Javanese who feared that local Sumatrans could poison them. With ethnic relations improved, people have been starting to build and use wells once again.

Given the large areas that must be covered by the central clinic and its branches, any sort of preventive campaign becomes a nightmare to organize, especially in mountainous areas where transportation is expensive. Such campaigns could, however, take important preventive measures largely lacking in the spontaneous settlements concerning, notably, proper disposal of wastes, the building of latrines, the eradication of mosquitos and the use of prophylaxis, proper nutrition and family planning. That health considerations receive low priority in the eyes of migrants is perhaps understandable given the weak impact of schools and government services and, especially in highland areas where land status is unclear, a sense that their stay is likely to be a temporary one. Rather than divert energies towards improving their environment, many migrants instead feel that they should concentrate on increasing production and building up their capital in order to reach the goals they set for themselves in the first place: economic security in Sumatra or Java.

7 . Markets

Most settlements of any size have set aside land for a future market, and have begun or plan to begin leveling work on the sites. In the eyes of spontaneous migrants, a settlement truly comes of age when it opens its first government-subsidized market *(pasar Inpres)*. No longer do residents have to rely on irregular and ad hoc arrangements for procuring daily necessities. Competitive prices, savings in transport costs and the creation of new income-generating activities are direct benefits, but people see a wider significance. The market provokes a multiplicity of exchange relations which attract outside investment and stimulate internal productivity, creating animation *(ramai)* that strengthens the settlement's credentials as a *desa*.

Kampung Baru is the only field site we visited which has a *pasar Inpres*. Since the opening of the Wednesday and Sunday market in 1988, the village has been transformed in a way that inspires the envy of nearby spontaneous settlements. Four fixed shops *(toko)* exist at or around the marketplace, to add to the one other village store in a nearby neighborhood, opened in 1987. Three food stalls *(warung makan)* and various repair shops have opened. In 1988, a 5 m x 10 m kiosk spot could be purchased for Rp 20,000. A market tax is collected for village revenue and market expansion. Every market day there are about 80 traders present, including several cloth traders, and about a quarter of the village population shows up to buy and sell. Many come from Belitang, either Gumawang, neighboring villages or the official Transmigration settlements close by. The large shops are owned by Chinese or Komering having family connections with traders in Gumawang and they all replenish their stocks through wholesalers there. Among the traders are also some of the ten or so North Sumatran and Batak residents. Lack of capital remains a factor limiting large trading activities by Javanese and Balinese in the village, and to a lesser degree by more-established transmigrants in nearby official settlements.

Sukorejo has a small weekly market on Sundays *(pasar mingguan, kalangan)*. It is sufficient for the most routine purchases of food, though some feel the need to go to other markets at neighboring sub-districts, like Sugihwaras (an hour and a half walk or Rp 1000 by truck) and Tangsi Lontar (2-3 hour walk or Rp 1000). Special purchases demand a trip to Baturaja (an hour by truck, Rp 2000).

Spontaneous migrants in areas relatively far from markets or in mountainous areas where transportation is expensive drastically limit the frequency of their purchases and tailor their consumption habits accordingly.

Notes to chapter 3

(1) A few clearings in this forest between Kotaway-Talang Karet and Gunung Raya had already been made, probably without authorization, by small local and migrant groups about three years before the establishment of Danau Jaya.

(2) Kampung Baru and Cahaya Mas are located midway between Gumawang (Belitang) and Pematang Panggung (Mesuji), on the periphery of the Belitang government-sponsored receiving areas. For an overview of the history and economics of settlement in the Belitang area following Independence, see Fachurrozie and MacAndrews (1978).

(3) Though the Swakarsa program is recent, *the government has long sought to have transmigrants pay their own way. Before 1955, the government organized the movement of 880 self-paying families or 3689 persons to the Outer Islands (Bhatta, 1957:19).*

(4) Before the Marga local government structure was abolished in 1983, no land fell outside of the Marga jurisdiction. However, migrants as well as locals still refer to land for which legal title is available as tanah marga, *and land for which no certification is possible as bukan* tanah marga, *"not Marga land," or a similar expression.*

(5) Studies of spontaneous movements in other countries have also mentioned the construction of infrastructures by pioneer settlers (Schaaf and Manshard, 1969).

Chapter 4

Economic and social life of spontaneous settlements

There are as many opportunities for as there are constraints on economic development. Some of the opportunities outlined above have been created by the migrants themselves through their motivation to play an active role in building their communities, often from scratch, and their hard work invested to insure the economic viability of their families both in the new settlement and in the sending areas. Normally this development is carried out in concert with, or at least without opposition from, local Sumatran populations.

The socioeconomic framework, within which migrants must compete for employment, land and resources, differs throughout South Sumatra and even within a given settlement. Nevertheless, it is necessary to focus on the varying rules of the game if we are to understand the choices open to migrants and the opportunities they have to gain financial independence and security, the major reasons for their embarking on their journeys.

In the highland coffee plantations, the choices open to migrants will be determined by the capital they have upon arrival and the sorts of deals they can cut with potential employers. The maps of Sabutan (upland food crops) and Sukorejo (upland coffee) below (Fig. 27 & 28) provide an idea of the economic and ethnic heterogeneity of these upland settlements. In the lowland areas, one is part of a community with little inequality in terms of land ownership, with most households owning 2 ha. Other factors may intervene, however, to promote economic differentiation in these areas. In all settlements, the question of whether official land certification is available will also determine the economic strategies adopted by the settler.

Following a description of the agricultural setting and the process of land colonization, we turn to the structure of the employment environment in which spontaneous migrants must operate, and then examine the domestic economies that develop in spontaneous settlements. This section will close with observation of social life in the settlements and interaction with local communities.

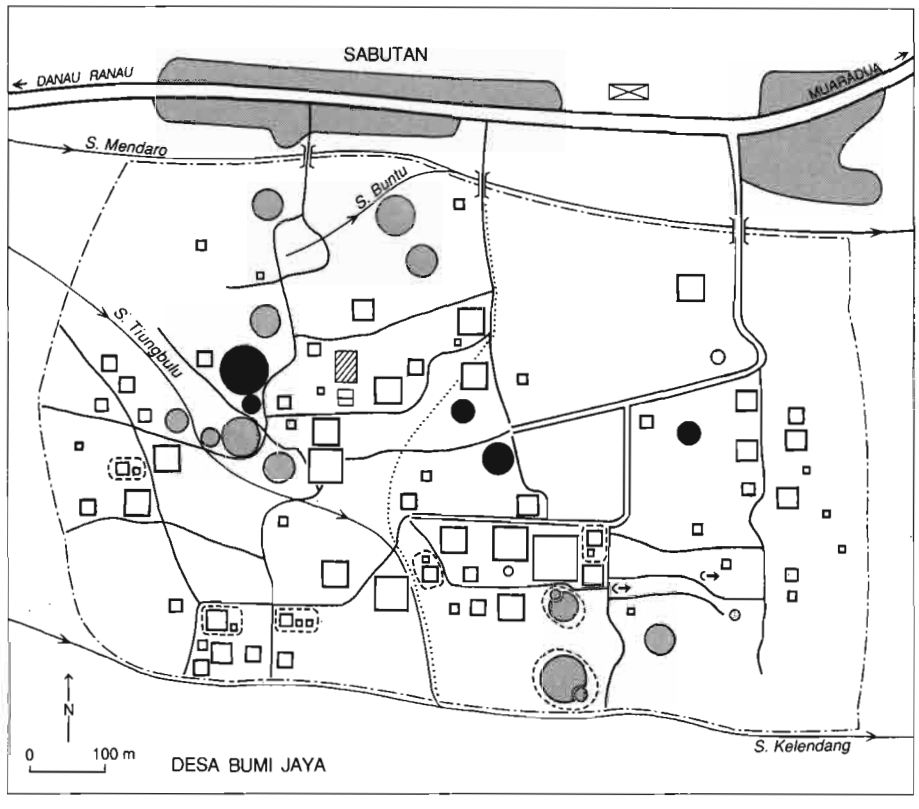
1. Land clearing

In each type of spontaneous settlement, land clearing is done by the settlers themselves, without the aid of machinery commonly used to open land for official Transmigration settlements. Whether the land to be cleared is covered with primary or secondary forest or *Imperata*, simple hand tools are often the only means spontaneous migrants have at their disposal. Only in the last few years have chain saws appeared.

The extent of land clearing necessary depends on the area settled. Usually settlers are opening secondary or degraded forest, or reopening overgrown plantations. This is sometimes land which has been sold to them by former (usually local Sumatran) owners, or land which was used for shifting cultivation. This land is covered with *Imperata* or with forest regrowth or both. Large trees remaining from patches of primary forest sometimes remain.

Sabutan and Kampung Baru were covered with shrubby forest (small trees) and *Imperata*. In the area of Kampung Baru and Cahaya Mas, the sawmill P.T. Way Hitam had removed many of the largest trees but, at least in Cahaya Mas, some were left standing. The large trees encountered (some measuring up to 80 cm in diameter) left stumps and extensive root systems that still remain a problem in some fields. One neighborhood head said that only in the last two years has it been possible to begin plowing the land with cattle.

Fig. 27 PIEDMONT AREA (COMBINATION FOOD AND CASH CROP).
THE HAMLET OF SABUTAN, BUMI AGUNG, KEC. MUARADUA, OKU.



1. Ethnic group affiliation and family size.
Appartenance ethnique et taille des familles.

size of family *nombre de personnes par famille*	Daya (autochtonous *autochtone*)	other Sumatranese *autre Sumatranais*	Javanese, Sundanese *Javanais, Sundanais*
1	●	○	□
2	●	○	□
3	●	○	□
4	●	○	□
5	●	○	□
6	●	○	□
7	●	○	□
8 / 9	●	○	□

Families sharing the same roof are represented as attached.
Les familles partageant le même toit sont representées comme étant attachées.

boundary between the two farmers groups
limite entre les deux groupes des fermiers

width of paths - *largeur des pistes* :

1 - 2 m

0,5 - 1 m

wooden bridge - *pont en bois*

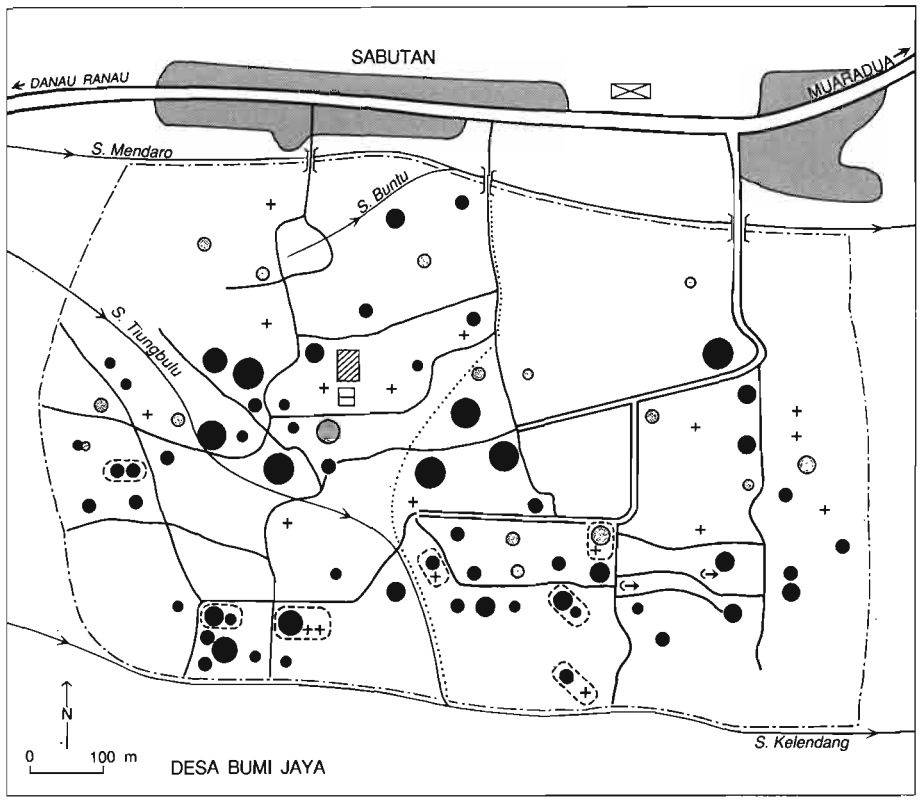
volley-ball court - *terrain de volley*

farmer's group collective plot
lopin collectif du groupe des fermiers

brick-making factory - *fabrique de briques*

spring - *source*

REGION DE PIEDMONT (CULTURES VIVRIERES ET CULTURES COMMERCIALES)
LE HAMEAU DE SABUTAN, BUMI AGUNG, KEC. MUARADUA, OKU.



2. Land ownership and size of plantation.
Statut foncier et dimension des exploitations.

size of plantation
superficie des exploitations

- o 0,50 - 0,99 Ha
- ○ 1,00 - 1,99 Ha
- ◯ 2,00 - 2,99 Ha
- ◯ 3,00 - 4,99 Ha
- ◯ 5,00 - 5,99 Ha

land ownership
statut foncier

- + landless - *sans terre*
- ○ shared by household *partagé (en métayage) par la famille*
- ● owned - *en propriété*

Sources - *Sources*
Field surveys - *enquêtes de terrain* 1990

Field survey sketch : this map cannot be used as a planimetric reference - *Croquis établi d'après observations de terrain : la planimétrie de ce document est approximative*

HB - GS gp - jz 1991

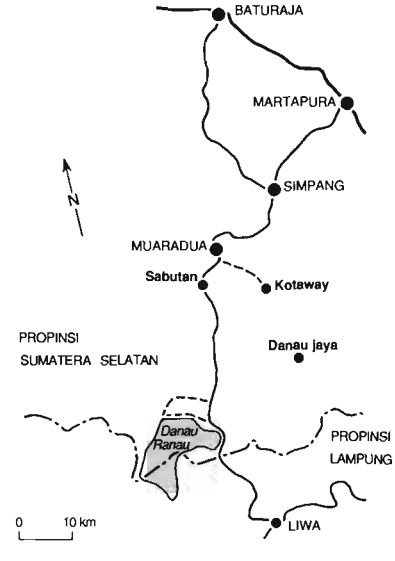


Fig. 28 HIGHLAND COFFE-BELT AREA : SOCIO ECONOMIC CHARACTERISTICS OF SPONTANEOUS MIGRANTS IN THE HAMLET OF SUKOREJO. PEDATARAN, KEC. PENGANDONAN, OKU
REGION DE HAUTES TERRES PRODUCTRICE DE CAFE: CARACTERISTIQUES SOCIO- ECONOMIQUES DES MIGRANTS SPONTANES DU HAMEAU DE SUKOREJO. PEDATARAN, KEC. PENGANDONAN, OKU

1. Ethnic group affiliation and year of arrival for the migrants
Appartenance ethnique des habitants et année d'arrivée des migrants.

native / *autochtone*

● Ogan family - *famille ogan*

migrant family (Javanese, Sundanese, Madurese)
famille migrante (Javanaise, Sundanaise, Madouraise)

- ☐ 1975 - 1984
- ■ 1985 - 1988
- ☐ 1989 - 1990

- ◇ prayer house - *maison de prière (langgar)*
- ⊠ marketplace - *lieu du marche*

Socioeconomic data were collected only for migrant families
Les indicateurs socio-économiques n'ont eté recueillis que pour les familles des migrants spontanés

2. Size of migrant families
Taille des familles migrantes.

size of family
nombre de personnes par famille

1
2
3
4
5
6
7

Families sharing the same roof are represented as attached.
Les familles partageant le même toit sont représentées comme étant attachées.

3. Land ownership and size of plantation
Statut foncier et dimension des exploitations.

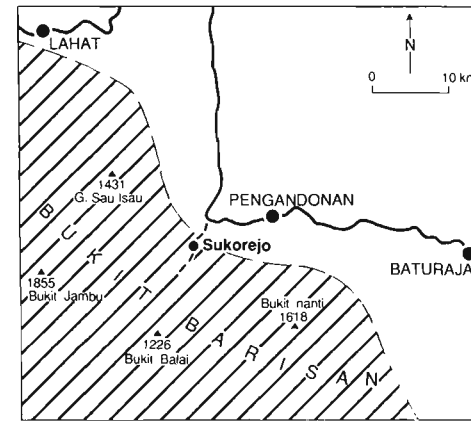
coffee · number of trees café: *nombre de pieds*

1	○	1000 - 1999
2	○	2000 - 2999
3	○	3000 - 3999
4	○	4000 - 4999
5	○	5000 - 5999
6	○	6000 - 6999

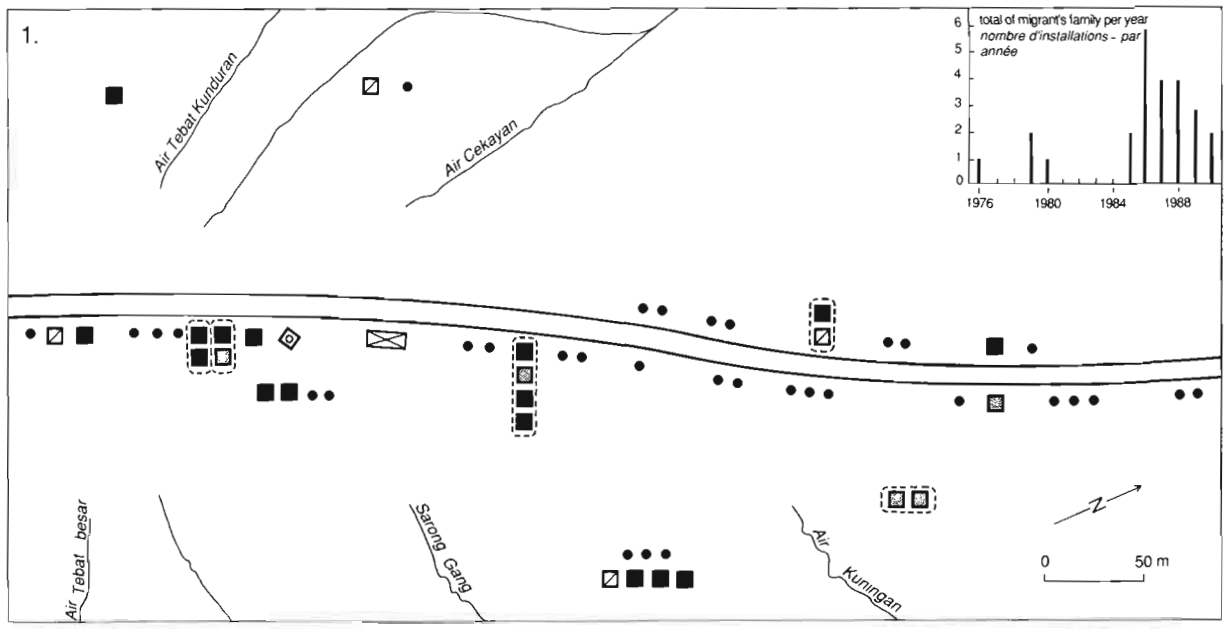
One hectare can accomodate from 1500 - 2500 coffee trees - *1500 - 2500 pieds couvrent environ un hectare*

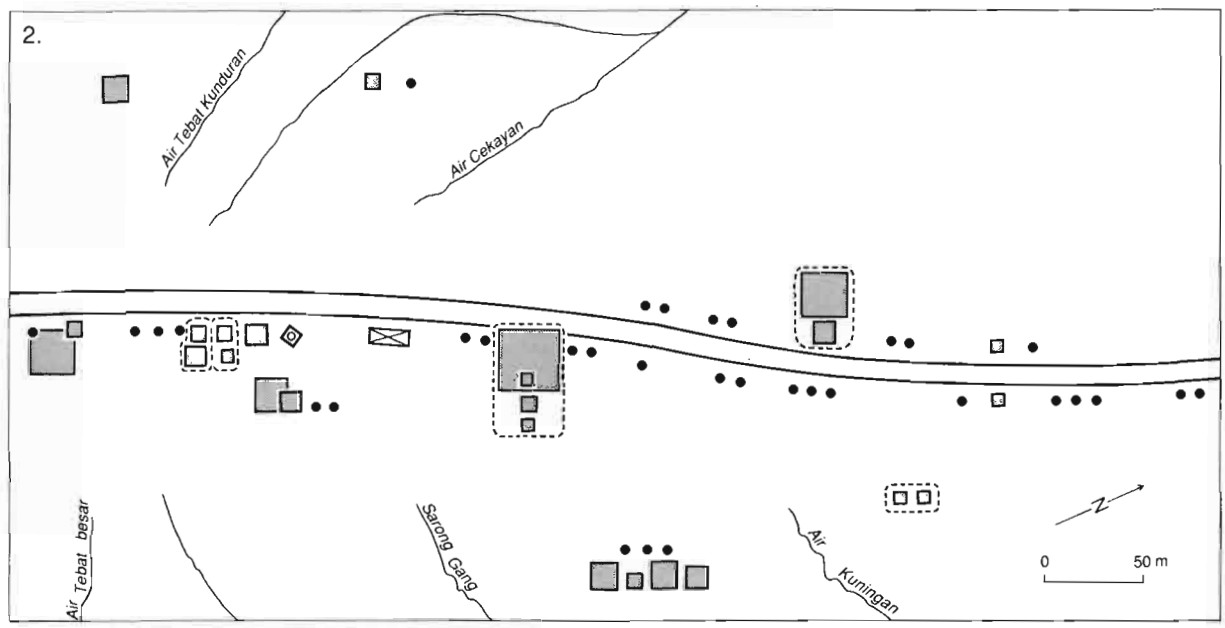
land ownership - *statut foncier*

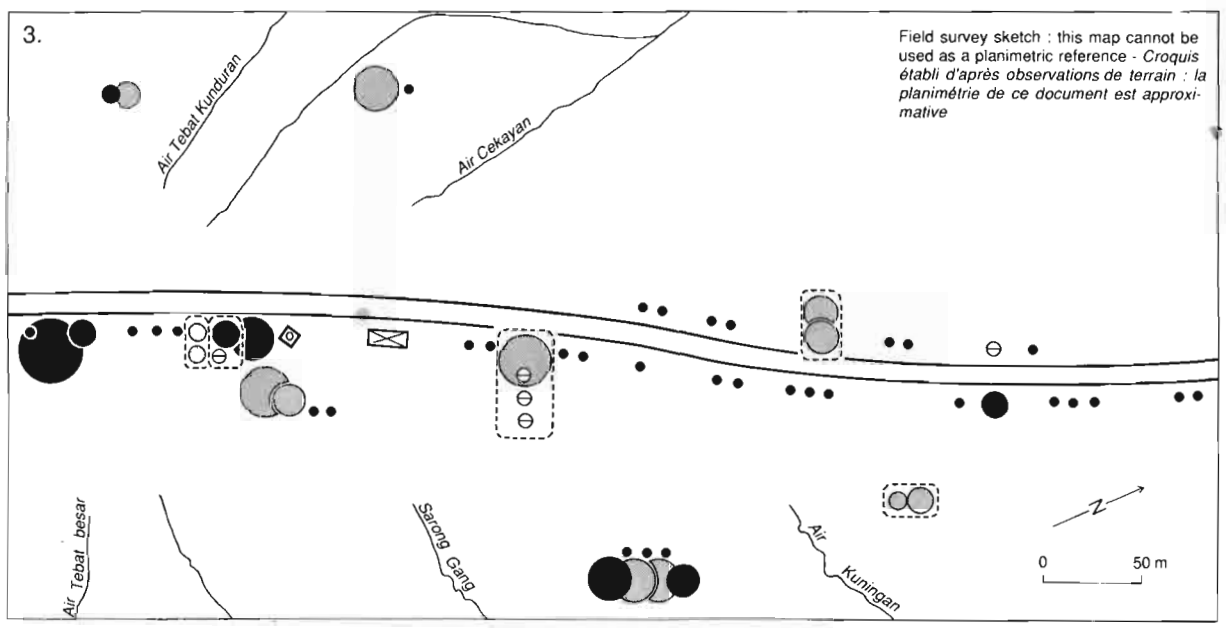
- ⊖ landless (works for day wages exclusively)
  sans terre (journalier agricole à plein temps)
- ○ sharecropped
  partagés (en métayage) par la famille
- ● owned
  en propriété



Sources - *Sources*
Field surveys - *enquêtes de terrain* 1990







HB - GS / gp - jz 1991

Those who have moved to these settlements over the last few years often must deal with *Imperata* on fields that have been used for fallow rotation by earlier settlers. The Balinese in Cahaya Mas, for example, have for the last three years been settling an area that was first opened by Javanese.

The *Imperata* must be hoed up and plowed or turned under. The Javanese and other migrants are known for their willingness and ability to clear large expanses of *Imperata* to put them under cultivation. This is indeed one of the main reasons for the receptivity of migrants in Sumatran communities. Migrants simply use the hoe *(cangkol)*. Local people (such as the Ogan at Sukorejo) sometimes use a crowbar *(linggis, tembilang)* along with the hoe to pry up *Imperata* by the roots. This is said to be faster than using the hoe exclusively. Opening one hectare for planting takes 60-80 person-days (or costs about Rp 100,000) in the Balinese area of Kampung Baru. In Sukorejo, it may take as little as thirty or as many as 150 person-days to open one hectare, depending on the extent of *Imperata* sometimes mixed with small trees that have grown back from earlier cultivation. In Danau Jaya, the cost of eradicating *Imperata* is much more because a higher day-wage rate is paid for this work, Rp 3000-3500. Clearing one hectare is a job that can take from 75 to 180 person-days (up to 45 days for three or four men) to accomplish because it would mean hoeing three times over. In Sabutan, 155 person-days are necessary to open secondary forest area with *Imperata:* 25 person-days for cutting down the trees and undergrowth, five for burning the debris (others provide mutual help without cost) following a week or two drying period, 75 for a first hoeing and 50 for a second hoeing. If there is no *Imperata,* less than 60 person-days are sufficient for the clearing. In all areas, much variance in the estimates of the amount of work required also depends on the thoroughness desired.

The highland coffee settlements in Kotaway (Simpang sub-district) are examples of the many settlements opened from primary forest. A group of Semendo from the Bayur area of Muaradua Kisam district decided to create a settlement within the remaining forested region of the Simpang district between the established plantations of Gunung Raya and Talang Karet-Sipin. Having chosen the area near a small lake, Danau Jaya (or Danau Kuning as it is also called), almost equidistant from the two plantation centers, a group of ten men came together in 1977 to do the first land clearing. They were supported by family in Bayur for the first months while land was cleared, rice and coffee planted and houses built. By the time the rice was about to be harvested, their families came to join them.

About half of the men opened 4 ha each (enough for about 8000 trees) and the other half opened from 1 to 3 ha. The work was done collectively, and there were no "clearing specialists" who left once they had prepared land for others. All cleared land to plant a coffee plantation for themselves. After thirteen years, only one of the original settlers remains; the others have all returned to the Bayur area, their plantations take over by newcomers from Bayur.

The way in which the settlement was established was conducive to mutual help, where the planters took turns opening up each other's land *(gotong royong, giliran).* This limited the amount of capital needed to establish the plantations. Today, one can no longer count on mutual help for specialized sawing, clearing or eradicating *Imperata;* all these tasks must be paid for.

The tree-clearing, achieved with rudimentary tools, was no easy task. Small axes *(beliung, kapak)* were the only tools used to fell large trees measuring four spreads of the arms in circumference. A four-meter-high platform would first be constructed, and the tree would be cut at that height. Two people working together could only cut down two trees of this size per day at most. Simply to remove the larger trees from an average 1 ha parcel takes two men eighteen days (or cost about Rp 150,000 in 1990, over Rp 4000 per person-day) using chain saws. Farmers actually prefer large trees to *Imperata,* since although the same amount of time is necessary for clearing, the work is less arduous. If there is no *Imperata,* hoeing is unnecessary; it is enough to clear the brush and smaller growth with sickles and machetes. This will take less than a month for two people. Then the debris must be left to dry for at least two weeks, preferably longer, before it can be burned. People will usually help out the day the trees and debris are burned, and no pay or meals are even required. About twenty people are needed for a 1 ha parcel to prevent fire from spreading. The burning of most ground cover takes one day, though large trees may smolder for weeks. After the first burning, the debris is gathered together and reburned. Ashes are left for fertilizing. This second burning and tidying up requires about 16-20 person-days.

All of the above work must be done during the dry season. If there is rain, the work is delayed. Once the clearing is completed, however, it is necessary to wait for rain before planting upland rice *(padi),* the crop which is usually chosen to provide subsistence while the coffee trees are growing within it [1]. The calendar therefore dictates when clearing and planting takes place. If in July and August the trees are felled and in September or October the debris is burned, the planting may be done in October or November following sufficient rain.

Rice is planted by *gotong royong,* with the workers only receiving three meals, refreshments and tobacco. About 15-20 people will need one day to plant 1 ha. Using a planting stick, seven or eight seeds (local variety) are placed in holes about 30 cm apart. *Padi* is weeded twice during its six-month growing cycle, each time requiring ten person-days. No fertilizer or insecticide is used for *padi* on fields prepared for coffee. After the rice has been in the ground for between one to three months, the coffee is

planted. This takes about seven man-days, with the trees spaced 2 m x 2 m or 2.5 m x 2.5 m apart. The small coffee trees will have been grown beforehand in a covered nursery *(jambangan)* until they attain the height of about 25 cm (or about six months of age). No fertilizer is used in the nursery, which is sheltered by a simple roof of leaves.

Following the rice harvest, the shoots are pulled up (requiring about 10 person-days) and the coffee is left to grow on its own. Yield from the *padi* works out to about 900 kilograms per ha (dry hulled weight) [2]. The cost of hulling varies from five to ten percent. Harvesters receive one part to the owner's four, a high share when it is considered that workers are dispensed from doing the preliminary land clearing and preparation (paid labor is used for this heavy work). Most who take part in the harvest are neighbors who will also plant or have already planted the rice-coffee combination and can be expected to repay the harvest opportunity. Perhaps the generous sharing system, in addition to helping those without plantations or in need, permits an effective spreading of risk and pooling of resources among planters.

At the height of the initial clearing and planting in Danau Jaya, up to forty people were taking part. In the beginning almost all were Semendo, but some Javanese were brought along from Bayur where they had been agricultural workers. They would soon open up their own settlements in and around Danau Jaya.

Althought more thorough and time-consuming clearance would affords more protection against a rapid return of weeds, local people usually seek to reduce labor inputs both in the land clearing phase and the regular maintenance whereas Javanese and other migrants are more willing to invest additional time and effort in expectation of increased yields. Such behavior is to be expected from migrant people who have few other social and economic pursuits that demand a share of their attention. We will return to the subject of ethnic differences in the next section on farming systems.

2. Farming systems

Migrants borrow aspects of their farming systems from local people and vice versa. Almost always there is some alteration made in what is brought from the sending area or adopted in the receiving area. Soon after their arrival, migrants are instructed in agricultural, architectural, and other techniques by employers and co-workers from the local or migrant community. They can thus avoid, at the outset, a prolonged period of searching through trial and error for appropriate techniques. Migrants in their new and uncertain environment, if they can surmount the initial difficulties of dislocation, often exhibit a desire to learn, experiment with and create new farming techniques.

The future viability of spontaneous settlements hinges on the long-term fertility of the soils, especially the yellow podzolic and other fragile tropical soils [3], as well as on the possibilities for diversification. Monitoring of farming systems and yields over time is essential to ensuring their future viability. We now look at food crop systems and then coffee cash crop systems in some detail. The first section presents descriptions of typical agricultural systems found in the food crop areas. Quantitative data, presented here in footnotes, are indications based on interviews with key informants who were asked to provide average estimates for their areas.

3. Lowland food crop areas

In almost all recent spontaneous villages, outside of the *pasang surut* tidal-swamp area, wet-rice *(sawah)* cultivation is practiced only marginally, on humid depressions, if at all. In none of the field sites has there been any attempts to create irrigation systems, with the exception of Sabutan, where an early attempt in the 1960s was abandoned. Most of the better land where *sawah*-type cultivation is possible to any great extent has long been settled by local populations. What *sawah* land is available is usually too expensive for migrants at least in their first few years of settlement.

Most non-coffee spontaneous settlements must therefore depend primarily on dry field cultivation systems (similar to the Javanese *tegalan* agriculture), based on a rotation of food and sometimes cash and vegetable crops. This is done through *tumpang sari* (mixed cropping) [4] or rotation of pure stands in the villages studied. Farmers often will devote part of their holdings to pure stands and part to an intercropping, rotating their fields over the years. The most common crops in these systems are upland rice, maize, cassava, soybeans, peanuts, beans (including yard-long, mung and green gram), or chili peppers.

None of the purely spontaneous settlements has yet evolved extensive tree crop systems, outside of the primarily highland coffee-growing areas, but some settlers have experimented (with mixed results) or expressed interest in growing orange, cacao, rubber, pepper, clove and oil palm. In all the spontaneous settlements in the food crop areas one finds home-garden *(pekarangan)* trees which provide important supplemental income for family budgets. These include banana, coconut, durian, duku, rambutan and other trees.

In Sabutan, where Javanese communities are intermingled with a minority local population, quite a degree of diversity is found. Although most Javanese depend on dry field *palawija* or less frequently wet rice, several locals have fairly extensive holdings of tree crops, including coconut, coffee, rubber, durian and banana. The local tree plantations are characterized by low yields, notably for the coffee and coconut, due to irregular weeding.

Among the migrant farmers in Sabutan, maize, upland rice, cassava and soybeans are crops often planted in pure stands or combined in a *tumpang sari* system. Some local people are fond of saying that before the Javanese came, they would only do one cropping period per year; the migrants have shown them how to do two or even three. A common association that can be cropped three times is maize-soybeans [5]. Cassava are sometimes planted around the field.

Whether they plant it with other crops or alone, all farmers grow some cassava, usually 100-300 plants for personal consumption. Cassava is left to grow with little care for from seven to twelve months (spacing 1 m x 1 m). Mixed with rice or maize or eaten alone, cassava becomes increasingly important in the diet during the second half of the year when farmers are awaiting the first rice or maize harvests in December or January.

Upland rice is planted by some migrants, though the returns [6] are substantially lower than for maize alone [7] or maize-soybean intercropping, and many cannot afford to tie up their field for a harvest that takes six months. Those who do justify the cultivation by the desire to maintain soil fertility.

Migrants in Sabutan have had much success in cultivating yard-long beans *(kacang panjang)* to the point where the neighborhood is gaining a reputation as a supplier of vegetables to the Muaradua town market. The areas planted are usually quite small, from 0.04 to 0.16 ha [8]. Chili peppers *(cabbe rawet, Capsicum frutescens* L.) are grown by some on portions of their fields (0.25 ha at the most, Photo. 7). Trial and error experimentation can be seen in their practice of leaving chili peppers in covered nurseries at least 4 months (or until they attain 70 cm) in order to insure a greater survival rate for the trees, a practice that differs from the Javanese pattern and is much longer than the one month suggested by extension workers.

Cahaya Mas and Kampung Baru are two areas where the evolution of farming systems should be carefully monitored. Many of the migrants moving there over the last ten years have left areas located just over the subdistrict border in Belitang (Nusa Bali, Nusa Bakti, Nusa Jaya, Nusa Tenggara) where soil fertility decline and severe pest infestation have occurred. More study is needed to determine if the soils in their new settlements can sustain the various cropping systems over a long term and what optimum cropping patterns should be adopted.

A sure sign of fertility decline, a turn to cassava monoculture, has so far been avoided. For the time being only one of the settlers interviewed in Cahaya Mas and Kampung Baru farms only cassava on his entire parcel (average: 2 ha), but some devote 0.5 ha or more to cassava monocropping. The problem of soil exhaustion has been avoided so far in these areas because there remains vacant land *(tanah desa)* available for fallow rotation. Many residents take advantage of this land; indeed most local authorities advise them to rotate crops and make regular use of available land because pests and *Imperata* seem to return in force if land is left fallow for two or three years in a row.

Farmers in Cahaya Mas and Kampung Baru have high hopes that their settlements can become sustainable ones, perhaps evolving towards tree crops at some later stage. For the moment, most residents plant a variety of crops, often in a mixed cropping system. The most common combination is maize-rice-cassava, usually in that order, but sometimes maize is planted after rice has sprouted [9].

In many neighborhoods, the most important crops are peanuts and cassava. Peanuts are usually grown in pure stands [10] in Cahaya Mas and in *tumpang sari* in Kampung Baru, associated with maize. The maize is planted just before the peanuts, both are harvested together in 100 days, then maize is planted in pure stand (at 1 m x 0.5 m distance) after plowing. In mixed systems, two meters separate each row of maize. Green gram or soybeans (often found in pure stands) along with cassava are sometimes planted together in fields where upland rice is already established (having attained the height of 25 cm). Yard-long and green beans are other plants usually grown in pure stands in Cahaya Mas.

Fertilizer applications are uneven for all crops. The most that is applied per ha is 200 kg for *padi*, 300 for maize and 150 for soybeans (urea mixed with TSP). Farmers cite the expense of fertilizers, Rp 10,500 for a 50 kg sack of urea or TSP (KCL is rarely used). This price increases to Rp 12,000 if the road from Belitang is flooded. It is said that poorer people in the settlements will only use about one fourth of the above amounts.

Some farmers express a dislike of the *tumpang sari* system with cassava, noting that if the cassava are left out they can grow two or three maize crops on the parcel. Where maize is cropped once in a mixed system, the yield ranges from 1 to 3 t (rare) per ha, or 1 to 4 t/ha in a pure stand.

The advantage of the *tumpang sari* pattern of cultivation is that conditions may favor some crops over others in a given year; cultivating a basket of crops affords an added degree of security. If one of the crops fails or its price falls, returns from the other crops tend to offset the losses. Mixed cropping and crop rotation have been found to conserve soil fertility and provide resistance to pests. In spontaneous settlements where fertilizer applications and insecti-

cide treatments are well below recommended levels, this seems to be an adaptation to settlers' limited means. The low returns to labor for mixed cropping systems appear to be acceptable because households are able to cultivate as much land as their labor supply allows. The discussion next turns to highland coffee planting.

4. Highland coffee planting

Agricultural systems in the field sites based on coffee planting share many similarities. In most areas, little other than coffee can be cultivated on any scale because of animal pests, especially wild pig *(babi hutan)*. Diversification is virtually unknown in the frontier settlements, unlike the case in established settlements where land tenure is available and density is higher, and in older Sumatran settlements (Godoy and Bennett 1989). Land title has so far been impossible to obtain in all these sites. Most of the sites are located a great distance from market towns, roads and services. The forced monoculture, the problem of land title and the remoteness of many spontaneous settlements are difficulties that must be taken into account in attempting to understand the strategies and motivations of the settlers. In zones optimal for intensive coffee production, in effect, planters have little to gain from diversification out of coffee.

From a technical point of view, coffee planting is an occupation that is rapidly mastered by Javanese, Madurese, Balinese and local Sumatran alike. Most farmers who were interviewed in the coffee areas had never seen a coffee plantation before coming to Sumatra. It is common to find young plantation owners who previously were urban dwellers in places like Palembang or Surabaya. Only a few migrants have had prior experience working in the government or private plantations in East Java or Bali. The chances for success in coffee planting probably depend more on manpower, capital and luck than on prior experience.

Case 19

C. was born in Madiun, East Java, in 1925. He attended primary school for five years, from 1933 to 1938, and married in 1952. He is the eldest of five. His parents have 6 ha of land that still remains to be divided among the children. His wife, the eldest of three, should have inherited herself 0.5 ha of rice fields, but her parents asked that she give up her share to the younger siblings. C. himself owned 1.5 ha of sawah *and 0.5 ha of dry land in Java, but he was forced to come to Sumatra after insects destroyed his crops for three straight years (1974, 1975 and 1976).*

In 1977, he decided to follow a friend who was going to Bayur, in the Semendo country. He left without capital and worked in Bayur by the day (harian) *or by the job* (borongan) *in the rice fields and plantations, where he learned the art of growing coffee. A year later, he returned to Java to fetch his eldest son, 15. Soon after, he brought the rest of his family. In 1980, with the earnings from Bayur, he bought 5000 coffee trees (aged 2 years) in the settlement opened by the Semendo,* ***Danau Jaya****. The plantation was completely destroyed in the great fire of 1982 that ravaged the whole region. In 1982, he re-opened 4 ha of secondary forest, paying Rp 100,000 to a Semendo who had cleared it of its large trees. He first planted 5000 trees and subsequently enlarged the land "on the edges" himself to total 8000 trees. C. gave part to his son before the son died at the age of 26.*

In 1987, C. bought a 8000-tree plantation from a Javanese for Rp 1.5 million. Two years later, he bought 1 ha of secondary forest for Rp 700,000 from a Javanese who was returning to Belitang, and planted 3000 coffee trees. In all, he owns 20,000 coffee trees. He also has a coffee huller and two motorcycles. He sometimes hires up to 15 workers in one season, all of whom come by themselves. He hires them by the "weeding" (redan) *or by price as per contract* (borongan)*. For weeding 8000 trees, he pays Rp 100,000, meals and tobacco included. This takes four experienced men about eight or nine days, or more than fourteen days for beginners.*

His house has plank walls and wood tiles for roofing. It is built on the ground, but the wood flooring gives the impression of a Semendo or Kisam home without stilts. One room serves as a storage area for a small shop which he and his wife have managed for the last three years, selling soap, cigarettes, candy and other common items. The widow of his son lives with him along with a nephew and an unmarried worker hired by the year (paid Rp 350,000 per year plus transport to and from Java). He has five remaining children: a daughter of 29 is married and lives in Java and a boy of 12 in his first year of secondary school (SMP 1) in Madiun, East Java; two other sons aged 23 and 20, and a daughter of 18, married with one child, are living here in the same highland neighborhood with their families.

The operations involved in coffee planting begin with the clearing of the forest or field and planting of rice or other crops in temporary association with the coffee trees. [11] The young plantation must be weeded before the trees come into production at two years of age and as long as they remain farmed. Coffee tree give their first measurable yields at two years of age, the third year provides what is usually the maximum yield, and yields decline sharply in the fourth year and steadily thereafter. After a couple more years of production, the job of pruning the trees becomes increasingly important as a way of staving off a further sharp drop in yield.

Pruning is used to rejuvenate *(memudahkan)* trees in an attempt to regain the vigor of the early productive years. If the coffee tree has, for example, four branches, the two least productive ones will be cut, allowing them to grow back rejuvenated. The older two branches will then be removed, leaving the two new ones. The new branches usually begin to produce again within two years.

The size of the yield one can expect from a plantation and the amount of labor expended depends primarily on how often and how thoroughly the plantations are cleaned, weeded and pruned. Wide variations are noted here. The weeding of a standard 1500-tree plantation can take anywhere from 45 to 200 person-days or more per year, or an average of 120. Time spent on harvesting varies much less, the time needed to harvest 1500 trees being from 17 to 32 person-days, or an average of 25. This brings the labor input for a year of coffee planting (established plantation) to between 65 and 250 days, or an average of 140 days [12].

Fertilizers are only recently available in the hilltop plantations; most planters do not yet apply any. If fertilizer is used, it is applied at the rate of only 50 kg/ha. It is planted about 15 cm in the ground either some 10 cm from the foot of each tree or midway between two trees. Spraying for insecticide is only slightly more common, but is limited to spraying ants before harvest. Finally, coffee beans are hulled twice after harvest using traditional wooden hullers (Fig. 29) or recently introduced diesel machines.

Yields anywhere from 225 to 750 kg per 1500 trees can be expected for a plantation that is regularly weeded, the higher figure of course representing a well-maintained one. An average of a third of a kilo for each tree is a widely recognized average [13]. Yet, one hears accounts of, on the one hand, yields of almost nothing in poorly weeded plantations, and on the other hand, average yields of one kilo per tree in well-maintained plantations [14].

To summarize, one could calculate the returns for an average 1500-tree parcel. Assuming the coffee price is Rp 1000, a yield of 500 kg would gross Rp 500,000. If all labor was hired on a flat-rate basis averaging out to Rp 2000 per day, the expense for 140 days would equal Rp 280,000. If Rp 20,000 was used for fertilizer, this would leave a net return of Rp 200,000 [15].

It is often said that migrants work their plantations more thoroughly than local Sumatrans. Sumatrans themselves often say that Javanese and other migrants were encouraged to settle in their areas, open land and sharecrop their plantations because they were hard-working and would be sure to increase yields. Certainly a migrant population hoping to find a brighter future can be expected to work harder than a secure sedentary one. Yet, it is likely that most of the discrepancy between local and migrant farming techniques can be explained without recourse to purely cultural factors.

Traditionally, declining yields would cause swidden coffee cultivators in Sumatra to leave their plantations after six or seven years of production to open new land. The work involved in clearing and planting new coffee, even accounting for the two or three year delay before maturity, would make economic sense as long as accessible forest lands were available. In recent years pressure on land has led farmers to intensify coffee cultivation through regular weeding and pruning. The arrival of fertilizers and insecticides in the last few years has further accelerated this process, though many farmers still do not use them. The result of intensification can be seen in some of the older spontaneous settlements dating from the 1960s and 1970s where it is possible to find coffee trees still producing even after twenty years of age. A village leader in one such area declared the yield from 1500 twenty-year-old trees to be normally 500 kg in a well-maintained plantation (carefully weeded and pruned) and a maximum of 1 t if fertilizer is used. If the plantation is poorly taken care of, the yield would be from 2-300 kg. Though these figures are much higher than those given in the field sites, the point is borne out that a great difference in yield exists between maintained and neglected plantations. Intensive management practices have developed to a large degree because the area of forest available for swidden rotation has sharply dwin-

Fig. 29
WOODEN HULLER - *MACHINE A DECORTIQUER LE CAFE*

Wooden huller used to crack outer skin of coffee bean before drying. Diesel hullers completely remove the outer cover from the dried bean before sale - *Machine à décortiquer le café, en bois, utilisée avant le séchage de la récolte. Les décortiqueuses diesel débarrasseront ensuite complètement les grains séchés de leur écorce, avant leur vente.*

dled and measures have been taken to discourage swidden farming.

The state of migrant coffee and local tree (including coffee) plantations in Sabutan contrasts with plantation maintenance found among both local and migrant farmers in the highlands. Where other agricultural and productive activities avail themselves, the level of tree crop maintenance declines. In the isolated highlands where coffee is the only real crop, both locals and migrants invest more for maintenance, though wide differences among individuals of each group still persist. Non-cultural factors that determine labor intensity are capital, farm size, tenure access, availability of fertilizers and other inputs, and the personal goals of the planter. If one has less than 2000 trees, it is still possible to properly care for the plantation primarily with household labor. One method that is employed by big landowners in areas where land title is available, or at least recognized by tradition, is to let portions of the plantation return to secondary forest to be cleared at a later date, usually if prices rise. Where land title is unavailable, farmers will hardly feel secure enough to let their land lie fallow for the seven or more years necessary for fertility replenishment. It is the control over critical resources that provides certain groups (such as those Sumatrans with ancestral lands and wealthy planters) with expanded decision making capability, opening up flexible forms of management to them.

Not all successful Sumatran farming systems are adopted by spontaneous migrants for this reason. One such system, coffee associated with rubber, is used on soils of low fertility by local farmers in the Pengandonan subdistrict. Land is cleared and brush is burned before planting *padi*. After a first *padi* harvest, coffee is planted and when it reaches the age of seven months, *padi* is planted once again. Anytime after the second *padi* harvest, rubber (local variety) is planted among the coffee trees. The coffee will be harvested for about eight years. The rubber trees come into production about twelve years after planting, and give anywhere from ten to twenty-five years of harvest. Some reports speak of rubber trees measuring one meter in diameter and still producing after fifty years. This coffee-rubber association was not found among spontaneous migrants though it is suitable on poor quality land. Since it is likely that such systems will be used by those with sufficient land surface, capital and security of land tenure, it should be expected that few migrants are yet in a position to emulate this local practice.

5. Animal husbandry

The International Fund for Agricultural Development (IFAD) has been providing cattle to farmers in Kampung Baru and Cahaya Mas since 1989. The program is paid for by OPEC and Indonesia in equal parts and administered by the Indonesian Directorate Generals of Agriculture and Animal Husbandry. Administrators at the local level give farmers who have influence in the villages, such as the household group and farmers' group leaders *(RT, kepala kelompok tani)* one male and one female head of cattle. Other members of the farmers' groups may receive one head (usually female). Ideally, programs such as this one can be self-perpetuating, since farmers receiving cattle are obliged to return animals to the program at the rate of two head for each female and one for each male received.

Cahaya Mas is said to have received 150 cows and 15 bulls offered as part of the IFAD program for having reached their tax quota every year since 1985. As Mesuji has quite a few government Transmigration schemes benefitting from IFAD cattle, it is natural that the program be extended to the spontaneous settlements in their midst. This program has had a clearly positive effect on agriculture in the area. In Cahaya Mas and Kampung Baru, renting a plow team with driver costs Rp 2500 for a half day including 1 meal. If a large surface is to be plowed for a fixed rate, the rate per half day can work out to Rp 1500 or less in Cahaya Mas.

In Sabutan, however, there is an acute shortage of cattle because the area is within a region dominated by coffee where cattle have less utility and are more expensive to raise. The rate for a plowing team is Rp 5000 from 7 am-11 am and 2 meals must be provided. One farmers' group chief there even has figured it would be economically feasible to buy a tractor, considering the high price of land preparation. On the other hand, it may be argued that the benefits from extending programs like the IFAD to a greater percentage of farmers and to new areas would greatly outweigh the costs. Animal husbandry provides multiple and long-term benefits to farmers, including draught power for plowing, investment opportunities, meat, and fertilizer.

In the food crop areas, owning cattle can enable early planting, early harvesting and early marketing of crops before prices fall. If a farmer is obliged to wait his or her turn to borrow a plowing team, he or she may miss a chance to plant early, just after the rains. Reflecting the importance farmers place on cattle, prices rise in the livestock markets in August-September as cattle are purchased in time for the first plowing.

The investment opportunities of cattle are often underestimated. These benefits can also be extended through "cattle sharecropping" *(paroan)* arrangements to landless or land-poor workers. Returns for the labor involved in

caring for cattle and putting them to work compare favorably with other productive activities in all the field sites; in addition, work can be allocated among various family members. A sharecropping arrangement with female cattle usually calls for the owner to give one calf to the guardian for every two born. If male cattle are shared, the owner and guardian share the profit at the sale of the animal (after subtracting the original value of the animal at the beginning of the contract).

In a few highland areas, chickens and goats are raised. In the Simpang sub-district east of the Saka, one large neighborhood has 50 goats for 187 households, and most growers keep chickens. In other field locations in the highlands, goats are rare, and few households are found keeping fowl, as disease is rife. Birds of prey *(burung elang: Microhierax fringillarius* Drapiez) and wild cats *(macan akar: Felis viverrina* Bennett) are also known to carry off chickens in highland areas.

6. Bringing crops to market or the market to the crops

The subject of transporting crops to market has been touched on earlier in this chapter, and it is central to the question of crop marketing. For the highland coffee areas, almost all coffee is transported by *tukang ojek,* trail motorcycle drivers, whom the planter calls on to insure delivery of coffee to a regular buyer *(tokai, bos)* in the main town at the bottom of the hill. An exception is Sukorejo, where coffee is sold to persons possessing four-wheel-drive vehicles who offer their price to the planter and then sell the crop in Baturaja. In Cahaya Mas and Kampung Baru, and also to some extent in Sabutan, independent trucking firms send their vehicles directly to the fields to load and sometimes also harvest the crops.

This system has its advantages and disadvantages from the grower's point of view. They are freed from the time-consuming and uncertain business of liquidating their crops, but they relinquish the possibility of earning through bargaining a closer approximation to the current value of their goods. There is little choice in most spontaneous settlements but to turn over the transportation and marketing end of the business to others. In coffee areas, transport is always available, but the price is high and it reduces profit margins by as much as 20% [16]. Furthermore, to drive the trail bike demands a degree of skill most are resigned to pay dearly for. The coffee brought down the hill is considered "unsorted green coffee" *(asalan);* it must be cleaned and sorted. Coffee planters are thus obliged to pass their production to the second to last rung of a ladder of middlemen, receiving only about 40% of the FOB price for sorted export coffee (Spillane, 1990; Aminuddin, 1986). Attempts to market food crops directly by some in Cahaya Mas have been met with failure because of the low margin that barely pays for truck rental and the lack of sure contacts among wholesale buyers.

Lack of capital further limits the marketing options open to settlers. Most farmers must sell at harvest, when prices plummet, because they have few reserves to fall back on. Prices of peanuts, for example, fluctuate a great deal, from (in 1989-90) Rp 250-400/kg at harvest (April) to 800 (July) reaching 1000-1200 by August. A number of those with capital in Cahaya Mas buy peanuts when the prices are lowest, often through the sale of cattle, then sell in August when prices are high and buy back cattle in time for plowing. In the wet season, prices fall when roads are cut for days between Cahaya Mas and Nusa Jaya. As mentioned earlier, road conditions also influence the price of fertilizers, discouraging their use.

Where a regular market has been established, such as in Kampung Baru, farmers have control over the marketing of small quantities of specialized produce and vegetables, but for the sale of the main crops and grains they still depend on the trucking firms.

In government-run and -financed Transmigration projects, provisions are made for the establishment of cooperatives (Koperasi Unit Desa, KUD) to handle the sale of agricultural production and the purchase of inputs. Some forms of cooperation have already been set up in spontaneous settlements. In several settlements, land has been set aside and cultivated collectively by *gotong royong* to provide income for farmers' groups and villages. Some farmers' groups have negotiated with official Transmigration settlements or other villages near them to gain access to their KUD facilities for the purchase of fertilizers and other agricultural inputs. In some places where wild pig and other pests are rampant, community members have long contributed financially to the cost of materials to make traps, and their efforts have reduced the problem to manageable levels. Collecting adequate funds is the perennial problem for such groups; were sufficient funds available for cooperative ventures, spontaneous migrants could put them to profitable use. In the food crop areas, for example, funds could finance the construction of storage facilities that could enable the stocking of cassava (properly dried), peanuts and other crops characterized by high price volatility in order to sell at the most opportune moments. Bulk purchasing and stocking would reduce prices of inputs and moderate price rises in the rainy season when roads are impossible.

7. Organizing production on and off the farm

In the lowland food crop villages of Cahaya Mas and Kampung Baru, most settlers own and farm their own land. Work in the fields is often undertaken with household labor and additional help from neighbors who contribute their labor in anticipation of an eventual return when their fields need to be worked. In Sabutan, those who own land often rotate labor in this way, or hire labor from among the landless. The most intensive use of paid labor is found in the coffee areas during a three-month period (July to September) harvest period. One might venture a guess that the majority of spontaneous migrants in South Sumatra either live in the coffee area or have at least once in their lifetime done agricultural work or picking there.

The first few years of settlement saw extensive use of the rotating labor system *(giliran* or *gotong royong)*, as few new planters had enough capital to pay laborers. Moreover, with seemingly unlimited land for the taking, the first pioneers could scarcely tie workers to wage contracts. Their alternative was to use their capital to provide subsistence to workers who opened land, and in return receive half of the surface cleared. This system of land-sharing, *paroan bagi tanah*, is discussed below. Paid labor became increasingly an option as the land frontier vanished and coffee trees began to come into production. Medium and large-sized coffee plantations depend on a pool of agricultural workers who are available to do weeding, picking and maintaining fields. Many migrants responding to the portrayals of empty lands to settle discovered upon arrival that they would have to spend years working in order to buy increasingly expensive farms. Plantation sizes grew and social demarcation emerged, with on the one hand large plantation owners with capital and on the other workers hired to maintain and expand their holdings. Many of these workers, particularly those who came in the early years, were able to build up plantations of their own, joining a growing "middle class" of small to medium-sized plantation owners.

Much variation exists in work arrangements in South Sumatra, but most migrants agree that rates of pay and working conditions represent an improvement over what they were used to in Java. Salaries are often paid at harvest, especially in the coffee plantations, a practice that poses little inconvenience to the majority of migrants whose primary aim is to amass capital. Even taking into account the lack of continuous work in the slack season, most notable in the coffee-producing regions, migrants feel they can earn more or at least save more by working in Sumatra. Mention has been made of the common migrant perception that saving is rendered easier by the lack of distractions and consumption items in the hinterlands. The following types of employment arrangements are found in the spontaneous settlements we visited: day wage labor, sharecropping (either sharing yield or sharing land), yearly contracts and piecework. These arrangements will now be discussed one by one.

8. Day wage labor

Wage labor in South Sumatra is attractive to migrants because, compared to Java and other sending areas, rates are competitive, meals are practically always included and in many areas there is plenty of opportunity to work.

Wage rates per day are always at least as high as for comparative work in Java, and often pay Rp 500-1000 more. Rates for a seven to ten-hour day range from Rp 1250 to 2000 in the coffee and food crop areas under normal conditions. A rate of under Rp 1500 was only encountered in one small hill neighborhood. In the coffee areas, the wage rate is known to fall to Rp 1000 in the off season but it is more often closer to the Rp 1500 minimum.

Case 20

N., 21 and unmarried, arrived in Sabutan three months before being interviewed in June 1990, from the area in East Java where he was born and raised, Pojonegoro. His parents possess 0.25 ha, which will have to be divided later between their six children. The eldest, N. did agricultural work by the day in Java, and was able to amass a bit of capital in the form of a bull, purchased for Rp 125,000 in 1986. He came to Sumatra for the first time in 1988, to Sekinjo, Lampung Utara, with his uncle who had been living there, and a friend. He worked in Sekinjo for a year as a day laborer in the coffee plantations and food crop areas, being paid Rp 1500 plus three meals per day. He then returned to Java where by chance he met a Madurese who had just married one of his neighbors. The Madurese spoke of his coffee plantation at Danau Ranau, and N. realized he was describing the place, Way Ling, where a great-uncle of his was living. He quickly decided to follow the Madurese back to Sumatra. Once in Ranau, he "climbed up" (naik) *directly to Talang Java, where he worked by the day for a year at the same rate of pay as in Lampung. Ranau being a hilly region, he had no desire to invest his earnings in land there. He recalled that another relative, an aunt, lived about 20 km from Ranau, at* **Sabutan**, *and decided to go see her. She was the second wife of a Daya from Gunung Tiga who had a great deal of land in Sabutan. N. decided to buy land in Sabutan, and returned to Java to sell his bull for Rp 425,000. Two weeks following his return to Sabutan, he purchased 1 ha of land from an ethnic Aji. He now plans to plant soybeans, maize and cassava, using the* tumpang sari *mixed-cropping system.*

At least two and often three meals, drinks and tobacco are provided the workers. According to our research in selected sending areas and the reports of migrants in Sumatra, the current wage rate for agricultural workers in East Java is around Rp 1000-1500 per day without necessarily including meals. In Lampung it ranges from Rp 1000-2000, but the higher rates exclude meals. Obtaining regular work is difficult for those without the proper connections with a patron. Though patronage influences working conditions, demand for labor is such in many areas of South Sumatra that opportunities exist for migrants to gain work without prior connections.

Wage rates in all settlements are higher of course for those with special skills, such as carpenters (Rp 500-1500 extra per day). In some places, higher salaries (still including meals) are offered for particularly heavy work, such as hoeing to open new land or clear undergrowth. Workers in the highland coffee region of Danau Jaya receive Rp 3500 for clearing *Imperata* from fields or Rp 3000 for cutting down large trees. In most places, however, the difficulty of the work has little if any bearing on the wage rate or working hours.

The availability of wage labor differs in the villages selected for the field studies, depending on the village, the season and personal factors. In Cahaya Mas and Kampung Baru there is relatively little opportunity for wage labor because much work is done by rotation without pay *(gotong royong)*, few people have sufficient cash resources to hire help on a regular basis and most people are landowners who find sufficient agricultural labor in their household and among their neighbors to work their parcels. When extra help is needed, for example to clear land, load trucks with cassava or build wells, the going rate is Rp 2000 per day plus meals. People who hire labor are those with sufficient cash income and insufficient time to pay back *gotong royong* labor.

In Sabutan and in the coffee areas, daily wage labor is more prevalent. A young fit individual with wide contacts can find about 200 days a year in Sabutan [17]. In the highland coffee areas, one has difficulty finding work during the off season. Many speak of the opportunity of working full-time, every single day, for three months during the picking season, but of working only an average of five days per month during the other nine months. Working steadily is most difficult for newcomers lacking enough contacts, and older migrants. Many migrants therefore seek to enter into sharecropping or yearly contracts [18] with plantation owners. Depending on the rates and conditions offered, these arrangements may provide a more secure and even higher paid form of employment than working for daily wages. Some young workers are brought to Sumatra by a patron *(tuan tanah)* to serve as his day workers. Rather than pay them a yearly wage (see *tahunan* below), he will employ them at the going day rate perhaps 100 to 200 days a year, and let them look for work elsewhere when not required on his farm.

Usually day wage work is used as a supplement for piece work or to fill in free time while one is engaged in a sharecropping or yearly contract (provided the contract allows). During the picking season, for example, workers usually earn more than the daily wage rate if they are paid by the amount of coffee picked.

9 . Sharecropping

Sharecropping arrangements are rare in the pioneer spontaneous settlements based on food crop agriculture simply because most of the residents own their own land or at least are able to find tracts of land to rent at reasonable prices from local village authorities. Until recently in many areas it was possible to obtain land without paying a great deal of money up front; people who were sharecroppers in Java or Bali could thus obtain land of their own in places like Cahaya Mas and Kampung Baru. It remains to be seen if sharecropping will ever develop to any extent in the spontaneous villages, as the returns from the land are low. In addition, socio-economic disparity is still relatively limited in these new settlements where land holdings are theoretically equal.

Spontaneous migrants are, however, engaged in sharecropping arrangements *(paroan* or *maro hasil)* in older, established villages in the irrigated *sawah* areas of Belitang and other zones where agricultural productivity is high. Migrant sharecroppers are also found in mixed migrant-local villages where land is expensive or where access is difficult. Yield is normally divided half for the owner, half for the worker once the cost of inputs (seeds, fertilizer, insecticide) have been deducted.

Where rice is grown the harvest provides the occasion for many people to join in and receive a share of the crop in payment. The harvest share ranges from 4:1 to 7:1 (those interviewed express these ratios as "5:1" and 8:1"). The rate and working conditions for rice harvests in Sumatra are considered better than in Java, where workers often can join in the harvest only if they have participated in other jobs without pay. The highest worker share is found in Cahaya Mas, perhaps because here the same people, most all landowners, take turns harvesting each other's *padi*. In Sabutan, and in hill areas when *padi* is grown on fields being prepared for coffee, the smaller shares are enough to encourage many workers to take part, some of whom are landless.

Sharecropping arrangements in coffee plantations are found in all areas, but are most common between local

owners and migrant caretakers. An arrangement may be made for the opening, planting and maintenance of a new plantation or simply for the maintenance of an existing plantation.

For the opening of a new plantation, the worker opens forest or overgrown land and plants coffee and rice, perhaps adding vegetables or peppers. The landlord provides him with rice to eat until these food crops are harvested. Thereafter, no support is given, but the worker keeps or sells whatever is grown during the first year or two. When the coffee trees come into production in the third year, and from then on, the coffee yield is shared equally between the worker and the landlord, as long as the worker maintains the plantation. This type of contract is sometimes referred to as "sharing secondary forest" or *paroan belukar*.

Often a *paroan* contract is made once the plantation has been established *(paroan kebun sudah jadi)*. If the coffee trees are just beginning to produce (2-3 years after planting) when the worker is brought in, he or she will probably only receive a one-third share of the yield in the first few years. This takes into account that the new worker did not put in the time and effort to clear the land, plant the coffee and weed the plantation from the beginning. Furthermore, the young trees have their greatest yields in the first two or three years.

Once the coffee trees have produced two or three times, and the yield begins to decline, the sharecropper is given a 50/50 share.

Case 21

B., 21, was born in Banyumas, Central Java. He attended primary school up to the fifth year. His wife, also from Banyumas, went up to the third grade. He is the eleventh of twelve children, all of whom are in Java. His parents have 0.25 ha of dry land in Java. Before, he worked in a rice mill as a day worker paid Rp 1000 per day without meals. In 1987, he came directly to ***Danau Jaya*** *with a friend who had already worked there; the friend has since returned to Java. B. had only enough money for the trip to Sumatra. He and another young migrant have been working as sharecroppers for a Javanese who owns vast plantations. They share the harvest from an 8000-tree parcel with half going to the owner and half divided between the two workers. The owner furnishes shelter, meals and tobacco. B.'s wife joined him two years ago (in 1988), with their son, who is 4 now. She was wary of coming earlier with a young child. Just recently, B. bought a 3 ha parcel of land covered with* alang-alang *which he will clear with the hoe. He bought it from the brother of the Semendo neighborhood chief in Danau Jaya. He plans to plant 8000 coffee trees. He also has a motorcycle. He has never returned to Java. He wants to open a small* warung, *or food stall with his wife next to the simple house he has just built for the two of them.*

Responsibility for absorbing the cost of possible fertilizer or insecticide applications depends on the contract agreed upon by the two sides. Sharecroppers are usually provided a place to stay close to the plantation, but are rarely given any food or extras, except in the above example where a new plantation is being established.

The system of land-sharing *(paroan bagi tanah)* was commonly used during the first few years of pioneer settlement in the study areas, when land had to be cleared and coffee planted. One with land and capital *(tuan tanah)* could hire others to open land, plant *padi* and coffee and take care of the trees for the first year or until they came into production (2-3 years). The landlord would pay for food and costs involved during that period after which the land would be divided half for the owner and half for the person(s) who did the work. Often a group of four people, for example, would work together to open land for a *tuan tanah*, each receiving one eighth of the total surface opened and planted. This system, also called "dividing land with ownership" *(bagi tanah dengan hak milik)*, is no longer operative in the areas we visited, but probably persists in frontier areas.

This system is more advantageous for the worker than sharecropping *(maro hasil)*, since the worker receives his own plantation and is no longer required to take care of the half belonging to his former patron. The terminology, however, is sometimes misleading. An agreement which may seem to result in land-sharing, sometimes referred to "dividing land without ownership" *(bagi tanah tanpa hak milik)*, is found in the Sukorejo-Pengandonan area. Under the terms generally found in Sukorejo at least, the worker opens a parcel, plants and cares for the plantation until production, as in the *paroan belukar* referred to above. In exchange, he or she receives all of the production from one half of the cultivated surface, for as long as is desired, but ownership of the land is unobtainable. Moreover, he is expected to help out the owner with maintenance work in the other half, making this contract for all intents and purposes identical to a *paroan belukar* agreement.

If land is plentiful the system of opening and dividing land is more likely to be used with workers who lack the capital to subsist while clearing the land and planting. Those with access to the land and enough capital for rice subsistence are more liable to use the *kungsi* system of sharing land opened collectively.

10 . Yearly contracts

Many young migrants come to Sumatra to work in a coffee plantation on a yearly contract *(tahunan)* already arranged in Java. They may have been recruited by family of a neighbor or relative who is on leave from the plantation, or by another similar worker returning home. Sometimes, such contracts are made in Sumatra. The standard agreement provides a fixed salary ranging anywhere from Rp 100,000 to 500,000, food, a pair of clothes each year, medicine and tobacco. Food is taken to mean either regular meals, three times a day, or an allocation of rice, usually five kilos a week, if the migrant is living outside the patron's house. Round-trip transportation is sometimes paid. Higher rates are paid by Javanese in comparison to local Sumatran patrons owing to the links which sometimes exist with the workers.

Although it does provide security, a yearly contract will not in itself guarantee the migrant will have something to show for his work at the end of the year. Each time a worker borrows from his boss, the amount is recorded *(masuk bon)*. Deductions are made for every item outside of the agreement between the two parties: a trip home, extra clothes, extra food, entertainment or expenditures for dependents. The total at the end of the year is subtracted from the pay; a negative tally sometimes appears.

Case 22

T. 32, was born in Sukoarjo, Central Java. Unmarried, he is the eldest of four children. T. reached the fifth year of elementary school. His parents have 0.2 ha of house garden (pekarangan) *and 1 ha of* sawah. *His three brothers and sisters, 25, 22 and 20 years of age, live with the parents, on the family's land. He first migrated at 17, because, as he said, he "didn't own anything"* ("ta' punya-punya"). *He went for a year to North Sumatra, Paja Peringan, to sell meatball soup* (bakso) *with an older friend from his village. His parents gave him the fare, Rp 7500, for the boat from Tanjung Priok to Pelabuhan Belawan, then on to North Sumatra. Once there, he rented a cart* (gerobak dorong) *with all the utensils for Rp 2000 per month. He would wake at 4 a.m. to cook, start selling at 8 a.m., and return at 2 p.m. to rest. After a year of this work, he returned to Java with his friend, because their earnings were diminishing, and went back to working the family's land. Two years later, in 1978, he departed again with the same friend for Semarang. This time, his friend lent him the money to buy a cart, Rp 20,000. He sold* bakso *again for a year, earning an average of Rp 1000 per day, but could only put aside a total of Rp 15,000. He returned to his parents house once again in 1979 and worked their farm.*

After nine more years with his parents, in 1988, he came to Sukorejo, on the advice of a friend who had already worked there. His parents gave him Rp 30,000, of which Rp 2000 remained upon arrival.

When interviewed, he was working an annual contract (tahunan) *on a plantation belonging to an Enim. According to the contract, he receives 1* pikul *(100 kg) of coffee beans per year and 5 kg of rice per week for taking care of 3000 coffee trees by himself. Part of his job at the beginning was to clear a great deal of* alang-alang *and tree stumps. The first year, the plantation gave two tons of coffee, the second year one ton. He usually tries to work for day wages to earn extra money (Rp 2000 per day, paid in coffee beans, and three meals), one week per month, but has been unable to do so for the last two months because it is harvest season. He works from about 7:30 a.m. to 11:30 a.m. and from 1 p.m. to 5 p.m., only a half day if it rains. He weeds the entire plantation once a month, a job requiring about a week. His boss pays his medicine, if necessary, particularly the injections for malaria attacks. The small house on stilts with corrugated iron roof and bamboo walls in which he lives was already built when he arrived. He will perhaps obtain a sharecropping arrangement* (paroan) *next year with his boss, to replace the current annual contract.*

Besides rice, he buys his own sugar, clothes and other necessities. He spends about Rp 15,000 a month, which he tries to earn through day work so as to save his annual salary. His diet consists of rice, cassava leaves, chili peppers, jackfruit cooked as a vegetable and a little dried fish (0.5 kg per month). He buys clothes once a year, at Lebaran. For shopping, he goes twice a month to the market at Sugihwaras, an hour's walk one way, rather than the weekly market right in Sukorejo, deemed too expensive.

He has yet to return to Java since coming to Sukorejo. He wants to go home once he has accumulated the earnings from two coffee seasons. He hopes to collect Rp 200,000 net. He is free of all debts, so he will only have to pay his trip back to Java, about Rp 20,000. His plan is to buy a gold necklace, work the land of his parents and get married. He has no intention of looking for a wife in Sumatra because, he says, he is poor.

Those who have gone from yearly contracts to land ownership, or who manage to economize most or all of their salary are usually the ones who are able to honor their fixed contract and, in addition, find a week or two of daily wage work per month. This is the best way to ensure their pay will be shielded from the inevitable incidentals during the year. Most on year contracts try to work additional days for others. Nonetheless, there are some bosses who forbid their workers from working for anyone else while they are under a yearly contract with them (although rates are then almost always above average, Rp 300-500,000). They will find activities to keep their workers busy throughout the year: maintaining the plantation in top shape, helping out with a store or simply cleaning up around the house. Sometimes when outside work is allowed, the work for the first boss is so heavy it is impossible to manage more than a few days a month of wage labor elsewhere [Cases 22 and 23].

Case 23

Y., 48, is from Cilacak, Central Java. He is the sixth of twelve children. When his parents past away, they left 1.5 ha of sawah *and 1 ha of home garden. Two brothers moved by Transmigration to Lampung Utara, one in 1956 and the other in 1972. The nine others are farmers in Java. Y. had no desire to sign up for Transmigration because he was afraid of being "stuck"; he wanted to be "free" to choose his destination* ("terikat, mau bebas"). *In 1978, he obtained the address of a Javanese coffee plantation owner in Gunung Raya. He departed from his home town with three other male friends and no capital except bus fare. He left his wife (married in 1962) with their three children to live off their one-sixteenth ha in Java.*

The four men first worked for three months in Gunung Raya with the Javanese landowner, sharing a pondok *(shelter on stilts located amid the plantation). Beholding the splendid coffee trees of Gunung Raya, the four men decided to look for land of their own. In 1978, however, there was practically no forest left to open in Gunung Raya, and none of the four had the capital necessary to buy a plantation. So they went into the primary forest, near* **Danau Jaya**, *to open 8 ha, using the* kungsi *system of sharing land cleared and planted collectively. There was nothing to pay. They spent three months cutting down the trees, clearing the land and burning the debris. Some trees were more than two meters in diameter, and the four men required two days to cut one down. They then planted* padi gogo, *and with 9* kaleng *of seed (110 kg) they harvested 11 tons of rice. They divided their 8 ha into four equal parcels. With the rice harvest in they could wait for the coffee to grow. They also looked for work elsewhere in the area. After two and a half years, the coffee began to yield beans.*

In 1981, he returned to Java to bring his family. He also brought back four young unmarried relatives to work for him on yearly contracts. From then on, workers would come by themselves without him having to go recruit in Java. His wife and children only stayed five months because the problems of education forced them to return to Java. The nearest school in Curup was two and a half hours away by foot. In 1982, Y. married a second wife, met in Sumatra but originally from his home village in Java. She is now 27 and they have two children with them, aged 4 and 6. Like his first wife, she was educated up to the third year of primary school. As for Y., he finished the primary school of the time (sekolah rakyat). *In 1984, he sold 2 ha of the plot opened by* kungsi *and bought a 4 ha plantation with 12,000 trees aged six years.*

Y. owns a vast, elevated house with wood-plank walls and a wood-shingled roof. Eight people live there year-round: Y., his second wife and their two children, and four single men from their village who work for Y. He gives them Rp 500,000 per year, lodging, meals and clothes, but forbids them from working on the side; they must remain available for work that has to be done in the plantation, the house or elsewhere. He only keeps them for one year, preferring to change his work force regularly. Doing no plantation work himself, he hires additional workers by the day and by the job. A radio, a television and a video cassette player are the main distractions available for the youths who stay with him for the season or the year. Y. also has a motorcycle which he uses for transport, sharing half the proceeds with a driver.

The settlement, called Simpur, has existed in an informal manner since 1982 with Y. as the leader; it has more or less seceded from Danau Jaya in order to be recognized administratively as a dusun *of Kotaway village in its own right. Covering about 6 square km, Simpur has 100 families divided into four* RT, *the heads of which are all Javanese. During the harvest season, 200 to 300 unmarried youths* (bujang) *and a few couples come to look for seasonal work. They arrive through Gunung Raya, much closer than Kotaway by foot, directly from Java or the Transmigration zones of Belitang and Lampung. This* dusun *is composed of 90% Javanese and Madurese, and 10% Semendo and other Sumatrans. All land in his* dusun *is now covered with coffee, the forest disappearing completely in 1984 when many new arrivals added to the 50 families living there up until then. Tigers and elephants roamed before, but now the only animals that remain are wild pigs, which prevent any food crop cultivation. The* dusun *has four coffee hulling machines, twenty motorcycles and four televisions. There is also a small store* (warung) *run collectively by 16 residents. They each pitched in 50 kg of coffee to build the stall, and profits are used to purchase tools that can be borrowed by the 16 or rented out to others.*

Since 1981, Y. has returned to Java at least twice a year to visit his family. His three friends from Java who came with him originally only stayed six years in Sumatra. With their earnings, they bought houses and rice fields in Java and set themselves up as traders. Y. also plans to return one day for good to his village in Java.

Even the lowest yearly pay found (Rp 100,000) may still seem attractive as one way of building capital, however modest, compared to employment alternatives in the sending area. Several Balinese coffee plantation workers met in South Sumatra said that back home they were paid only 25 kg (about Rp 25,000 at current prices), with no rice or other payment, for taking care of one hectare.

11 . Piecework

Hiring by the job is about as common as hiring by the day, whether in the lowland and food crop or highland coffee areas. As long as the price is right, workers and bosses profess a preference for the piecework system because they each feel they can come out ahead: workers can earn more than the going day-wage rate and are assured of having a string of working days; patrons avoid cost overruns and usually save on meals for the workers.

Workers can lose in the bargain if the value of lost meals is taken into account. For routine weeding of coffee plantations, the flat-rate contract equals from Rp 1250 to 2500 per person-day without meals. If the work is heavy or specialized, such as clearing *Imperata* or building houses, one usually meets or exceeds normal daily wages, earning from Rp 2500 to over 4000. One probably exceptional example was given of four men opening up a hectare of *Imperata* for Rp 1.5 million. It took them forty-five days to finish hoeing the parcel three times over, resulting in a daily rate of Rp 8333. This should be regarded as a maximum figure for piecework.

Picking coffee *(motil kopi)* provides earnings of up to Rp 3500 or even 7000 per day if trees are heavily laden, but early and late in the season earnings drop below the day wage rate. Growers sometimes have to offer day wages in lieu of the usual per can *(kaleng)* rate in order to insure their trees will be completely picked.

In Cahaya Mas and Kampung Baru, the preparation of *gaplek* (dried cassava) provides small additional income for men and women. Workers are paid for peeling and cutting in half the cassava roots before they are to be dried in the sun. This work is usually done in the evening from 7 to 11 p.m., and is paid Rp 1 per kilo. It takes four men and women four hours to prepare one ton, working out to a pay of Rp 250 each for one evening (equivalent to Rp 500 a day). The low pay is accepted because the work allows for socializing, is relatively light, and may be combined with the usual daytime work.

In Sabutan, removing maize kernels from their cobs is paid at the rate of Rp 25 per kilo, with most adults removing from 15 to 25 kg per hour (Rp 375 to 500 per hour, without meals).

Sometimes working for others interferes with the work that has to be done in one's own or shared fields. In the coffee areas, those who own or share yield from a small plantation occasionally need to work for others in order to support themselves while awaiting the once-a-year harvest returns. Daily pay sometimes becomes a priority for day to day survival, diverting attention away from the job of weeding and pruning one's own coffee. The consequences of this neglect, a mediocre harvest, leads invariably to continued dependence on wage labor.

12 . Informal sector employment

Off-farm activities include trading, transport of people and goods and numerous informal occupations. On the whole, off-farm opportunities are limited in spontaneous settlements because of their remoteness and the weakness of economic linkages.

The purchase and sale of agricultural products is practiced by migrants arriving with capital or who have been able to amass earnings from several years of work in the region while building close contacts with those in the villages and in the marketplace. Generally migrant traders have already exercised this activity in their region of origin, and are fluent in the ways of commerce, borrowing, lending and networking, and they will be found based in the larger market towns.

Petty traders and those who open a small shop or food stall are sometimes exceptions to this rule. Some have put together capital after years of agricultural labor. We had the opportunity to meet this type of trader in several villages. The returns from their business are usually too small to be anything but a complement to farming, which is continued. Petty traders buy small quantities of grains, vegetables, fruit or other local production from farmers to resell in the market or door-to-door. As for those who open their own place, customarily the wife remains at home with the children and minds the shop or *warung* during the day while the husband tends to the farm or plantation [Cases 9, 21 and 24]. In the evenings, when business usually picks up anyway, he helps serve and entertain customers. As a community develops, more sophisticated shops or *warung* capable of providing a livelihood may be opened by outsiders with capital who are often uninterested in land acquisition.

Case 24

A., 32, was born in Banyuwangi, East Java. He is the second of six children. His parents had 0.25 ha in Java, before the family left by Transmigration to Gunung Balak, Lampung Tengah. In 1981, the zone was closed for reforestation ("kena reboisasi"), *and they were forced to follow the Translocation scheme to Pematang Panggang SP3, Mesuji sub-district. They received 2.25 ha. A., however, failed to receive his own parcel because he was still unmarried. A year later, he visited a friend in Kota Bumi, Lampung, and there he met his future wife. Originally from Semarang, Central Java, she is 32, the same age as her husband. The fifth of six children, she also followed her parents with Transmigration to Lampung. Three of her brothers are in Lampung and another is in Transmigration at SP3 Pematang Panggang.*

A. came to ***Danau Jaya*** *for the first time in 1983 with one of his younger brothers, going on the advice of an uncle who had settled there. His uncle gave him land which he cleared and planted with 3500 coffee trees. Married in 1985, his wife joined him in the hill plantation only in 1988. In 1987, Rp 2 million earnings from his coffee bought him 3 ha; half was overgrown, half was planted with young coffee. He has since sold his first lot of 3500 trees. Three months ago (April 1990), he moved to the center of the* talang *of Danau Jaya and opened a small store* (warung manisan). *He lives in part of the house owned by the* RT1 *chief, and assures with him the security of the whole* dusun *by making rounds at night. Another of his brothers lives at Danau Jaya.*

Transport is a key activity in a region of spontaneous Transmigration still poorly served by roads and vehicles. Trucks, passenger vans or four-wheel-drive vehicles ply most of the main roads outside of the highland coffee areas, but in many areas only the latter get through following heavy rains. Only a minute percentage of spontaneous migrants have been able to purchase these vehicles. In the main towns, one comes across migrants hired as drivers or manual helpers of trucks and vans transporting people or goods.

Spontaneous migrants, however, account for some 60% of the motorcycle transport drivers in the Simpang coffee area [Case 10]. They are well-represented in other coffee-producing areas dependent on trail motorcycles *(ojek)* to bring the coffee yield down the hill and re-supply the isolated *talang:* Gunung Raya (Kec. Banding Agung), Tenang (Kec. Muaradua Kisam), Ujan Mas (Kec. Pulau Beringin), and other areas. Most drivers *(tukang ojek)* are young men, migrant or local, who undertake this strenuous and dangerous occupation for a limited time, lured by the high profits to be made. These profits may be as high as Rp 50,000 or more (average is Rp 30,000) per day during the 3-month height of the picking season. Some *tukang ojek* own coffee plantations of their own, though most lack their own motorcycle, but instead share profits 50/50 with an owner. Some circulate from one coffee area to another, taking advantage of the slight shift in coffee season between areas, the season running later in higher elevations. In the off season, work for *ojek* is reduced to resupplying hill settlements. Migrants do agricultural labor in the coffee plantations or return to Java for up to six months at this time.

Special non-agricultural talents are of great advantage to a rural migrant as a complement to his or her crops, if they can provide cash for daily needs. There are a wide variety of sideline occupations encountered in spontaneous settlements even off the beaten track: carpenter [Cases 13 and 17], sawer, radio-cassette repairman, bicycle or motorcycle repairman, tailor, barber, photographer, midwife, traditional healer, musician, singer, dancer, to name a few. Generally, those who exercise an activity parallel to agriculture do better in the short and long term.

On the other hand, it must also be noted that migrants often give up hopes of resuming an activity they practiced in their former homes. Usually lack of capital is the reason; the financial capital needed to enter the above occupations, for example, may be almost nothing for a midwife, Rp 50,000 for a carpenter's tools, or up to Rp 1.25 million for a power saw. Migrants usually are unable to absorb the risk of failure should the venture fail to bear fruit. Sometimes the area settled is not right for the type of business one is qualified for. A migrant might have the skill to set up a *tahu* (bean curd) factory, but if there is no regular and abundant supply of water the project is doomed from the start. Batik-dyeing, woodwork or performing arts may need time to adapt to local tastes and the purchasing power of the migrant community may still be too weak to support them. For these reasons, the majority of migrants in rural areas have remained involved strictly in agricultural pursuits.

Women work with their husbands or brothers in the coffee areas to help in their own or in a sharecropped plantation, or to do paid labor picking coffee. If the plantation is large and workers need to be hired to work in it, the wife will have to cook the meals that are part of the worker's pay. Many small plantations are run and worked by a young couple who will do most of the work themselves. The wife will work alongside her husband, in the plantation when it comes time to weed under the trees and pick the crop, in addition to her daily cooking and child-rearing chores. Women are often responsible for watching over the drying coffee when they are at home. As men drive the motorcycles, they take care of selling and transporting coffee and buying and bringing up supplies to the isolated plantations.

In the food crop settlements, women also do agricultural work along with the domestic chores. Were any detailed time-allocation data collected, it might be found that women do more work (productive and reproductive combined) than their male counterparts, as has been found in many peasant societies. They take care of much of the buying and selling of farm produce and household consumption items in the markets. Women and children make important contributions to animal husbandry and the processing of agricultural crops for marketing or consumption.

Fig. 30
SUMATRA FASHION OF CARRYING LOADS, USING FOREHEAD STRAP - *PORTAGE FRONTAL SUMATRANAIS*

Sites that are isolated from other similar sites, like Sukorejo, provide less competitive returns to labor than other areas, where workers are able to range widely in search of favorable conditions. Sukorejo is the end of the line for many older migrants with their families who cannot easily vote with their feet. For these people it is unthinkable to take the risk of jeopardizing the low-paying yearly or low-yielding sharecropping arrangements they have in order to seek better conditions elsewhere.

Consideration of the opportunities open to spontaneous migrants suggests that an inverse relationship exists between employment security and returns to labor. One who has contacts, is enterprising and is lucky enough to find well-paying flat-rate jobs and work by the day to fill in some of the free time, usually makes out better than a person who sharecrops or is hired by the year.

Like general Transmigration schemes, a settlement's chances for success are greatly enhanced when there are possibilities for off-farm employment. Migrants who take advantage of various opportunities as they present themselves can gain security through diversifying their income-gathering pursuits, so long as off-farm work does not interfere with work in their own fields.

The limited opportunities for off-farm work in many spontaneous pioneer settlements located in remote areas impede evolution towards alternative farming systems. Tree crop systems may be more suitable for many lowland food crop areas, but they will be nearly impossible for settlers to establish on their own without off-farm income or credit facilities.

13 . The migrant household

■ Nutrition

In all settlements, a majority of families are unable to insure themselves proper nutrition due to some or all of the following three factors: 1) the presence of wild pigs and other pests; 2) the unavailability of transportation at a reasonable price; and 3) the economic constraints of tight household budgets.

In coffee-producing highlands, proper nutrition is beyond the reach of almost all families because of the difficulty of planting food crops. Wild pigs, endemic in the highlands, attack food and root crops, fruit trees and vegetables, however close they are to the living compounds. Only enclosing the plants in rugged bamboo and barbed wire fences affords a measure of protection from these pests, though most farmers feel the returns do not justify such investments. A few selected areas in the upper elevations are relatively free from wild pig infestation, due to colder weather and diligent trapping. Cassava, maize, peppers and papaya are planted in some of these areas, but vegetables are unknown, aside from cassava leaves. Also in the highlands, the difficulty of raising animals greatly limits affordable protein sources. One exception is the small brackish-water fishpond in Danau Jaya that is seeded each year by residents who chip in Rp 2000 to buy the alevins. Their part in the yield amounts to about a kilo of dried fish.

Frictions have been known to arise in some spontaneous settlements between Moslems and Hindu Balinese because of the latter's consumption of pork. Yet, many Moslems in highland coffee areas express appreciation for the Balinese who help control the wild pig population through their assiduous trapping. Accusations that Moslem migrants have consumed pork surface from time to time, magnified by the feeling many Sumatrans have that Javanese and Sundanese are lax in their faith.

Given the distance and cost of transportation to markets, and the added cost of bringing up supplies, including food (Rp 50-200 per kilo), coffee growers and their workers in the isolated highland plantations are constrained to a diet lacking in variety. Rice, the staple food, is often consumed simply with hot peppers and salt, perhaps supplemented by cassava leaves or a condiment made from jackfruit, durian, dried fish and hot peppers *(tampoya)*. Often dried and salted fish is bought, since it keeps up to a month. It should come as no surprise that migrants in coffee plantations complain of having to eat the same foods all the time. Some early settlers, speaking of their first months or year in isolated areas, tell of a diet composed of rice with bamboo shoots and forest mushrooms for vegetables and an occasional deer trapped for meat.

Nutritional variety is greatly improved in and near market villages and *talang*, such as Sukorejo, which has small weekly market or *kalangan*, and Curup, a hub of the Simpang coffee region, where it is possible to find *témpé*, *tahu* (soybean cakes), local river fish, eggs and vegetables. Despite market proximity, however, the quantities of meat and other protein consumed are about the same as in other coffee areas if economic level is controlled for. For example, a migrant family owning a small coffee plantation at Sukorejo, which has a weekly *kalangan* market, might have beef only once or twice a year, at the Moslem holiday of Lebaran, following the Ramadan fasting month, chicken twice a year and eggs once every two months or so. A small piece of *tahu* or *tempé* or salted fish is bought at most weekly markets and a fresh river fish perhaps once a month. Some highland dwellers buy soybeans to make their own *tempé*. Poor landless workers in these same areas subsist almost exclusively on rice, leaf vegetables (i.e., cassava leaves), and if there is any protein source it would

come from small quantities of salted fish [Case 22]. Some families clearly stated that they ate rice and salt or rice and chili peppers three times a day, rarely ate vegetables of any kind, and only had meat once a year at *Lebaran* when they would buy, for example, a chicken or some beef. These people explain that feeding their family would be much easier if only they could plant cassava or even purchase the less-expensive tuber in the market.

Sabutan, located 12 km south of Muaradua along the road to Danau Ranau, has regular and comparably inexpensive transportation to town (Rp 200 one-way). In terms of variety, the settlers find many of the same vegetables and products they had in Java, and in their fields grow *kacang panjang*, hot peppers and other common foodstuffs. There is even a *tahu* maker in Sabutan. Most families go to market in Muaradua at least once every two weeks to buy and sell. According to the Javanese farmers' groups, nutritional status has neither declined nor improved from what it was in Java, though a few migrants report increased protein consumption [Case 18].

The rice harvest comes in February, but by the beginning of June, most farmers in Sabutan have begun to mix cassava and maize into their rice. Those without rice fields may end up eating cassava or maize by itself for up to six months out of the year. The difficulty of poultry-raising in upland regions such as the Muaradua valleys means higher prices as fowl must be sent from the Belitang area.

The low nutritional level of the diets and the physically demanding work involved in agriculture both in the lowlands and the highlands is reflected in the high incidence of migrants reporting bouts of exhaustion and fatigue *(sakit leso)*. Increased allotment of household budgets to improve nutrition might be feasible for better-off families. Yet elasticity is low for food: the diet of well-off families is only marginally better than the average. Almost all spontaneous migrants are drawn from less privileged classes having similar habits of nutrition, and they are willing to sacrifice nutrition, a reducible budget item, to advance the short and long-term goals that brought them to Sumatra in the first place. On a day-to-day basis, nutrition must be weighed against current household economic security and the possibility of an easier life in the future. One long-time settler who began as a laborer in coffee plantations and eventually became the leader of a large highland neighborhood spoke of his past efforts to economize by eating little else but rice and, a greater sacrifice in his eyes, drinking coffee without adding sugar.

In sum, spontaneous transmigrants in South Sumatra on the average have experienced no significant dietary improvement since their coming, despite an overall improvement in economic welfare in comparison to Java.

■ Assets and income

As should be expected, residents of migrant settlements have few valuable possessions besides their homes, farmland and perhaps farm animals. When surplus is available and is put to work locally, rather than transferred back to the sending area, it is generally used to expand productive activities. Some of the more successful people in the coffee plantations have a coffee huller or a motorcycle, items used to generate additional income. A smaller surplus is used to repair a house, do an extra weeding of the plantation or rejuvenate a section that has been neglected. In food crop areas, additional capital is put into savings in the form of cattle or gold. In all settlements, surplus that is placed in assets that can be readily liquidated provide a margin of security and manoeuvre. This is important when markets are volatile. A farmer with some capital can afford to wait and sell crops once prices have risen. He or she is protected if the crop is late and prices have already fallen. As long as the coffee grower has cash to live on, the harvest is stored with a dealer to be sold when prices rise.

Consumption items and home furnishings are for the most part lacking in spontaneous settlements. In all areas, the homes have little in the way of furniture; in the highland areas, notably in houses on stilts, tables, chairs, beds, dressers and other furniture are lacking. Some migrants have radio-cassette players and a few own televisions, running on car or motorcycle batteries.

Life cycle and other cultural events, from the circumcision or marriage of a child to the collective purchase of musical instruments, may at one time or another require sizeable expenditures. These costs usually are scheduled in order to be met with the help of harvest surplus. Contributions in cash and in kind by guests cover about half of the outlay.

Often when surplus is realized, the profits are reinvested in the sending area. There are numerous ways in which spontaneous migrants transfer and reinvest earnings at home. A cow or buffalo may be purchased in Java and left to be raised by a family member. School expenses for a younger brother may be sent home [Case 10]. When larger sums are available, land is purchased and houses bought.

In the older neighborhoods of Cahaya Mas and Kampung Baru most families own a bicycle. They have become a common sight in recently-opened areas since many children depend on them for transportation to school. Motorcycles remain extremely rare in spontaneous settlements outside of the highland coffee areas. They are used as in the coffee areas, to generate income through marketing and transport of agricultural production, or to transport passengers.

Generally, a high degree of relative equality exists in new spontaneous settlements. Usually the first settlers bring little or no capital and clear and plant similar parcels of land collectively. As settlements develop, income disparity increases, more so in the highland coffee regions than in planned spontaneous settlements designed on the government Transmigration model.

Household budgets of poor migrant families in the coffee areas are characterized by the large part devoted to satisfying day-to-day consumption needs. In these families, income is barely sufficient to cover the cost of food, transportation, school fees (if any) and medical expenses. Income and expenditures for food and basic necessities for a family of four rarely exceeds Rp 25,000 to 35,000 per month, and there is no surplus to fall back on in case of illness or other difficulties. In better-off families, saving is possible, if irregular, and this permits or holds open the possibility of land acquisition. Well-off families save every year, expand their holdings, educate their children above the primary level, and prepare for the possibility that their area might be closed for reforestation.

One might roughly classify the various types of spontaneous settlers in the coffee areas by their economic situation, as follows:

Poor workers: This group includes those who share small or unproductive plantations, and are unable to do regular wage employment. Those working on low-paying yearly contracts are also in this category. In mid-1990, it was still common in some areas (such as Sukorejo) to pay 100 kg of coffee for a year's management when coffee prices were barely above Rp 1000/kg. Sharing yield on a poorly-yielding plantation also means earnings little better than Rp 250,000 (for 3000 trees), necessitating additional sources of income for the family.

Better-off workers: They usually share high-yielding plantations and often combine sharecropping with day or piecework employment. Some have high-paying yearly contracts, with the right to work on the outside. With day wages, one can avoid having to borrow on the yearly salary and save some of the wages. By doing this, some workers save from Rp 200,000 to 500,000 per year. Drivers of *ojek* can earn over Rp 2 million a year from transporting coffee and goods, most of it during the busy months of harvest (over Rp 1 million if they share profits with the owner). They increase their earnings during the off season doing wage work.

Poor landowners: They own small, old or overgrown plantation. Once purchased, the lack of capital prevents expansion or improvement, and the resulting low yield prevents saving. An older 1000-tree plantation, though well-maintained, might only net Rp 250,000, barely enough for subsistence.

Better-off landowners: People and families in this category usually own young plantations of sufficient size to provide steady work for all family members and perhaps additional paid laborers. Some own a small plantation and share another. Profits of from a few hundred thousand to over a million rupiah a year are possible.

Well-off landowners: Rich planters own large plantations cared for by a number of live-in workers paid yearly. One with 10,000 trees can expect to make a profit of from Rp 1 to 3 million per year. The control of hulling and the buying of coffee in highland settlements, or the transport of coffee (by *ojek*, usually rented out) increases income well beyond this figure. Larger landowners with holdings of 35,000 or more trees account for only a few percent of all migrant coffee planters.

In the food crop areas of Cahaya Mas and Kampung Baru where most residents purchase a standard parcel of land, income disparity is reduced in comparison to the coffee areas, and reflects the similarity with government Transmigration settlements. In settlements like Cahaya Mas where unused land can be rented to supplement one's own holdings, those with larger families and available labor augment their income. Increased earnings are also a function of the access one has to other sources of income. These might include the sale, transport or processing of agricultural products, retailing of various items in the market, ability to do skilled manual work, or a position as a village or neighborhood leader.

In the organized spontaneous villages, the first few years for a new family are often difficult, while the land is cleared and put under till. Any profits during this time are usually absorbed by the cost of the land authorizations and home construction. In the first and subsequent years, however, basic welfare is easier to assure in the food crop settlements where education and health care are accessible and where adequate food for the family can be grown on one's own fields. Though saving is difficult in the first few years, one or two good harvests on 2 ha nets up to and even over Rp 1 million, enough to buy a pair of cattle.

Despite their overriding concern with amassing capital for land purchase or to satisfy other plans, spontaneous migrants often fall into debt. Often the debt is incurred to pay for rice for subsistence while awaiting harvest, to finance a life cycle event (circumcision, marriage), schooling, or medical treatment [Case 18], or to make up for crop failure or destruction by rats or other pests. Borrowing to pay for land is common though the debts are usually cleared up with the first harvest.

It is difficult for farmers to find co-settlers from whom they can borrow large sums. Almost everyone insists they have to look after their own security and investment plans first. In the lowland food crop areas, people borrow from family or from close friends.

Stores will extend credit to farmers and growers in all areas for the purchase of day-to-day essentials. In the highland coffee areas, planters borrow from their *toko* without interest but must in return promise to send them their coffee harvest. In the isolated *talang*, those with

sufficient capital will lend rice to others during the slow season, to be paid back with coffee when the harvest comes in with substantial interest added. It is difficult to determine how many people are constantly in debt, but a person's debts are usually limited to a few hundred thousand rupiah at the most. A few of those interviewed owed upwards of Rp 1 million.

In short, as far as migrant incomes, working conditions and overall welfare are concerned, much depends on the deals workers and owners strike with each other. To take one example mentioned earlier, yearly contracts in the coffee areas vary from Rp 100,000 to 500,000 or more. Generally, better terms for workers are had with family and acquaintances from the sending area. This explains why so few migrants come without any contacts in the receiving area. As most migrants arrive with little or no capital, they cannot "shop around" long for better employment terms before their money runs out and they are forced to work.

Almost all migrant landowners in the coffee areas arrived in Sumatra with little capital and started out working for others. The most successful of them came earlier, in the 1960s, 1970s or early 1980s, and worked a relatively short time as laborers before opening up forest land to plant new coffee, alone or in groups.

Case 25

N., 45, was born in Banyuwangi, East Java, one of four children. His parents had 0.25 ha of sawah *and 0.25 ha of dry land. As an adolescent working his parents land, he began to feel "dissatisfied and needed to leave home"* ("kurang memuaskan, harus merantau"). *Fifteen years old in 1960, he left for Metro, Lampung Tengah with friends. He had only enough money for the trip there. In Metro, he worked by the day or by the job but after two years was still unable to buy land in the region. He left for Belitang in 1962-63 and had the same experience: he worked, but soon found that it was already "dense, packed"* ("sempit") *as far as land availability went. He "ran"* ("lari") *to Gunung Raya in 1964 for four years, returned to Belitang in 1968 and went back to Gunung Raya in 1970. Saving what he could from working for others, he built up little by little his coffee plantation out of the forest* ("upah-buka"). *His land was a day's hike from the market, he said, crossing many of the fifty hills that Gunung Raya is said to have. His plantations grew, finally totaling about 25,000 coffee trees. In 1985, he sold everything to an unfortunate buyer just before the area was closed above the markings* ("tutup di atas patok") *and came to* **Sabutan**. *He was the first from Banyuwangi to arrive in Sabutan. He bought 1 ha of* sawah *for Rp 1 million, then a 1 ha dry field for Rp 500,000, and another for Rp 300,000, all from locals. The dry fields were overgrown with old coffee trees.*

His wife, 30, is from Jember, East Java. They met in Gunung Raya, where she had followed her parents (now returned to Java). N. and his wife have two children who live with them.

N. often returns to Java, sometimes twice a year. He never stays more than two weeks and no longer has to look for young men to work his land, as he did for his coffee plantations in Gunung Raya.

With few exceptions, all of those owning 10,000 or more coffee trees arrived before 1985. The contacts and deals they could make to gain access to or purchase their land were determinants of their success. Large land-owners often added to their original holdings by purchasing plantations at low prices from departing planters.

It goes without saying that personal and familial factors have a great deal of influence on employment options and welfare. Sickness and infirmity place great strains on family budgets and can lead to impoverishment or a return to the sending area. Young strapping workers are eagerly hired with good terms by plantation owners whereas older migrants have to take what is offered them. In the relatively new rural settlements chosen in the sample, it seems that physical condition and the amount of capital at one's disposal are more adequate determinants of successful adaptation than, say, higher educational level. The latter would be expected to have more importance in developed and diversified village communities offering opportunities for innovative entrepreneurship. Nevertheless, those who attain junior high school level *(SMP)*, whether they finish or not, usually do well; they place high priority on their children's education and they are more often found in leadership positions. Finally, those with more contacts providing sources of information are in a better position to react to changing markets and opportunities.

14. The social and cultural life of spontaneous settlements

Outside of neighborhood interaction and some community-wide agricultural work, opportunities for socialization occur mainly in the markets, and during artistic, sportive and religious activities.

At least during the first few years in the new area, the spontaneous migrant's social network is limited to family members, those who brought them to the settlement or hire them, immediate neighbors, and the neighborhood leader. Few have any network alliances or contacts in Sumatra outside the village or even the neighborhood, except perhaps family or acquaintances who provided information or assistance between the village of origin and the final place of migration.

The social network that is actively maintained, if in an irregular fashion, is that linking the migrant and the family in the village of origin. Since the exchange of letters is exceedingly rare, this network is maintained by visits. When migrants return to their village of origin they usually do so once the main harvest of the year is in, since money

is needed to pay for the transportation home and the inevitable gifts for the family. They usually have a number of practical reasons for returning: to give earnings to their family, assure school fees and housing costs for remaining children, help family in the sending area bring in their own harvest, check up on the work in any fields they own (or rent or sharecrop out), or invest earnings acquired in the receiving area by purchasing a house, land, cattle, or other asset. Trips home at Lebaran (when bus fares rise) are rare, and are made by those who have substantial and regular income year-round.

Once Javanese, Madurese and Balinese have gotten beyond the first difficult months of settlement creation, have built their homes and perhaps have a few harvests under their belt, they tend to recreate the sorts of social activities that exist in their places of origin. Revolving-credit associations *(arisan)*, sports and traditional music or performing arts from the area of origin, are examples of social institutions that are found in most established settlements. Social and cultural activities are most developed in settlements having a sufficient number of long-standing residents and a secure status as far as land-tenure is concerned.

A settlement with as little as ten families rarely lacks a prayer-house *(langgar)* for Islamic worship. Larger communities aspire to build a mosque. Moslems, Christians and Hindus coexist in many settlements with few apparent frictions aside from occasional problems with pork consumption, as mentioned earlier.

As expected, Sabutan, Cahaya Mas and Kampung Baru have more sportive and artistic groups, as well as masculine and feminine revolving-credit associations [Case 17]. In Sabutan, there is a *ludruk* (modern theatre) group and a *karawitan* (gamelan orchestra). The Sabutan *kentongan* (split drum ensemble) has even appeared on Palembang television. Kampung Baru has *karawitan, janger* (danced theatre) *ludruk* and *kuda lumping* (leather horse) groups.

In the highlands of Kotaway, such groups are absent, but the lower villages where land certification is possible have dance and music groups including the Sundanese *jaipongan* (regional song and dance). In Sukorejo, several Madurese do *jaipongan* from time to time with cassettes. The locals watch but never take part in this unfamiliar dance. A group playing religious music with flat drums *(rebbana)* composed of young local and migrant women led by a Javanese was formed but soon broke up because of the lack of instruments. Another religious flat drum ensemble *(hadramaouth)*, composed entirely of local men, functioned only a short time since its members were separated between the riverside village of Pedataran and the highland plantation settlement of Sukorejo eight kilometers away. These three attempts suggest the various possibilities of migrant and local interaction through such activities. We return to this interaction in the next section.

When they exist, these activities are always referred to with delight, for they are a pleasant part of migrant life. The communities of Sabutan, Cahaya Mas and Kampung Baru devote a portion of their budget to forming the groups and purchasing or fabricating the necessary instruments and costumes. Up to two or three evenings a week are spent learning and rehearsing. These efforts are all the more remarkable in the poor material context of struggling migrant settlements.

From a poor migrant's point of view, Sumatra provides as much artistic activity as Java does. One Kampung Baru settler put it this way: "if you're landless in Java, entertainment is for others" *("kalau tak punya tanah di sana, ramainya orang lain")*. In the migration area, those who live close to an artistic group participate in or at least watch the rehearsals. There are many artistic activities, including gamelan and various theatre forms. The gamelan in Kampung Baru was purchased for Rp 400,000 with the proceeds from harvests. The musicians practice every Sunday, though in the planting season and before, rehearsals are suspended to enable the members to prepare their fields. During the performances, the residents note "everyone mixes, all those here are invited, local people and Javanese, all of them" *("sama-sama campur, kalau sudah ada di sini, diundang semua, orang asli, orang Jawa, semua")*.

There are more artistic groups than sportive groups in the spontaneous settlements. In a context where physical activity is hardly lacking, they are created on the initiative of a community leader explicitly to strengthen the cohesion of the group, primarily its younger members.

Revolving-credit associations are present in all the stable settlements and are organized around a neighborhood or village leader in order to facilitate saving, borrowing, or the acquisition of collective or individual goods (such as kitchen utensils or dishes). All of the above common-interest associations may be seen as "adaptive mechanisms in situations of change" (Kerri, 1976:34). Open and flexible, they serve to unite settlers for work, leisure and decision making in common.

Unfortunately, in many spontaneous villages, especially those devoted exclusively to coffee farming, about the only leisure activity is playing the Social Ministry's *nomor* lottery. Although the weekly gatherings around the radio to hear the results may bring people together for social interaction, the lottery has an unhealthy impact on the local economy. Through this lottery a significant part of individual savings, a large percentage of which comes from agricultural laborers on yearly contracts or receiving low wages, is drained out of the local community. Winnings, if any, are never on a par with the amounts wagered, of course, but many feel the lottery is a worthy gamble, considering it the only possible way of amassing capital.

One neighborhood head *(kadus)* in the highland coffee

area east of the Saka called a meeting of his residents where it was decided as a group to foreswear all games of chance, the rationale being that they were there to put their earnings into long-term secure investments rather than gamble them away. Such investments are within reach of these planters, since they receive sufficiently large profits from their plantations in lump sums.

15 . Relations with local communities

The lowland settlements with dense migrant populations (Cahaya Mas and Kampung Baru) are somewhat isolated from the local communities situated along the rivers and roads and near the market centers. In the foothills, the migrants are more dispersed, living in the middle of their plantation, some grouped in hamlets, far from local communities situated below, along the roads and rivers and near the markets (as in Sukorejo, Bayur and Kotaway). This spatial organization is at the root of the rather distant social relations existing between migrants and locals.

Most migrants who have been present several years in Sumatra have a working knowledge of one of the local languages. Fluency is difficult to obtain, however, since most Sumatrans in the markets and other places of interaction speak enough Indonesian to communicate with the newcomers.

Thus, though there are many exceptions, migrants and locals tend to keep to themselves. Interaction and exchange between various ethnic groups takes place in defined spheres: when seeking employment and land, when selling agricultural production, or at markets, for example. This separation is usually less pronounced in frontier areas than in Sumatran villages which have received Javanese workers. Where one group represents only a small minority, interaction is often more integrated than in communities with two sizeable ethnic groups. Religious differences also distinguish and set off groups. These tendencies, which govern interaction between locals and migrants as well as between migrants themselves, are illustrated in settlements that receive a number of immigrants at one time, such as Sundanese, Christian Javanese or Balinese. Such groups form neighborhoods of their own where they may immediately pool resources and set about building their new community, drawing on common language, religion, culinary practices and relations existing prior to the move. Interaction also seems to be most active among people of similar socio-economic position, a factor sometimes prevailing over ethnic origin.

In the coffee plantations, meals may be left out of the labor arrangements made between locals and migrants for the simple reason that the locals have their main house far from their plantations and rarely work with their hired hands. Meals are always included in work contracts between migrants, as in the foothill (Sabutan) or lowland (Kampung Baru, Cahaya Mas) food crop zones. This situation sometimes diminishes relations between locals and migrants to the simple monetary exchange and dispensing of uncooked rice. The level of interaction between employer and employee is even less in the tobacco factories and the coffee and rubber plantations of East Java, where daily salaries exclude meals *(lepas makan)*.

Local people in towns such as Muaradua and Baturaja often remark that migrants, both transmigrant and spontaneous, contribute to local activity and to the development of trade and transportation in their region, bring new agricultural techniques, and provide the justification for increased governmental aid to the region. Local youths are also influenced by the new trends the predominantly young single male Javanese bring. This has brought rapid changes to areas long considered hinterlands, far from the sociocultural transformations of the large urban centers (quite obvious at first glance being the changes in clothing styles, musical tastes and relations between young men and women). Local farming systems are in turn adopted by the incoming migrants. The two-way or reciprocal nature of most instances of culture change through contact (acculturation) is thus highlighted by the data from South Sumatra [19]. As for which cultural elements are involved, it would appear that techniques and practices promoting increased productivity, security, and well-being are most rapidly adopted by a new group.

In every village there are examples of intermarriage, though it still remains an exception to the general practice of marriage within one's own ethnic group. When marriage between migrants and Sumatrans occur, they usually involve a migrant man and a Sumatran woman. This would seem normal, given that most migrants are men, many of them young and unmarried. Case histories and interviews suggest, however, that some Sumatran families seek a Javanese husband for a daughter for economic reasons (Balinese are excluded because of their religion). According to common stereotypes, Javanese men are thought to be harder workers than Sumatran men, who are said to leave much of the plantation work to their wives. Sumatran women are considered harder working than their Javanese counterparts (as well as less "emancipated"), perhaps offering an explanation for why Sumatran men rarely marry Javanese women.

From the migrant point of view, and besides reflecting the abundance of eligible young men among the migrants, marriage to a local often corresponds to a migrant strategy for access to land. In effect, through marriage, the migrant

stands to inherit the land of his wife. Whether or not she is the designated heiress (the eldest daughter for the Semendo, for example), she at least offers access to a human and material network that will guarantee his future welfare (through the provision of loans, aid for young children outside of the plantations, and other services). The hand of a daughter in marriage sometimes follows to a successful work contract for the opening or the rehabilitation of a coffee plantation [Case 5]. Most Sumatran parents now recognize that future spouses choose each other more than before; the number of marriages entirely arranged by the parents is declining while marriages between people of different social classes is on the rise. This could also contribute to an increase of inter-ethnic marriages in the future.

Migrants have also had an impact on local performing arts habits. Artistic groups of the older zones of immigration in Belitang or Lampung circulate throughout the region of Muaradua and Baturaja, among the migrant communities as well as by invitation to local marriage festivities. The most stable and homogeneous settlements maintain musical, dance and theatre groups which perform within the migrant community and in front of the entire local community during school and national festivities, for example. This sometimes calls for adaptations. Attracting spectators from Danau Ranau to Muaradua, the *ludruk* theatre group of Sabutan decided to have its female roles played by men to avoid shocking the locals, unaccustomed to seeing women on stage. In the story entitled "Hidup Berganti" ("The Changing Life"), dialogue is composed of a mixture of Indonesian, Javanese and the local Daya languages. Local art forms, on the other hand, have virtually no impact in the migrant communities.

As most studies of ethnic change have noted, the weakening of ethnic boundaries begins to be significantly felt only in the second and third generations following the migration. Schools are an important part of the two-way assimilation process. In the Belitang area, where Transmigration has been going on for several generations, youngsters seemed genuinely at a loss to explain what differences existed between various ethnic groups or what sorts of problems could arise among groups. Of course, conflicts do arise along ethnic lines, particularly in areas which have reaped no economic benefits from the increasing presence of migrants from Inner Indonesia in their midst. Nevertheless, in most areas the issue has shifted over the years from one of conflict over ethnic issues to one of mutually—if not equally—beneficial contact and cooperation in economic affairs. Most of those who migrate to Sumatra eventually feel at least temporarily at home in a place with, as the anxious parents of one future migrant warned, "man-eating tigers, large snakes and a mix of tribes".

Notes to chapter 4

(1) Upland rice was the only crop currently seen in freshly opened fields, but farmers stated that other crops can be planted in its place, including various beans, maize, chili peppers and vegetables. These crops are left in association with the coffee trees until the latter begin to shade them (a maximum of 17 months), but recent practice is to plant only one six-month rice crop and then leave the coffee to grow alone.

(2) Up to 2100 kg/ha was reported for the first rice fields opened from primary forest in the Kotaway area in the late 1970s.

(3) Cahaya Mas and Kampung Baru have red-yellow and brown-yellow podzolic soils; Pengandonan has a mixture of brown-red and red-yellow latosol; Danau Jaya and the highland settlements east of the Saka River have either brown-yellow podzolic mixed with podzolic (as does Sabutan) or red-brown latosol depending on the area.

(4) The mixed or multiple cropping systems found in the settlements may be referred to as tumpang sari seumur *(intercropping) and* tumpang sari beda umur *(interplanting). While both call for straight rows of various crops, the latter uses plants of different growth cycles and is more common. For a discussion of mixed or multiple cropping systems found in Indonesia, see Thahir S. and Hadmadi (1985).*

(5) A yield of up to 1.3 tons per ha can be attained in pure stands or 1 ton of soybeans and 400 kg of maize if the latter is added. Maize is planted in rows 4 m apart with 50 cm between holes each holding 3 maize plants (local variety) and soybeans are planted within the maize during the months of September, January and April, depending on rain, using a planting distance of 20 cm x 50 cm. For each cycle, thirteen half days of plowing and harrowing and four person-days of other land preparation are required per hectare. Planting is usually done by gotong royong *using thirty persons per ha to finish in one day.*

Maintenance includes intensive weeding, gathering soil around plants and replanting that is carried out between day 21 and day 26. Then from day 26 to day 70, only spot weeding is necessary, which can be done by the owner in spare time. Finally, when the soybean plants are 70 days old (about 75 cm high), the field is weeded again, requiring 20 person-days. The total labor request for maintenance operations amounts to an average of 55 person-days, depending on weed infestation. Harvest takes place at 90-95 days and takes 40 person-days, enough to uproot, dry and shell the beans so they are ready to sell. The total labor required (including household and gotong royong *repayment) is an average of 126 person-days per agricultural cycle, yielding maximum returns to labor of Rp 6800 per person-day, not including inputs. Fertilizer use is slight; 150 kg or less of urea and TSP are deemed sufficient.*

(6) Upland rain-fed rice cultivation provides returns to labor of Rp 800-2300 per person-day and yields of 1-2 t/ha.

(7) Yields for pure stands of maize range from about 2 t/ha without any fertilizer whatsoever to 4 t/ha if fertilizer is used. If fertilizer is used it is usually applied sparingly, on the order of 150 kg/ha (urea and TSP). Maize is not labor intensive and thus can offer returns of Rp 6500/day if the harvest is 2 tons.

(8) One who plants 2 rantai *(20 m x 40 m or 0.08 ha) of long string beans estimates his yield at about 750* ikat *(bundles of about 600 g). If sold for an average price of Rp 200 each this yields Rp 150,000. He estimates his expenses for inputs and labor at about Rp 50,000, leaving him with a profit of Rp 100,000 for about 50 person-days of work. Returns to labor of around Rp 2000 are low in comparison to other crops but much of the work involved is light, is suitable for children and can be done in the evenings while socializing.*

(9) Many farmers use the following pattern with very minor deviation: maize is planted in September when rains permit soil preparation. Five days later rice is planted (at distance of 25 cm x 25 cm) and 20-25 days later the field is weeded. Cassava is planted in the field (at 1 m x 1 m distance) in October, about a month after the maize is planted, and a second weeding takes place once the cassava sprouts leaves (at about 20 days, the paddy is 40 days old at this point). The maize is harvested in January (or at about 90 days). Paddy is left until April. Some additional weeding may be done as these crops are harvested. The cassava can be harvested any time thereafter, and often remains in the ground until August or September (10-11 months). If the land is not to be replanted, the cassava can be left in the ground longer to increase its weight. Cassava yield can more than double if left up to 14 months. One farmer claimed 25 t/ha after 12 months. Yields minus harvest shares for maize and paddy (both four parts for owner to one for workers) are per ha: 800 kg maize, 400 kg paddy, and 5 t cassava. Labor request for one complete year cycle amounts to from 179 to 252 person-days/ha, depending on whether gotong royong *is used (if so, the amount of labor to be repaid is added). This gives returns to labor of only Rp 1235 to Rp 1402 per person-day.*

(10) Peanuts give an average of 800 kg/ha in pure stands, with a range of 250-400 kg/ha on critical parcels to 1000-1200 kg/ha under optimum conditions. In association with maize or paddy, 400-500 kg/ha is considered a good yield.

(11) Refer to the discussion of land clearing above.

(12) High and low values were discarded in ranges, but not in averages, presented for maintenance, harvest and total labor expenditures.

(13) Scholz (1983:95-105) surveyed the Southern Coffee Belt in 1982. The belt has expanded since then, despite continuing low coffee prices (Danau Jaya, Sukorejo and the settlements east of the Saka River all lie outside of Scholz's 1982 limit). At that time, he calculated the average coffee plantation size at 1.67 ha, and average yield for fully productive stands at 500-600 kg (dried bean) per ha.

(14) Much of course depends on the age of the tree. A 3-year-old tree can be expected to give 1.5 to 2 kg that year, though the following year the yield will likely be half that. The average yield reflects that of middle-aged but satisfactorily-maintained plantations. Intensive plantation maintenance will increase yields, and growers have to calculate the cost benefits of hiring additional labor in order to raise yields in this way. In an extreme case of impeccable maintenance, the village of Pecah Pingan (Pulau Beringin sub-district) strove, albeit unsuccessfully, to win the Lomba Desa Tingkat Propinsi (provincial model village contest) claiming that the village's average coffee yield was 1 kg per tree, and that trial plots could get 10 kg per tree!

(15) Such calculations smooth over the differences between high and low returns. From studies of eleven planters with plantations ranging in size from 1000 to 37,500 trees, returns for all labor are found to range from Rp 1592 to 9280. The values are clustered at the low end of this range: Rp 1592, 1870, 1878, 1886, 1969, 2169, 2465, 2869, 3466, 6218, 9280.

(16) For those in the highest and most remote parts of Kotaway, the ojek *fee was Rp 200/kg while coffee prices were around Rp 1000/kg (July 1990).*

(17) Working hours in Sabutan are usually between seven and eight hours but can be as little as five and a half, with meals.

(18) Monthly contracts (bulanan) *are rarely used and were not encountered in the field study villages.*

(19) Ortiz first proposed the term "transculturation," to emphasize the reciprocal nature of acculturation. For definitions and discussions of this term and the acculturation concept as used in anthropology, see Ortiz (1940, cited in Beals, 1953:628); Beals (1953); Herskovits (1948); Redfield, Linton and Herskovits (1936), and; The Social Science Research Council Summer Seminar on Acculturation (1954).

Conclusion

The process by which people decide to leave the security of their home and family and migrate is as complex as are diverse the family histories of the migrants themselves. In addition, a general picture of spontaneous migration is difficult to present, especially if it is to be based on material from a limited area. Many familial and extra-familial factors will influence the trajectories taken by migrants in their move. The process of creating and developing spontaneous settlements also varies considerably. Stressing again that our data are drawn exclusively from a handful of field study sites, and allowing for many exceptions, some generalizations can nevertheless be made.

Economy is the factor leading the vast majority of those interviewed to migrate. Unsuccessful in acquiring land or amassing capital in their village of origin, spontaneous migrants set off in order to acquire land or more lucrative employment in the receiving area and with the proceeds either settle down there or return to invest in their home village. In a few cases they retain homes and livelihoods in both areas.

Most of the migrants in the sample villages selected for this project are of peasant background; only a few have off-farm occupational skills. Those who leave, however, are seldom the landless or the most impoverished, but come from the level just above them. They are the small landowners with less than 0.5 ha, an insufficient land base for the present and future needs of the family or its offspring. One fifth of the migrants interviewed are children of landless peasants. Although one might expect landless peasants to be the group most likely to migrate in search of new land, they often lack the capital to finance the move and the settlement and, without a farm to fall back on, are unable to risk severing employment contacts in their village of origin.

Family migration history is another important determinant of migration behavior. Sixty-eight percent of spontaneous migrants interviewed have been through a migration experience with their family, whether they went through Transmigration or migrated on their own.

Ninety percent of spontaneous migrants come from families having more than three children, and there seems to be a tendency toward the migration of eldest male children. Migration may provide a way for young people to escape familial or social problems at home. Economic factors are again often at the root of family conflicts and frustrations that provoke spontaneous migration. The young age of migrants at their first departure suggests that the difficulties of educating children above the primary level encourage their migration by combining the factors of unemployment, family pressure to be self-sufficient or to contribute to the family budget, and perhaps an adolescent need to "get away" from these and other tensions.

Statistics on inter-provincial migration obscure the fact that numerous particular routes are taken by migrants. Migration directly from the place of origin to the site when the migrant was interviewed accounts for only a small part of the trajectories. Out of all the migration histories collected, half pass through Belitang or Lampung before continuing to another site. Some spontaneous migrants started out as transmigrants. Others migrated in a circular fashion between the village of origin and spontaneous sites before settling down. There is little sense in differentiating types of migrants once and for all.

Many of the success stories encountered in spontaneous settlements can be traced to luck: a migrant being in the right place at the right time, preferably with a bit of capital to invest. Were luck and capital evenly distributed, successful migration would seem to result from the adoption of one or more of the four following strategies: first, the taking advantage of all close and distant contacts in order to be constantly informed of opportunities for employment and land access; second, the sending of an active family

member (father, husband or son) on a scouting mission to the place of potential migration; third, the acceptance of family separation depending on the situation and needs for periods of from a few months to several years; and, fourth, the retention, to the extent possible, of land and housing in addition to that possessed at the most recent migration site.

Spontaneous migration appears to result from the conjunction of specific and evolving living conditions and opportunities to be seized at a given moment. The multiplicity of trajectories and solutions adopted belies any characterization of migrants as simple reactors to circumstances beyond their control. Yet, one finding that was brought home to us during the fieldwork, one that is reflected in the case histories, is the extent of limitations on rather than the range of choices open to migrants. The ways in which migrants create or join settlements are also constrained by certain limits restricting their ability to choose.

Broadly speaking, migrants who enter spontaneous settlements in food crop areas buy their land, either from the village administration at a fixed price or from residents based on market value; migrants in the coffee-growing highlands open primary or secondary forest or, increasingly, purchase established plantations from former owners. The first type of migrants can expect to obtain some sort of legal title for their land, usually the *SKT*, whereas most owners of recently-opened coffee plantations cannot.

Where legal title to land is obtainable, communities are more apt to adopt sustainable yield agricultural and conservation techniques. Where status is unclear, farmers tend to seek short-term yield at the expense of long-term. Much uncertainty persists concerning the legal status of many coffee-growing areas and local officials themselves are unable to delimit the boundaries of exploitable and protected areas. This situation hardly encourages sustainable practices, conservation and local investment since farmers feel they must make their profits and get them out before they are ejected from the area. They are most inclined to reinvest their profits in their place of origin; only there do they see a secure future.

Upland growers, especially those without legal title to their land or residing illegally in protected forest, are often blamed for reducing watershed capacity and causing landslides and other environmental degradation. A distressing point is that in many areas protected forest has been delimited without apparent regard for existing villages or the particular area's proven importance as a watershed (for example, 50 per cent of the Pulau Beringin sub-district falls within planned forest reserves, including centuries-old indigenous villages). Whether migrant settlers are on the right or wrong side of the land status divide, one question goes unanswered: how can they be expected to adopt soil and other conservation techniques if they themselves have no way of capturing the benefits derived from such investments, or if adoption of innovation results in a reduced net benefit (Napier, 1991a, 1991b; Batie, 1986)? Assessments on a region by region basis of both the real dangers of hill slope farming and of the economic benefits of conservation for subsistence farmers (Cochrane and Huszar, 1988; Huszar and Cochrane, 1990) are needed in order to design programs to deal with the problems posed by upland spontaneous settlement.

For those migrants who face eviction, the prior warning is given weeks or months rather than the year or more necessary to prepare another move. The importance of capital for migration and settlement under proper conditions would call for a policy whereby those expelled from protected areas could collect the final harvests from their plantations and be employed in reforestation programs during a transitional period in order to assemble a minimum of means necessary to rebuild a livelihood elsewhere.

The farming systems of spontaneous settlements were outlined in this chapter, but more research is needed in order to evaluate the possibilities for more sustainable alternative systems. Wet-rice *(sawah)* cultivation is practiced only marginally, on humid depressions, if at all, thus most non-coffee spontaneous settlements must depend primarily on dry field cultivation systems. Most spontaneous migrants have limited capital when they arrive in South Sumatra or after they have purchased land, and they are therefore unable to properly fertilize and maintain their fields. Cattle are in short supply in many areas hindering adequate and timely land preparation and the maintenance of soil fertility. The long-term viability of many lowland settlements may well depend on conversion to tree crops. In many of these settlements, however, the rarity of off-farm work makes it virtually impossible for a farmer alone to finance the establishment of a plantation.

Despite the insecurities, migrants see their newfound lifestyles as somewhat or even clearly better than they were in the sending area, despite feelings of being less "at home" in the new area, either because they do not yet have their own land, agricultural yields are insufficient, they feel cut off from their family and friends, or they feel a sense of isolation from being far from social activities and services. Although they clearly state that they are staying there because economic conditions force them to, usually once they possess sufficient land with legal title to enable satisfaction of household needs, migrants express a desire to settle in Sumatra rather than move back to their place of origin. In areas where legal title is not available, farmers generally plan to return to Java when and if their area is closed to settlement, or if they amass enough capital to make a living in the sending area.

Migrant motivation is not a fixed phenomenon. A temporary sojourn is often transformed into a long-term if

not lifetime stay. Migrants who leave with only a desire to earn capital to start a family or business in Java may be encouraged to stay and build lives for themselves in Sumatra if security and a reasonable quality of life are attainable. Though pioneer settlers are characterized by inventiveness and fortitude shaped by life in situations of isolation and insecurity, there is no indication that they are prepared to settle indefinitely in areas lacking basic infrastructures. In the absence of these, they will have no incentive but to seek short-term gain with a view to returning to the place of origin, and will make only a minimum economic contribution to the local community.

In this study, we have presented an overview of spontaneous migration and settlement patterns based on interviews with migrants and indigenous people in various settlements in lowland and upland South Sumatra. Analysis of their decision making in migration and in settlement suggests that on the whole they are reacting to conditions in their social, political, economic and ecological environment. Migration is ultimately a reaction to landlessness, land fragmentation, poverty, a state of diminishing resources with respect to population, or other factors beyond their control which frequently find expression in family crises. Cognizant of their situation and the options available to them for dealing with these factors, they seek solutions through migration.

One is often struck by the creativity of migration decision making and spontaneous settlement organization in response to changing conditions. The evidence of this study suggests that group creativity and innovation manifest themselves in contexts within which migrant and settler actors, clearly aware of the forces at work, are nevertheless primarily reacting to externally-imposed conditions. Consideration of the innovative responses made by migrant and interethnic communities should therefore not cause one to lose sight of the contexts in which such responses are fashioned. Innovative goal-orientated behavioral patterns are perhaps characteristic of most migrant cohort groups. Adequate design of development assistance programs will depend on proper interpretation of the beneficiaries and their needs.

Although spontaneous migrants and settlers are often blamed for their actions, an analysis of their migration and settlement patterns reveals little that can be deemed irrational in their behavior given the context in which they act. It is increasingly clear that the impediments to successful migrant adaptation, sustainable agriculture and ecologically sound settlement patterns are primarily of an institutional nature. The shortcomings of official and unofficial policy could be subsumed under the rubric of laissez faire management. Poor or contradicting land status determination prevents an optimal balance between productive use of fertile land and vital conservation of watersheds and forest reserves. Though tenure insecurity has been found to encourage land clearing and deforestation in tropical hinterlands, particularly where land clearing is a prerequisite for formal tenure (Southgate, Sierra and Brown, 1991; Southgate, 1990), as long as settlers and officials in South Sumatra's highland areas have an interest in opening land, deforestation will continue even if formal land tenure does not legally hinge on land clearing. Semi-official directives to clear remaining patches of forest have been given to planters in some areas by neighborhood heads relaying orders from higher up. Attempting to engineer a fait accompli, their aim would seem to be to convert the forest to uses that are profitable to the local and regional economy, since until now forest conservation has mainly benefitted those with the means and influence necessary to win logging concessions, for the most part interests based in the capital.

There are lessons that policy-makers may gain from studies of spontaneous communities. For South Sumatra at least, few doubt that spontaneous migrants often pauperized by conditions in their villages of origin play a positive economic role in receiving area economies. Yet the recent alarming loss of primary forest in Indonesia and other tropical countries has focused attention on environmental issues including the question of spontaneous settlement. Although the benefits of such movements have been enjoyed for several decades now, the longer-term costs are only beginning to be felt both within spontaneous communities and without. Developed countries will have to determine how much they are willing to contribute to efforts to save forests on which all depend. In Indonesia, openness, clarity and action on the subjects of land status determination, land tenure and aid to agriculture in the receiving areas as well as efforts to deal with conditions in the sending areas fueling migration (through welfare support, job creation and land reform programs aimed at moderating the flows), each could contribute towards preventing the costs from outweighing the benefits.

Muaradua Kisam, OKU

M. CHARRAS

1. A successful Javanese settler who began with a land-sharing agreement and now, in partnership with a coffee dealer, collects, drys and hulls all the coffee in the area. Still relatively isolated along an unimproved road, she hopes the future will bring more people and activity to the area - *Un Javanais ayant réussi en créant au départ une plantation de café avec un planteur local. Aujourd'hui, intermédiaire et partenaire du grossiste installé en ville, il collecte les productions, sèche puis décortique le café. Il attend d'être rejoint par plusieurs planteurs et espère que la route d'accès sera améliorée afin de rompre son isolement.*

2. Tying bunches of long string beans for sale in Sabutan. Friends, family and often children gather in the evening following harvest to do this relatively light work - *Les amis, la famille et souvent les enfants mettent en botte les haricots longs les soirs de la récolte.*

Muaradua , OKU

H. BOUVIER - G. SMITH

Muaradua Kisam, OKU

M. CHARRAS

Muara Telang, OKI

W.L. COLLIER

3. Young Javanese boys in their third year of working for a Javanese planter. They return home once a year with their earnings and plan to eventually marry and settle in their village of origin - *Trois jeunes garçons sur la plantation où ils travaillent comme ouvriers depuis trois ans. Munis de leurs économies, ils rentrent une fois l'an dans leur village d'origine où ils espèrent prendre femme et s'installer définitivement.*

4. Buginese woman in Musi Delta planting rice seedlings. She has used a stick to poke holes in the peat soil for the seedlings which is the traditional swampy land technique - *Femme Bugis dans le delta de la Musi repiquant du riz. Elle utilise un baton pour faire des trous dans la tourbe afin d'y disposer les plants de riz, ce qui est la technique traditionnelle dans les régions marécageuses.*

5. Newly opened land in the Musi Delta swamps forest. This shows the mound for the coconut seedlings in the rice fields. This Buginese couple have dug a small canal (*parit*) for drainage. In ten years, this will be a smallholder coconut plantation - *Défrichement récent dans les forêts marécageuses du delta de la Musi. La butte au milieu de la rizière accueillera un plant de cocotier. Ce couple Bugis a creusé un petit canal (* parit *) pour assurer le drainage. En une dizaine d'années la rizière sera remplacée par une petite plantation de cocotiers.*

Muara Telang, OKI

W.L. COLLIER

Tugumulyo, OKI

M. CHARRAS

6. A large village founded by spontaneous Javanese settlers in the mid-1960s - *Un grand village fondé par des colons spontanés javanais au milieu des années 60.*

7. The leader (right) of a upland spontaneous settlement and some residents in the middle of his chili pepper field. Many cropping patterns and techniques have been introduced or adapted by spontaneous migrants - *Le chef d'un village pionnier des hautes terres dans son champs de petits piments. Plusieurs nouveautés culturales et techniques ont été introduites ou adaptées par les colons spontanés.*

Sabutan, OKU

H. BOUVIER - G. SMITH

Mendala, OKU

M. CHARRAS

8. New spontaneous settlement on the periphery of a transmigration scheme, situated about 4 km from the indigenous village to which it is attached administratively. "Rubber jungle" was cleared to provide land for the settlement. Cassava was planted to insure subsistence for the first year. - *Nouveau village créé par des migrants spontanés dans une clairière de forêt d'hévéa, à la périphérie d'un centre de la Transmigration et à quatre km d'un village traditionnel dont il dépend administrativement. Le manioc a été largement planté afin d'assurer la nourriture de base de la première année.*

9. Crossed wooden poles act as trestles to support the climbing vines of long string beans - *Tuteurage des haricots rames dans le champs d'un colon spontané Javanais.*

Bumi Agung, OKU

H. BOUVIER; G. SMITH

Banding Agung, OKU

A.G. BEAUDOU - M. PAIN

10. Steep slopes in the upland areas cleared using the slash and burn method will be planted with rice. Coffee and banana trees will be planted subsequently, as in the adjacent plots - *Un nouvel essart sur une forte pente, prêt à être planté de riz. Caféiers et bananiers seront ensuite plantés comme sur la parcelle voisine.*

11. Indigenous swidden field and future smallholder rubber plantation. After the first burning, branches for a fence are set aside and the rest are placed around the stumps for a second burning - *L'essart et la future plantation d'hévéa d'une famille autochtone. Après le premier brûlis, les branches qui serviront pour la clôture sont mises de côté tandis que le reste des branchages est rassemblé sur les grosses souches pour un deuxième brûlis.*

Middle reaches of the Musi River

M. CHARRAS

Pulau Beringin, OKU

M. CHARRAS

12. Coffee plantations in the upland where each hill is settled by one or two indigenous or Inner Indonesian families. Nearly every two years, the holdings are enlarged on their peripheries by the Javanese planters or workers - *Chaque colline est occupée par une ou deux familles, autochtones ou migrantes. Tous les deux ans, les parcelles sont agrandies par les planteurs ou les ouvriers javanais.*

13. Drying of coffee and rice on dry ricefields near a fork of the upper Ogan and Medingin rivers by local Sumatrans. A cucumber plot in the background is fenced in with sturdy bamboo and barbed wire to keep out wild pig - *Le café et le riz sont mis à sécher sur des nattes dans une rizière asséchée chez les autochtones du cours supérieur de la rivière Ogan. A l'arrière-plan, un carré de concombres est solidement clôturé de bambous et de barbelés pour le protéger des sangliers.*

Pengandonan, OKU

H. BOUVIER - G. SMITH

Pengandonan, OKU

14

14 & 15.. Harvest coffee being brought back by a Sumatran men to the homestead to be dried before sale. Children contribute their share to the household labour force. Javanese and other migrants have adopted the characteristic local way of carrying loads in baskets supported by a forehead strap - *La récolte de café est ramenée par un autochtone pour être séchée avant la vente dans sa maison. Les enfants font leur part de travail dans la maisonnée. Les migrants, javanais ou autres, ont adopté les paniers et le système de portage frontal locaux.*

Muaradua, OKU

15

16. Vehicle carrying passengers from Belitang to Muaradua. Packs of rice and live chickens tied to the overhead rack are brought from lowland areas like Belitang to be sold in the uplands where rice cultivation and animal husbandry are limited - *Un minibus transportant des passagers mais aussi des victuailles de Belitang aux vallées de montagne où le riz et le petit élevage font défaut.*

17. Two trail motorcycles setting off from an isolated hill settlement for a trip down to the town. Each of them are transporting a 100 kg sack of coffee. The one on the right is also carrying a passenger straddling the coffee sack - *Dans un hameau isolé, deux motos tout terrain prêtes à rejoindre la ville, chargées chacune d'un sac de café de 100 kg sur lequel un passager peut s'asseoir.*

18. Coffee transported by four-wheel-drive vehicles in the upland areas - *Un véhicule tout terrain, surchargé de sacs de café, au retour d'une collecte dans une vallée isolée.*

Belitang, OKU

16 H. BOUVIER - G. SMITH

Kotaway, OKU

17 H. BOUVIER - G. SMITH

Tanjung Agung, MUARA ENIM

18 A.G. BEAUDOU - M. FAIN

Sabutan, OKU

H. BOUVIER - G. SMITH

19. Preliminary female dance called *legong* in a *janger* theatre rehearsal with *gamelan* in the background provides an example of Banyuwangi preforming arts in a South Sumatran spontaneous settlement. Often used for Javanese marriages, the group was also invited for a Daya marriage - *Une danse d'ouverture,* legong, *du théatre* janger, *accompagnée d'un* gamelan *(à l'arrière plan) donne un bon exemple de manifestation artistique originaire de Banyuwangi, donnée à Sud-Sumatra par des migrants. Souvent appelé pour des mariages javanais, le groupe a néanmoins déjà été loué pour un mariage local.*

20. Gathering of spontaneous settlers around a group of *kentongan* drummers from Jember, East Java. The group has been featured on regional television and is used to celebrate festivities locally, such as the morning prayer during the Ramadan
Rassemblement de migrants autour d'un orchestre de tambours (ketongan*), originaire de Jember, Est Java. Le groupe est déjà passé à la télévision provinciale et participe à des festivités locales, entre autres aux prières de réveil du Ramadan.*

Sabutan, OKU

H. BOUVIER - G. SMITH

Bumi Agung, OKU

H. BOUVIER - G. SMITH

21. Self-help (*gotong royong*) group building a road to their settlement in South Sumatra - *Demi-journée de travail en commun (*gotong royong*) pour la construction d'une route d'un village de migrants originaires de Java.*

22. Market day in Kampung Baru. Rapid population growth in Kampung Baru helped to qualify the spontaneous settlement for government aid to establish a market (*Pasar Inpres*) - *Jour de marché à Kampung Baru. L'accroissement rapide de la population a permis à ce nouveau village pionnier de bénéficier d'une aide du gouvernement pour construire un marché* (Pasar Inpres)

Mesuji, OKI

H. BOUVIER - G. SMITH

SECOND PART

Spontaneous migration in the coastal wetlands

William L. Collier

Dadang Kartapura

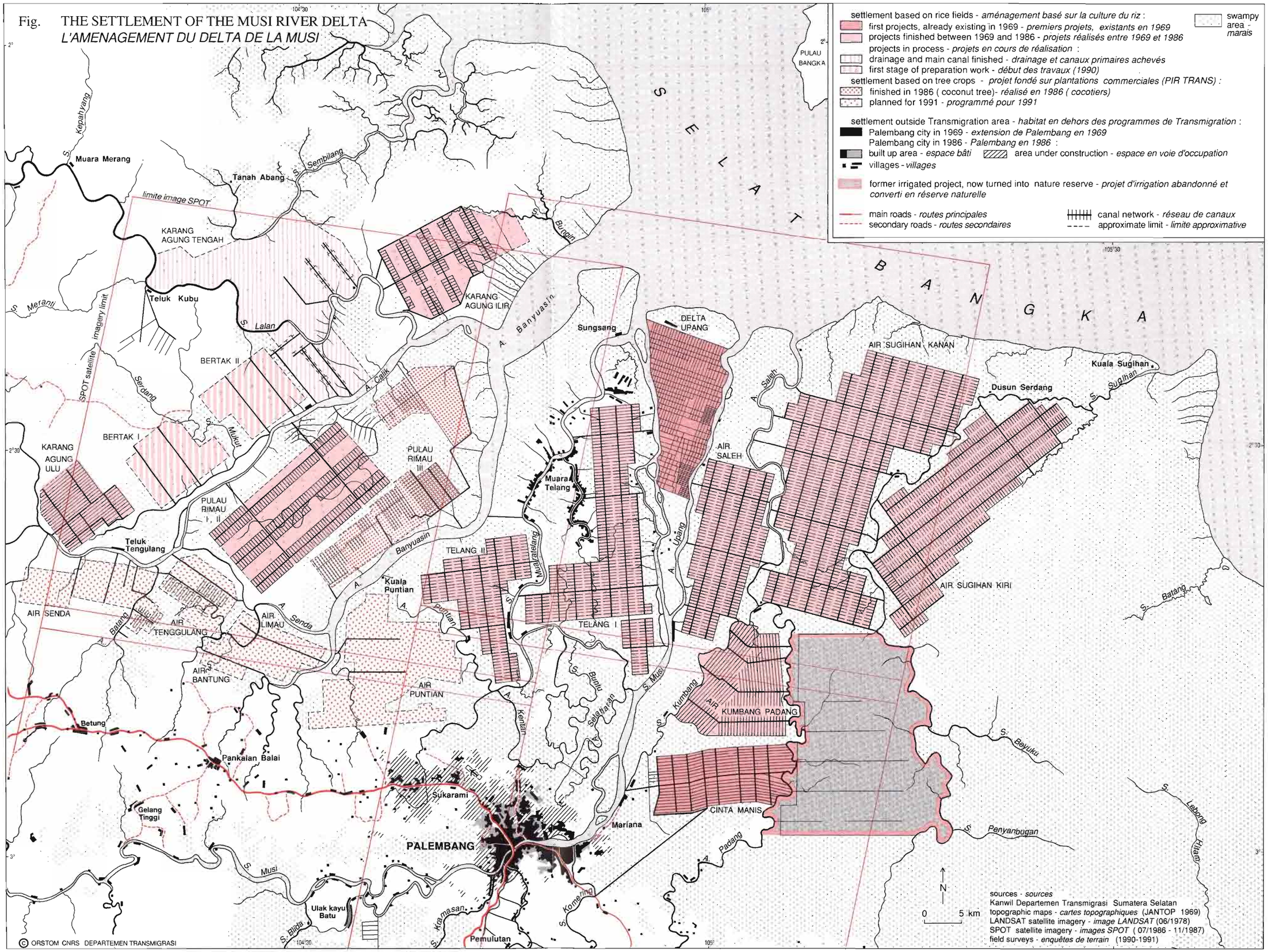
Rudi Wibowo

Insert map No.3 - *Carte n° 3*

THE SETTLEMENT OF THE MUSI RIVER DELTA

L'AMENAGEMENT DU DELTA DE LA MUSI

Fig. THE SETTLEMENT OF THE MUSI RIVER DELTA
L'AMENAGEMENT DU DELTA DE LA MUSI



M. PAIN- Yanto Why. 1991

Spontaneous migration in the coastal wetlands

William L. Collier, Dadang Kartapura, Rudi Wibowo

During the last thirty years (1960-1990) in the coastal wetlands of Indonesia there has been a major transformation of the natural resources from primary forests to agricultural settlements [1]. This transformation has created millions of hectares of rice and coconut fields cultivated by local residents, spontaneous migrants and transmigrants [2]. No matter what a person feels about this change from primary forest to cultivated fields, it has occurred both with and without Government support, and will continue though at a slower pace.

This migration of people into these coastal wetlands resembles the push Westward of the American pioneers in the mid 1800's when the western frontier of the United States was being transformed into agricultural lands.

Although the estimates vary widely, wetlands of Indonesia along the East coast of Sumatra and in South and West Kalimantan and in Irian Jaya cover an estimated 43.5 million hectares. Previous estimates suggest that 5.5 million hectares of these swamp forests or tidal influenced swamps have agricultural potential [3].

During the last twenty year, the Government's development efforts have included the exploitation of the swampy lands of Indonesia. These swampy lands are considered marginal because of the fragile soils, location, and difficulties in converting them to agricultural uses. A number of studies have indicated that these swampy lands have a very valuable forests that perform essential ecological functions [4]. At the beginning of this effort, two soil scientists stated about these low land peat swamps that "Summarizing we can say that no other soil type combines so many unsolved difficulties"[5].

1. Transmigration and spontaneous migration in South Sumatra

South Sumatra Province is a very good example of what has occurred in these coastal wetlands. The settlement of the Musi River Delta which began more than a hundred years ago by the local Melayu groups, but greatly accelerated in the early 1960's by the Buginese from South Sulawesi and in the late 1960's by the Government's Transmigration Program.

Insert map No. 3 shows the vast extent of the conversion of swamp forest to primarily rice fields and coconut plantations in the coastal wetlands in South Sumatra. This map indicates the various projects set up by the Government. The system used in Sumatra was to connect the rivers in these delta areas by a series of major canals. Once the primary canals were dug between the rivers by very heavy equipment, then samller canals at right angles to these canals were dug, and then the tertiary canals to the farmers fields. Although this system was meant to provide two crops of tidal irrigated rice each year, in reality it only operated as a drainage system so that the farmers could only get one crop of rice and this was in the wet season. What actually occurred was the deep drainage greatly favored the cultivation of coconuts rather than rice, since the tidal irrigation did not force the river water on to the farmers fields in the dry season, and only allowed sufficient drainage in the wet season to grow rice.

The system used by the Government in Kalimantan

was much different than this system because of the wider distances between the rivers. They used a system resembling a pitchfork, or three pronged system. However, this systemwas actually a drainage system rather than an irrigation system.

As shown in the insert map No. 3 for the Government sponsored transmigration projects, the first projects were at Cinta Manis and Delta Upang which were both initiated in mid-1960 and completed by 1968. The first was a dismal failure and the second a bright success. Cipta Manis demonstrated the problem of potential acid sulfate soils below a thin layer of peat, that were exposed during the land clearing process.

Delta Upang demonstrated that the Javanese and Balinese settlers could overcome the peat soils and achieve a reasonable living standard. Upang also demonstrated that it takes ten years of settlement before the migrants can achieve a rather stable rice production, at rather low levels, during the wet season.

The next area opened by the Government was the Telang Delta which is shown on the map as Telang I and II. Although some of these areas had deep peats which prevented crops for a number of years, the other areas with less severe peat problems were able to cultivate rice. The deeper peat areas were opened and attempts were made to raise rice but were not successful. These areas are now mostly in smallholder coconut plantations. Then came the opening of the Saleh Delta and the Air Sugihan Delta for rice cultivation.

What is not shown on the insert map No. 3 is the areas opened by the local Melayu and the spontaneous migrants most of whom were already living along the these rivers when the Government opened these lands. The local people having lived in this area, along the river banks, for the last fifty to eighty years have their coconut and rice fields next to the rivers. The next group to move into these lands was the Buginese spontaneous migrants who usually are located behind the Melayu settlements or in areas which they had not opened by the 1960's. The Buginese had institutions, to be described later, which made it possible for them to dig small canals up to several kilometers long which allowed them to open areas farther into the delta wetlands than could the Melayu.

■ Upang Delta

However, surveys of the transmigrants and spontaneous Buginese migrants in the Upang Delta clearly demonstrated that the rice based cropping systems of the Javanese were not very suitable for these coastal wetlands [6]. This research showed that the Buginese coconut and rice based farming system was much more appropriate for these swampy lands. However, it was only effective up to four or five kilometers from the river. The Transmigration projects were designed to have two rice crops per year based on the tidal irrigation concept which was never effective in the dry season and only drained the swamps in the wet season.

Map No. 3 shows Delta Upang completely covered by the Government's canal network, though this is not quite correct because in the early 1970's there were many Buginese farmers along the rivers and the transmigration projects were in the middle of the delta stretching towards each of the rivers. The comparison of the two different farming systems, one based on irrigated rice and the other based on coconuts and rice, showed that changes would have to be made in the farming systems of the settlers. Some of these ideas were accepted and included in the design of the projects but most had to wait until the sites were turned over to the local governments and the farmers were free to adjust their farming systems to the prevailing ecological conditions of each site.

Later visits to this area in the late 1980's proved that the concept of coconut based cropping systems were one of the alternative cropping systems for these coastal wetland areas. It depends on the nearnest to the river and the amount of drainage that has occurred in the wetland area. Those sites near the river that have some tidal influenced irrigation can get two rice crops per year, other areas farther from the river are more suited for one crop of traditional rice varieties (nine months) especially if poorly drained and still deep peats, the better drained and not so deep peats can be used for one crop of rice per year with coconuts planted on the bunds.

However, as will be described later, the cropping system best suited for these areas is the Buginese system of rice for several years, then planting coconuts through out the field, and eventually having just a coconut smallholding. Frequently there are variations on this system depending on the soil and the drainage, with some sites only being suitable for directly planting coconuts, others with rice and then in four or five years a coconut plantation, other situations where coconuts on the bunds and rice, and others where it is just rice cultivation. The Buginese have sufficient experience that by looking at the wild plants in the area they can determine which system is best for a location.

■ Sungai Cawang : Buginese spontaneous migration

An example of how the spontaneous migration occurred is in Sungai Cawang village on the western bank of the Air Saleh River, only a few kilometers from the sea [7]. In 1971 five Buginese pioneers, originally from South Sulawesi, but living in Riau Province, traveled along the Air Saleh, opened up several hectares of the forest, and cultivated rice. After several seasons they were convinced that this would be a good location for settlement.

They obtained permission from the local government, probably the *Pesirah*, to open up the land along this stretch of the Air Saleh on the eastern side of the river. They brought their families to this village, sent letters to relatives in South Sulawesi, and traveled to Riau, encouraging other Buginese to settle on the Air Saleh. As the newcomers arrived, they would work as unpaid laborers for the original settlers, be given land to open and canals to be dug, and in a few years would have their own land. They would give a certain portion of the land they opened to the *Kepala Sungai* (Head of this section of the River) who was the person who founded this settlement. In the first year there were only three settlers, in the next year there were twenty or more, in five years there were more than one thousand Buginese people living along this section of the river.

Between 1971 and 1981, they opened 3,000 ha of swamp forest for agriculture. They dug 62 major canals and many branch canals in this peat swamp. The first rice crop was produced in 1973 by a group of five pioneers. Later that year, 62 families asked permission to open more land. By 1980 there were 1,929 spontaneous migrant families in the area.

These Buginese settlers had a system of cutting down the forest that relied on selected trees that would, when cut down, fall into other trees and end up by quickly clearing a sizeable piece of land. It would have many large stumps in the field but these would be burned out over time. They would plant rice among the stumps and begin digging drainage canals to the river. As the land drained and the remnants of the forest disappeared, they would raise mounds in the fields for coconuts and plant rice around these mounds. Soon the mounds would join together forming an earthen ridge in the field where they planted coconuts, bananas and vegetables, while in the depressions between the ridges they would plant rice. Once the coconut trees are six or seven years old, then the site is used just as a coconut plantation and the farmer opens up a new field for his rice and coconut system. After twenty years the farmer would have five to ten hectares of coconut plantation, which he can then retire since the plantation requires much less labor than his earlier system.

As can be seen in map No. 3, most of the transmigration sites do not cover the entire delta. What happened was that along the rivers, the local Melayu opened up fields (1900's to 1960's) on the river banks and just behind these river banks for rice and coconuts. Behind most of these areas the Buginese (1950's to 1970's) and later Javanese, dug drainage canals, opened the forest and cultivated the land. Then the Government sponsored the opening of the center part of the delta's for the transmigration program (1965 to 1985). The best land was along the river banks, then the back swamp just behind the river banks, and then the most marginal land was left for the Government which used very large equipment to dig the canals through the deltas. Most of this remaining land had peat soils from one-half to two meters in depth, underlain by a potential acid sulfate soil.

2. The coastal wetlands of Muara Telang

■ Land use in Muara Telang

The Telang Delta is a very good example of the development of these wetland areas since it was first settled by Melayu people in the late 1800's, has a substantial Buginese community, many spontaneous Javanese, and major transmigration projects. Some of this diversity is shown on the map in Figure 31. This map also shows where canals were dug in poor locations and then not settled.

The first area to examine in Figure 31 is around the small town of Muara Telang which is half way up the map on the east side. Along the Muara Telang River (actually Telang River since Muara just means the mouth of the river), there are a combination of dark areas where the houses are located on the river bank, then small rivers and canals (black irregular lines) from the Telang river to the inside of the delta, where the farmers are growing rice (V) and then behind the rice they are cultivating coconuts (VII). Actually, in most cases this will be coconuts with rice planted between the coconuts if it is a young stand of trees. These combinations of rice and coconuts are a good example of the spontaneous Buginese system which has been adopted by some of the spontaneous Javanese farmers in this area.

Fig. 31 DIVERSITY OF FARMING SYSTEMS IN SWAMPY AREA (MUSI RIVER DELTA)
VARIETE DES SYSTEMES DE PRODUCTION DANS LES REGIONS MARECAGEUSES

I forest - *lorêt*

II forest recently opened (Transmigration program)
lorêt récemment ouverte (programme Transmigration)

III forest opened outside Transmigration program, traditional farming system
lorêt ouverte en dehors des zones de transmigration, systèmes traditionnels de mise en valeur

IV dry crops and plantations made by Transmigrants, mostly Javanese people
cultures en sec et plantations réalisées par les Transmigrants, en majorité Javanais

V irrigated ricefields (Transmigration network) or flooded (Melayu or buginese system, "pasang surut")
rizières irriguées (Transmigration network) ou inondées (technique Melayu ou Bugis, "pasang surut")

VI irrigation or drainage network - *canaux d'irrigation ou de drainage*

VII smallholder plantations made by Buginese (coconut) - *plantations lamiliales de cocotiers réalisées par les Bugis*

VIII governmental plantation (oil palm Elaeis, PIR system) - *plantation gouvernementale de palmier à huile (système PIR)*

partly hiden by clouds - *partiellement masqué par couverture nuageuse*

Commentary - *Commentaire*

On this sketch, based on SPOT remote sensing imagery, one may note the diversity and originality of the land use systems and of the settlement types. In Muara Telang, traditional Malay villages, occupy the river levees for kilometers, along tributary rivers of the Musi delta. Melayu people have their rice fields situated just behind the high levees and are aesily irrigated by the tidal action.

Behind this first fringe of rice and coconut fields, Buginese spontanenous migrants settled on each side of a narrow canal (parit) dug by hand for distances of one to five km and perpendicular to the main stream. Using the tidal action ("pasang surut"), they will first plant rice in the newly opened land but then part of the field (on peat soil) will prepared for coconuts planted on mounds in rows. Buginese are able to plant coconut trees then bend the young trees down to create a better base so that it does not falldown when fullgrown. This also makes it easier to harvest the coconuts. They usually hire Javanese, spontaneous migrants coming from the transmigration village, to do the hard preparation work, and for rice cultivation. Some of them bought or rent the land opened by the Buginese.

Transmigration schemes began in the 60's to open a considerable area in the deep swamps between the Banyuasin and Sugihan rivers. The geometric figures on the map are the huge networks of drainage and irrigation canals dug after the forest has been totally cut down. The system was conceived mainly for tidal rice cultivation but do to the lack of drainage and learning from the Buginese, the transmigrants have introduced small levees in the field to cultivate secondary food and tree crops.

The government has recently introduced coconut smallholding plantations using the PIR system, based on coconut trees and more recently on oil palm.

Sur ce croquis, établi à partir d'images satellite SPOT, on peut remarquer la variété et l'originalité des systèmes de mise en valeur et des lormes de peuplement.

Les villages malais traditionnels de Muara Telang s'étirent sur plusieurs kilomètres le long des berges de cours d'eau secondaires, affluents du lleuve Banyuasin. Les Melayu qui les peuplent installent leurs rizières en bordure des rivières dans les parties basses inondées situées juste en arrière des hauts bourrelets de crue.

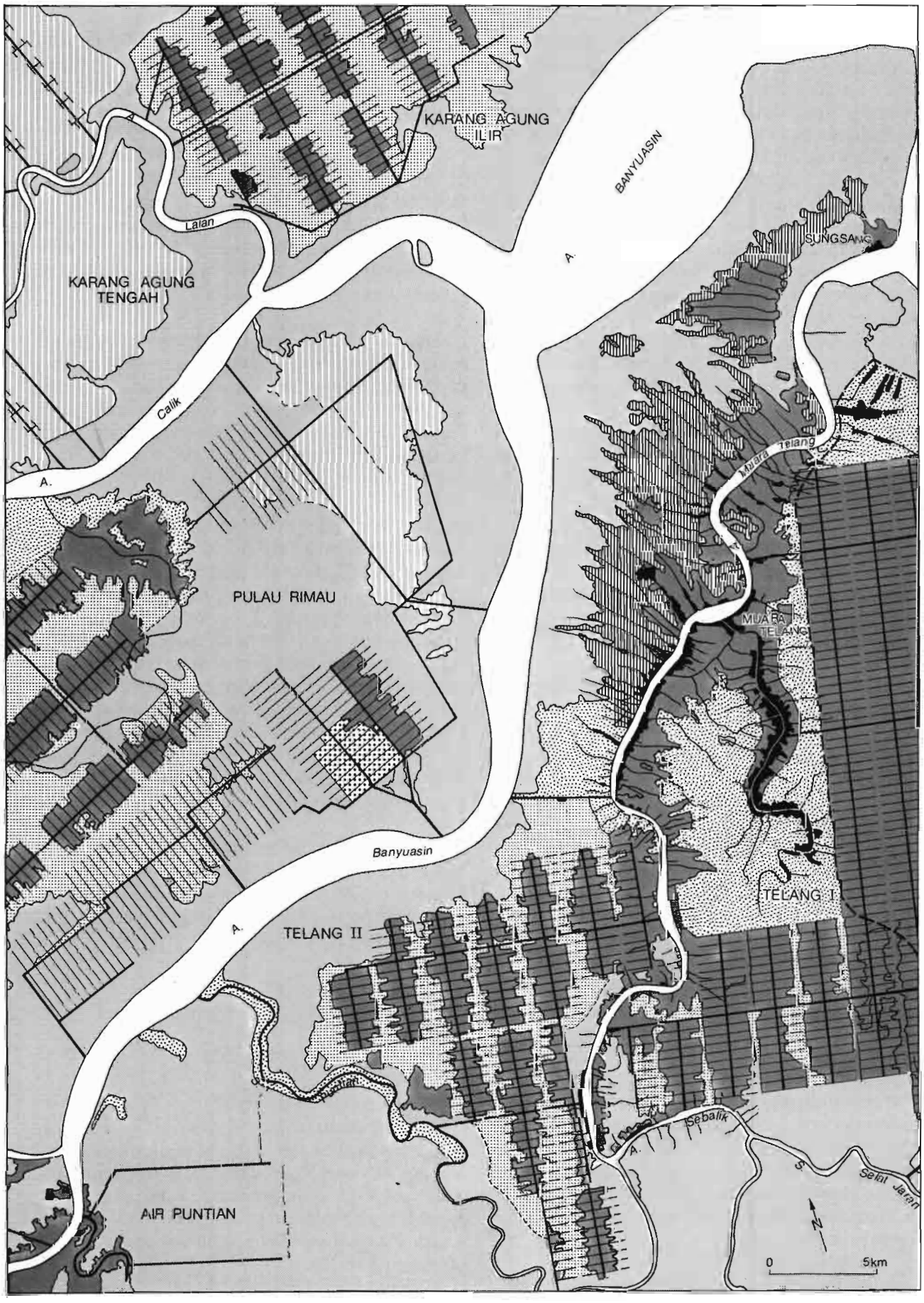
En arrière de cette lrange de rizières et de cocotiers, les Bugis se sont installés de part et d'autre de canaux étroits ("parit"), creusés à la houe, longs de un à cinq kilomètres et perpendiculaires au cours d'eau principal. Utilisant le battement de la marée ("pasang surut"), ils créent dans un premier temps d'étroites rizières qui seront transformées en cocoteraies, au fur et à mesure qu'ils drainent des sols tourbeux très acides et qu'ils créent des billons de plus en plus larges à l'abri des inondations. Les Bugis maintiennent les jeunes plants de cocotiers couchés de façon à favoriser un large enracinement dans un sol peu épais et friable, ce qui assurera à la fois une plus grande stabilité aux arbres adultes et une inclinaison des troncs permettant une récolte plus aisée. Des migrants javanais, venus spontanèment ou ayant abandonné les villages voisins de la Transmigration, sont régulièrement utilisés comme main-d'oeuvre par les Bugis, aussi bien pour les durs travaux d'aménagement des terres que pour la riziculture. Certains travaillent suivant des systèmes de partage de la récolte, d'autres rachètent les terres déjà mises en valeur par les Bugis.

Les programmes de Transmigration, lancés depuis les années 60 à la conquête des régions marécageuses, occupent entre la Sugihan et la Banyuasin des surfaces considérables gagnées sur la forêt, matérialisées par d'immenses réseaux parfaitement géométriques d'irrigation et de drainage. La base du système de production est le riz mais les transmigrants, en raison des carences du drainage, ont introduit à l'instar des Bugis la technique du billon au milieu du champ, ce qui leur permet de mettre en oeuvre des cultures secondaires en sec et des plantations de cocotiers.

L'Etat intervient également en créant de vastes plantations d'un seul tenant, divisées en petits lots autour d'un noyau central (système PIR), fondées sur le cocotier et plus récemment sur le palmier à huile.

sources - *sources*
SPOT satellite imagery - *images satellite SPOT*
278/355, july, 1986 : major part of the sketch - *recouvre l'essentiel du croquis*
279/355, nov. 1987 : east fringe of the sketch - *bordure est du croquis*
topographic map (JANTOP) - *cartes topographiques JANTOP*

photo interpretation - *photo interprétation* : WLC, MP
field survey - *vérifications de terrain* : Dadang Kartapura
drawing - *dessin* : Yanto Why., Jalizar


KARANG AGUNG ILIR
BANYUASIN
Lalan
SUNGSANG
KARANG AGUNG TENGAH
Calik
A.
Muara Telang
PULAU RIMAU
MUARA TELANG
Banyuasin
TELANG I
TELANG II
Sebalik
S. Selat Jaran
AIR PUNTIAN
N
0
5km

The second area to examine is the Telang II area which is a major transmigration site. The author visited this site when it was first opened and then years later when it was reasonable successful. On the map it shows how the transmigrants are cultivating rice (V, VI) with coconuts on the bunds within the gridwork of canals and at the ends of the grid there are still areas sometimes of secondary crops, coconuts, waste land or forest.

The third area to examine is near the coastal fishing village of Sungsang (mostly built over the river on stilts) where there is forest (I) forest along the river and then behind the forest is rice fields an coconuts by the spontaneous migrants. These forests are actually nipa forests where the soil and the frequent tidal inundation makes it impossible to cultivate crops. Thus, there still is a fringe of nipa and mangrove along this stretch of the river. Unfortunately, it was not possible to distinguish between the different types of swamp forest, mangrove and nipa on the satellite image without checking it on the ground in more detail.

The fourth area is between Muara Telang and Telang I and II and is designated as class III for forest opened outside the transmigration project but is more secondary forest, interspersed with ladang or dry land agriculture and scattered stands of primary forests.

The fifth area is that on the western side of the Banyuasin river on the lower part of the map in Pulau Rimau. This shows a network of canals with most of the area still in forest (I). This was intended to be a transmigration site but it has never been opened probably due to it not being suitable for rice cultivation. Both times that the researchers have tried to penetrate this area to examine the situation it has been low tide and they were unable to use their boat. However, the interviewed farmers confirmed that it is mostly forest with scattered smallholder coconut plantations in the area designated as VII.

The sixth area is also on the western side of the Banyuasin river where there is the gridwork for a transmigration scheme but a major section is actually a coconut estate (VIII).

When the author visited Pulau Rimau in the mid-1970's it was already clear that the rice based systems were not very productive and most of the farmers were cultivating traditional rice varieties. At this time in interviews of the Buginese residents in this area, they expressed concern that the Pulau Rimau area was not satisfactory for rice based cropping systems. In the years since this time, it has proven to be partly true.

In the upper left-hand corner is the relatively new Karang Agung Transmigration project which is partially supported by the Swamps II loan project from the IBRD. At the time of these SPOT satellite images in 1986/1987 the project had just been initiated.

What does this land use map tell us about future swamp development projects. First, planning should be improved. There are at least five locations on this map where the Government dug major canals but could not settle persons on the project, most probable because the areas would not drain properly. Yet, this activity clearly dirupted the ecosystems of these swamp forests.

Second, this map indicates that spontaneous migration at no cost to the Government can open up major areas as did the Government programs at substantial costs. Where the spontaneous migrants can not compete is more in the centers of these deltas that require longer and deeper main canals. Whether or not these areas should be opened is a different issue.

Third, the cropping systems proposed in the feasibility studies by the consultants were clearly inappropirate and usually wrong. The feasibility studies pushed two crops of rice per year, with the tidal action irrigating these fields in the dry season. A system of coconut tree based farming systems has proven to be much more effective. Even though the polder system worked in the Netherlands, the ideas of the consultants on how to open these swamps was not very good. The spontaneous migrants, through many years of experience, knew more about swamp settlement than these consultants. The lesson is that consultants should learn from the local people and then there would not be so many schemes that do not work.

Fourth, although the author presented a paper in the mid-1970's on Swamps Are For People, it is clear from this map that not all swamps are for settlement. However, many of these areas have developed into prosperous farming communities, especially in the Telang and Upang Deltas.

■ The *Pesirah* of Muara Telang

A second unique feature in this marginal land development is an operation near Muara Telang, a village located along the Air Telang River and opened by the Buginese [8]. The local *Pesirah* (or headman of the traditional governing system) has a rice-based cropping system of rice - coconut - banana, which is an excellent example of an intensive system of swamp cultivation.

The *Pesirah* has 15 rice and coconut fields totaling 55

ha. He cleared his first field of 2.7 ha in 1955. The field is still producing rice, through it also has 8 ridges, each 2.5 m by 200 m by 0.6 m high, with 157 coconut trees. To cultivate his rice crop, he sharecrops the field and gives 7 of 10 shares to the sharecropper. Even though he has been cultivating this field every year since 1955, he still had yield of 1.85 t/ha in 1980.

In 1968, the *Pesirah* opened 2 more fields of 10 and 4 ha, where he planted rice, coconut, banana, and other crops. The 10-ha field has 2,332 coconut trees, but only 600 were nature enough to produce 12,000 nuts ($1,064) in 1980. The 4-ha field has only 28 coconut trees that produced 600 nuts ($58). Rice cultivation yielded 17 t rough rice in the larger field and 7 t in the smaller field in the same year. The 2 fields also had 3,000 banana plants that produced 600 stalks of bananas.

According to local tradition, when a group of farmers open a new canal, they give the *Pesirah* an opened field to show their appreciation for his approval. When new canals were opened 1975, the *Pesirah* was given 2 ha of clear land which is intended for coconut after rice. In 1976 he was given 0.5 ha, and in 1977 he received 7.8 ha with 20 cm of peat in which he plants rice.

The *Pesirah* has developed a profitable rice-based cropping system that is suited for these swampy lands and peat soils. He is able to expand his holdings by using contract laborers or local residents who sharecrop. Because he plants rice and banana the first couple of years and then adds coconut, he is able to intensify his operation and increase his return per hectare. He is also able to choose the best cropping system for each location, depending primarily on the depth of the peat.

■ The kepala sungai of Muara Telang

The *Pesirah* gave permission to the spontaneous Buginese migrants to open up the forests along the small streams and also to dig their own canals (parit). At the head of each of these parit (2 to 3 kilometers long) will be a Buginese who acts as the head of the parit and who is responsible for whatever occurs along the parit. In order to manage these areas, the *Pesirah* appointed a *Kepala Sungai* (head of the river) to manage the Buginese in this area. The *Kepala Sungai* in the mid-1980's discussed how they opened up these areas with the author and took him to a number of the forest areas where they were actively opening the forest.

These Buginese would work out how the trees were situated and then decide on a key tree which they would cut down and as it fell it would knock down many other trees. In this way they could open an area very quickly. Next, they would begin burning the stumps and half felled trees. Between these tress they would begin planting the traditional rice variety as they drained the swamp. Each season they would set fire to these stumps which would burn for many days as did the peat in the dry season. The clouds of smoke use to be so thick that it would even close the Singapore airport. However, this burning has greatly decreased in recent years. Each year it would require less burning and clearing to plant their rice. After a few years, they would plant coconuts in this areas.

The *Kepala Sungai* even informed this author that the reason he had been selected by the *Pesirah* was his reputation as a very strong person and leader. He was quite proud that he had been in jail three times for leading a gang of robbers, including his wife. He felt this gave him even more authority. It was clear that the *Pesirah* selected him because of his ability to manage the Buginese spontaneous migrants in this area. However, this system of *Pesirah* and *Kepala Sungai* was nullified by the Government which now relies on the *Lurah* of a village and the *Camat.*

3. Case study : spontaneous migrants and "swakarsa" transmigrants in Muara Telang Sub-district.

Since the author had substantial experience in Muara Telang Desa in the mid and late 1970's, it was decided to examine this area in detail for this study in 1990.

As shown in Figure 31, the Muara Telang area is composed of transmigration projects (Telang I and Telang II) and fields opened by the local Melayu and spontaneous migrants. Near the village of Muara Telang, see the map, the canals dug by the spontaneous migrants radiate out from the air telang river and its branch at the village.

■ Area and land use

The Muara Telang Sub-District is bounded in the north by Sungsang and in the south by Upang. In the west and east it is bounded respectively by Tanjung Lago and Sungsang.

The Muara Telang Sub-District covers an area of

approximately 54,800 ha. The Sub-district office is located in Muara Telang Village. It consists of 18 village, of which 13 villages (Sumber Jaya, Marga Rahayu, Sumber Mulia, Telang Jaya, Telang Makmur, Sumber Hidup, Telang Rejo, Telang Karya, Panda Mukti, Mekar Sari Mukti, Mulia Sari and Telang Sari) are former transmigrant villages and 5 villages (Karang Anyar, Muara Telang, Terusan Tengah, Terusan Dalam and Telang Lubuk) are former marga (clan) villages.

The area has a flat topography with elevation varying from zero to three meters above sea level. Rainfall amounts to 860-2400 mm/year. May and September are the months of high rainfall. The average air temperature ranges from 24 to 250C. Moderate winds prevail in the area.

Soil types in the area are latosol and peat soils in the upper layers and alluvial soils in the lower layers. Poor drainage and a water table of less than two meters deep characterize this area. The soils are acid with pH of 5.6 - 5.7, while its texture is sandy with clayey silt in the lower layers.

The area is under the influence of brackish and saline water, causing the existence of dense stands of nipah (*Nipa fructiana*) along the rivers.

Land use is dominated by agriculture in the form of sawah (rainfed or tidally irrigated fields), coconut small holdings, house gardens, and dry fields. Other parts of the land area is used to locate public facilities and roads. Aside from this there are reserve lands and forested areas. The area of the villages varies. For instance Sumber Jaya has an area of approximately 2,450 ha comprised of rice fields, tree crop holdings, house gardens, reserve lands and public facilities, while Karang Anyar Village, a former marga village, covers an area of about 9,000 ha comprised of rice fields (40%), tree crops (12%), house gardens, areas under forest, etc.

■ Population, education and sources of income

Population data are poorly recorded in Muara Telang Sub-District. It is estimated that around 40,000 people consisting of about 9,000 household inhabit this sub-district. Previously the area was occupied by indigenous people the Telang Malays, but through transmigration, both government sponsored and spontaneous, a variety of ethnic groups such as Malayans, Javanese, Buginese, Sundanese, Balinese and Madurese occupy the area.

Each household consists of 2-10 people or 5.7 people on the average, while 2-6 people or on the average 3.4 people in each household are more than 14 years old.

The indigenous (*Telang Melayu*) household are generally big, compared to the other ethnic groups. On the average it consists of 6.3 people. In comparison Buginese households consist of 6.0 people, while Javanese households average 4.9 persons.

A low level of formal education prevails among the inhabitants of Muara Telang Sub-District. Only 65% of the respondents families acquired primary education. Of the population about 20% were educated to the level of junior high school, while 10% to senior high and university level. Probably this condition is caused by the poor infrastructure and facilities related to transport and educational institutions.

Muara Telang sub-district has a population of approximately 40,000 people in 9250 households. In general *swakarsa* transmigrants and spontaneous migrants have settled in all the villages which are under the authority of Muara Telang sub-district.

The indigenous people of this sub-district are the Telang Melayu, while the migrants settling this area consist of Buginese, Javanese, Sundanese, Balinese and relatively small numbers of other ethnic groups. Aside from the Telang Melayu, Melayu from other areas have settled in this sub-district also.

■ Formal and non-formal institutions supporting migation

In Muara Telang there has been two major systems promoting migration. These are the formal Government sponsored transmigration program and the non-formal spontaneous migration. Each one of these systems has a number of variations depending on the dialect group.

The formal Government Assisted Program is made up of the general Transmigration System managed by the Department of Transmigration and consists of two types, i.e. the general transmigration system fully managed and sponsored by the Department of Transmigration and the *swakarsa* transmigration system with partial involvement of the Department of Transmigration. Only the *swakarsa* transmigration system will be described in this study since it is a combination of the non-formal spontaneous and formal assisted Governmental programs. The *swakarsa* transmigration system falls into two types, i.e. *swakarsa* transmigration without government financial aid and *swakarsa* transmigration with government financial aid.

"SWAKARSA" TRANSMIGRATION WITHOUT GOVERNMENT FINANCIAL AID

Transmigrants under this category have to cover the cost of moving to the receiving area and the cost of building a house in that area. The Department of Transmigration reserves land for them on the transmigration site to use it as agricultural fields. There are three types of *swakarsa* transmigrants :

- *Swakarsa* transmigrants who replaced government sponsored transmigrants who abandoned their allocated land in the transmigration sites;

- *Swakarsa* transmigrants who are off-spring of government sponsored transmigrant families or former members of transmigrant households.

- *Swakarsa* transmigrants who are not programmed to come but arrive in the area possessing a P6 Letter, a certificate of noninvolvement in the 30 th of September 1965 attempted coup by the communists and a Certificate of Good Behavior from the authorities in their place of origin.

"SWAKARSA" TRANSMIGRATION WITH GOVERNMENT AID

In this type of *swakarsa* transmigration the Department of Transmigration allocates agriculture land, a house and living allowances for three months. The cost of moving to the receiving area is financed either by the government of the receiving province or the government of the province of origin of the transmigrants. The institutions promoting *swakarsa* transmigration are the Department of Transmigration and the Provincial Government of the place of origin of the transmigrants. They also have informal institutions that make it possible to inform their relatives, acquaintances and former neighbors living in the receiving area of their arrival.

The truly spontaneous settlers are spontaneous migrants who migrate independently to a transmigration area. There are two types of spontaneous migrants i.e. permanent spontaneous migrants and seasonal or temporary spontaneous migrants :

1. Permanent spontaneous migrants. These are the migrants who came as traders or farmers and stayed permanently as an inhabitant of the village of destination.
2. Seasonal (temporary) spontaneous migrants. These are the migrants who migrate on a seasonal (temporary) base and consists of traders, farmers and farm laborers.

The spontaneous migrants move into an area based on information from relatives, acquaintances and farmer neighbors living in the receiving area. The information received concerns:

- the availability of extensive lands suitable for agriculture;
- the successes of the settlers (transmigrants) in the area;
- the shortage of labor during pre-planting soil preparation and harvest.

The group with the best developed institutions for promoting migration are the Buginese from South Sulawesi who have setup major informal networks to assist relatives, friends and persons from the same general region. The Javanese system is less developed partly because they do not have a cultural tradition for migration, whereas the Buginese have a very strong tradition of migration to frontier areas.

■ Motivations to migrate

There are similarities in the motivations of *swakarsa* transmigrants and spontaneous migrants to settle in the area in this study. These are:

- The prospect of better living standards and higher income levels than in their places of origin;
- The desire to own either some farm land or a larger farm;
- The desire to seek new experiences;
- The desire to own a large smallholder coconut estate (especially in the case of Buginese spontaneous migrants), and becoming more frequent the Balinese and Javanese.

The difference between the two categories of migrants mentioned above is primarily based on the selection of the potential settling site which is related to the information received and the method of land acquisition.

Those transmigrants and spontaneous migrants who are successful in their farm operation and have sufficient surplus funds, visit relatives living in their home village or village of origin. The Javanese and Buginese migrants may stay for one to three months in their villages of origin. As an example of the intensity of these visits to native villages, the Village Head of Telang Karya estimated that annually 120-130 persons of this village visit their village of origin.

■ Settlements in Muara Telang

The local or indigenous people in this district are the Telang Melayu who have settled here for more than a century along the river banks. In general they live in the former traditional (*marga*) villages. These local people usually settle along the Telang River, Muara Telang River, their tributaries and ditches dug from a main river. Settlements of indigenous people are usually zero to 3 km from the banks of the river trunk.

The indigenous population derive their income mainly from farming. Some are fishermen, traders, or have an income from coconut farming in their home yards.

Some of the people in this area believe that the local people are rather lazy and are afraid to live in the backcountry or inland areas in Muara Telang. The spontaneous settlers are the Buginese, Javanese, Balinese, and persons from other areas of Sumatra. The majority Buginese live in the former traditional villages, namely Muara Telang, Karang Anyar and Terusan Tengah. The distribution of these Buginese settlers in the three villages is as follows (Table 18) :

Table 18. DISTRIBUTION OF BUGINESE SPONTANEOUS SETTLERS IN MUARA TELANG
REPARTITION DES MIGRANTS SPONTANES BUGIS A MUARA TELANG

Village Name	Drainage Channel	Number of families
Terusan tengah	Jalur 5	70
	Parit Gotong Royong	63
Muara Telang	Telang Pasar Sub-Village	50
	Parit 1	20
	Parit 3, Parit Gantung	28
	Parit Usaha Baru	20
	Jalur 3	10
Karang Anyar	Parit 4	27
	Parit 5	11
	Parit 6	13
	Parit 7	3
	Parit 8	6
	Parit 10	20
	Parit 11	10
	Parit 12	38
	Jalur P.U.	12

Sources : field surveys

Also there are Buginese settling in the Government assisted transmigration villages. Their number is less than in traditional villages (less than 20 families). This is due to the limited availability of land in transmigration villages. An exception is Sumber Jaya where 81 Buginese families live.

Generally the Buginese settle along a parit on or near their landholdings, within a distance of three to seven kilometers from the main river trunk.

Many of the Buginese who are successful in farming or who own extensive landholdings live in Telang Pasar which is a sub-village of Muara Telang Village. The reason for this is that Telang Pasar is the administrative center and trade center as well as the Muara Telang Subdistrict.

■ Infrastructure, transport and institutions

There are two types of transportation in the area, i.e. road transportation and water transportation. There are roads along navigation canals, and primary and secondary canals which are only suitable for bicycle and motorcycle traffic and primarily during the dry season only. During the rainy season and even after rainfall during the dry season, these roads are difficult to pass by bicycles and motorcycles, and usually people just walk if they have to go anywhere.

Rivers, navigation canals and primary canals are used as waterways. Small motorized boats (*ketek*), large motorized boats , speedboats, and non-motorized canoes are the means of water way transportation. The small and large motorized vessels are usually used to transport goods and people while speedboats are primarily to transport people.

■ Migration system

To determine the number of spontaneous migrants in the area under study, a census was conducted in various RTs (Rukun Tetangga, the smallest administrative unit of a village). Table 19 presents the result of the census.

Usually the spontaneous migrants come to this area after receiving information on the area from acquaintances or relatives who have already settled in the area. Most of the spontaneous migrants are Buginese from South Sulawesi and Javanese from Central and East Java.

Table 19. NUMBER OF SPONTANEOUS MIGRANT FAMILIES IN THE RTS OF SUMBER JAYA VILLAGE
NOMBRE DE FAMILLES DE MIGRANTS SPONTANES (PAR GROUPEMENTS) DANS LE VILLAGE DE SUMBER JAYA

RT	Number of families	Number of family Members
RT 13	13	85
RT 16	8	28
RT 19	9	45
RT 22	13	58
RT 23	7	12
RT 24	3	8
RT 25	24	91
Total	**77**	**327**

Sources : field surveys

Based on information from administrators in Sumber Jaya, seven to ten percent of the population of Sumber Jaya are spontaneous transmigrants.

The poor state of village administration made it impossible to list all the spontaneous migrants. This is especially true in the case of Buginese migrants, since they frequently do not settle in a certain administrative unit and this creats difficulties for the village administration.

Generally the settlement site selected by the spontaneous migrants depends on their ethnic background and major occupation. The Javanese usually settle in abandoned houses or build houses near business centers such as markets, since aside from food crops farming (rice and/or coconuts) they are also engaged in commerce. Usually the Buginese build houses near markets with the permission of the village head.

The village head issues permits (*Surat Ijin Lokasi Usaha* : SILTU) to build structures (so called units of enterprises) on "open" lands under the authority of the Department of Public Works. As long as these lands are not utilized by the Department of Public Works any one can request a SILTU from the village head. A SILTU is issued for one unit of enterprise covering and area of 4 m by 4 m and costs Rp. 40,000. The permit and thus the land occupied including the structures build on it will be claimed by the Department of Public Works the moment that the land is needed by the department.

Administratively, the spontaneous migrants from Java are more disciplined than others. Usually the spontaneous migrants from Java are provided with a *Surat Keterangan Pindah* which states that the holder is moving from the region of origin. This is not the case of the Buginese. Aside from this, Buginese usually do not settle permanently on one site, but primarily show the circulatory type of migration which is repetitive, temporary, short timed or cyclical in character. They do not show clear indications to settle in one place, except if they consider themselves successful in their ventures in a certain location.

The majority (90%) of the spontaneous migrants are engaged in agriculture and commerce. However, the Buginese show great diversity in their ventures. Besides being farmers they also are merchants, rice huller owners, shop owners, boat owners etc., while the Javanese are usually share croppers (*tani numpang*) or farm laborers. As stated in the preceding chapter, the Buginese migrants who are practically all spontaneous migrants are the most successful due to their success in coconut farming and commercial ventures.

Table 20 shows the time of arrival of the spontaneous migrants in Margajaya. It shows that during the last five years the inflow of spontaneous migrants tends to be considerably high. Around 53% of the existing spontaneous migrants settle in Margajaya based on economic motives. Achievement of better levels of prosperity than that experienced in their region of origin is the prevailing motive to migrate, although migration is also caused by family conflicts or to seek experience.

Table 20. SPONTANEOUS MIGRANT FAMILIES IN SUMBER JAYA ACCORDING TO TIME OF ARRIVAL
FAMILLES DE MIGRANTS SPONTANES A SUMBER JAYA EN FONCTION DE LEUR DATE D'ARRIVEE

Location	Number of Migrant families	Number of Migrant Families Arriving at various times in the past		
		> 5 Years ago	2-5 Years ago	< 2 Years ago
RT 13	13	2	4	7
RT 16	8	-	-	8
RT 19	9	1	3	5
RT 22	13	4	3	6
RT 23	7	1	-	6
RT 24	3	2	1	-
RT 25	24	10	6	8
Total	**77**	**20**	**17**	**40**

Sources : field surveys

Table 20 also shows that spontaneous migrants tend to settle in regional centers such as RT 25 which is the center of the Sumber Jaya area. Here the majority of spontaneous migrants are Buginese. Javanese spontaneous migrants are concentrated in RT 22, 23 and 24 which are near agricultural fields. This conforms with the tendency among the Javanese to engage primarily in agricultural activities.

■ The process of spontaneous migration of the buginese

Differences exist in the process of migration of the various ethnic groups. This report is focussed on the differences in the process of migration between the Buginese and Javanese.

Research conducted by the *Survei Agro-Ekonomi* (SAE) revealed that practically all the tidal wetlands of South Sumatra were opened by the indigenous people and spontaneous migrants in the past. The soils in these wetlands were of good quality. Therefore, it is understandable that what was left for the government sponsored transmigrants are soils of marginal quality.

Nowadays the population of the tidal wetlands of South Sumatra consists of three groups, namely the indigenous people, government sponsored transmigrants mentioned the Buginese are by for the numerous.

Generally the Buginese spontaneous migrants come from South Sulawesi, specifically from Kabupaten Wajo, Bone and Sidrap. During the 1950s these highly migratory people migrated to Sumatra, especially to Riau and Jambi.

During the 1970s these Buginese migrated to areas farther South, among others to South Sumatra through Sungsung District which borders Jambi Province. The motive of this migration was to seek wetlands which could be transformed to agricultural fields to cultivate rice and coconuts. Thus presently it can be observed that there are many coconut plantations in the area of Sungsang I, Sungsang II, Sungsang III and Sungsang IV Villages owned by Buginese. From these areas the Buginese spread to the south to the Muara Telang area and other areas during the 1980s.

It appears that the Buginese were able to develop a system of agriculture most suitable to tidal wetland conditions. Initially the Buginese clear wetland forests to cultivate rice. For several years until all the forest is cleared, the cultivation of rice is maintained to meet their needs for food. However, after four years of forest clearing the productivity of rice farming starts to decline due to decreasing soil fertility and weed infestations. It is during this period that the Buginese start to diversity by cultivating bananas, coconuts, pineapples, cassava and other crops on soil piled and prepared beforehand in their field. While waiting for their perennial crops (usually coconuts) to produce, they harvest bananas, pineapples and other crops which can be sold to meet their daily needs. For the Buginese the moment their coconuts start to produce gradually their way of life becomes more "permanent", although still striving to extend their landholdings for agriculture in other areas. However, in general the Buginese believe that with their coconut plantations in production, simultaneously their standards of living change. Indeed, the Buginese are firmly convinced that a positive correlation exists between "prosperity" and "coconuts". Therefore, it is understandable that the Buginese settle near the canals they dug, with the coconut plantations developed in cleared forest areas, while rice cultivation is only a side activity.

The process of land acquisition before the introduction of Law No. 1979, which annulled the existence of traditional (*marga*) villages, differs from that after its introduction. Before the introduction of Law No. 5, 1979 the Buginese obtained forest clearing permits from the *Pesirah*, the head of a traditional district (*marga*). At that time there were five marga villages in Muara Telang, namely Muara Telang, Terusan Tengah, Karang Anyar, Terusan Dalam and Takang Lubuk. The *Pesirah* or also the Kriau (head of a *marga* village) holds the authority over the lands in the *marga* area. The Buginese had to pay the *Pesirah* or Kriau to be permitted to clear a forest (*pancung alas*) in the marga area. The Buginese who is permitted to clear land under forest has the authority over it and is called *kepala parit* (canal chief). He may allocate the land under his authority to his team members if they meet certain requirements. It should be noted that there were instances that Buginese did clear forest areas under marga authority without payments to the *Pesirah* or Kriau.

After the enforcement of Law No. 5, 1979 which annulled marga villages, the Buginese acquired land by paying compensation money (*ganti rugi*) to owners of already cleared forested lands, or as observed in one case in Karanganyar, to a kepala parit (canal chief).

■ Spontaneous migration of the Javanese

Generally the Javanese spontaneous migrants come from East Java (Blitar, Lamongan, Kediri and some other areas), Central Java (Pati, Cilacap and Banyumas) and Yogyakarta.

There are several groups of Javanese that have migrated spontaneously to these areas. These are relatives of transmigrants, new families, true spontaneous migrants, and the assisted migrants.

The relatives of Javanese transmigrants are the persons who have joined their relatives at a scheme to work on their fields. Often they would also join a spontaneous settlement once they have saved sufficient money to go out on their own rather than being a laborer on a relatives tranmigration site.

The new families are the children of the Javanese Transmigrants who have grown up on the scheme, then marry, set up their own family and spontaneously migrate to a nearby area where their is land.

The true spontaneous migrants are those pioneers from Java who come to Sumatra, usually as laborers on a government project or a plantation, and then decide to settle in these swampy lands. With the greatly improved transport system between Java and South Sumatra, it is inexpensive and takes only one or two days for them to reach these areas from Java.

The assisted spontaneous Javanese migrants are part of the recent Government program that provides limited assistance for these Javanese to travel to South Sumatra and then they are allocated some land that has not been settled in a scheme. They would not get the normal food and inputs that a regular transmigrant would receive from the Government.

■ Spontaneous migration of the Balinese

The Balinese spontaneous migrants are a community in the area under study. They usually arrive by groups in Muara Telang (specifically in Sumber Jaya Village) via Belitang and previously lived in Kabupaten Klungkung. They are provided with information by former neighbors or acquaintances on the good prospects of farming and livelihood in the area.In Sumber Jaya the Balinese occupy houses and land abandoned by the majority of Javanese transmigrants by paying compensation money (*ganti rugi*).

■ Interviews with selected respondents

To give a more detailed personal picture of the spontaneous migrants, the following is a result of interviews with some of the selected respondents.

WALA

He is 39 years old, his wife and two children migrated from Ponorogo, East Java, to Marga Jaya on August 9, 1990 where he and his family live in RT 19, RK 7. Information on conditions in Marga Jaya was provided by this first cousin who is government sponsored transmigrant in the area. He sold his landholdings (about 0.3 ha) to cover the cost of moving to Marga Jaya.

The house presently occupied by this family was bought for Rp 200,000 from a Buginese. The house garden (20 x 40 m) was acquired by requesting a "*Surat Pengakuan Hak Tanah*" (Certificate of Acknowledgement of Land Right) issued by the village head and affirmed by the *Camat* (District Head), for which he had to pay Rp 35,000.

Presently he owns about five hectares of agricultural land in Sungsang I acquired from Balla a Buginese, at the cost of Rp 250,000 per hectare. Aside from cultivating rice, he also plants red pepper and bananas, and raises some chickens in his house garden.

He admits that conditions in the area where he is living now offer him better prospects for income generating activities now as well as in the future compared to the conditions that he faced in Ponorogo. Also, the existing educational facilities in Marga Jaya are sufficient, while interaction with and adaptation to the population in his neighborhood did not constrain him, since they come from the same area in Java.

BEJO

He is 32 years old and his wife Ginah are a childless couple, who moved from Wonosari, Yogyakarta, to Marga Jaya on August 8, 1988, where they now live in RT 18. Information on conditions in Marga Jaya was obtained from Sukarjo, an acquittance, who told him that the area shows good potential for agriculture development and good prospect for gaining a better life than in Wonosari.

In Wonosari besides being a *becak* (tricycle) driver also he was a common laborer. To cover the cost of migrating he sold all his goats for Rp 70,000, motivated by

the better prospects for life in Marga Jaya.

In Marga Jaya he build a house without support from anyone on a piece of land reserved by the village government for transmigrants offspring and spontaneous migrants. He had to pay Rp 45,000 in installments to obtain a *Surat Pengakuan Hak Pemilikan Tanah* (Certifcate of Acknowledgement of Land Right) for the piece land where his house now stands.

The income that this childless couple now earns is derived from share cropping on an approximately two hectare piece of land owned by a Buginese. He has to contribute 200 kg of dry unhulled rice of each harvest of rice to the landowners. Aside from rice farming, he plants red pepper and bananas and raises chickens in his housegarden.

He feels that his welfare in Marga Jaya is better than in Wonosari. Also, both he and his wife feel that life is better in Marga Jaya, since in Wonosari they often had to be separated from each other since he had to work far from home.

WAGIYAN

He comes from Kulonprogo, Yogyakarta. In 1978 he joined his brother's family who were transmigrated by the government to Tirta Kencana, a transmigration village in South Sumatra. He married here but stayed with his brother's family. For five years he was a sharecropper in Tirta Kencana, but he was not satisfied with the level of prosperity achieved.

In June 1987 he and his wife moved to Sumber Jaya and from their savings bought land for Rp. 300,000 in Rt 16, RW VI Sub-Village 3. He built a house with material that he bought. He spent about Rp 900,000 to build it.

He holds two land certificates, respectively for his house garden and rice field that he owns. His reasons to move to Marga Jaya was that aside from having relatives here at that time the price of land here was still low. Presently he has three children, aged seven, five and three.

He grows rice on his field and has planted some coconut palms around it, which are not yet producing fruits. He also raises 15 chickens in his home garden.

While in Kulonprogo he worked as a coconut tapper. In one day he could tap 25 coconut trees, from which he could tap 6-10 of palm juice from the flower stem. He could meet his daily needs as a bachelor, but was not able to save money. Presently aside from the returns of his rice fields, as a skilled carpenter he is able to raise his daily income.

WERO

He is a Buginese, age 38, and he moved with his family from the Teluk Payau area (in Sungsang I Village, Sungsang District, Kabupaten Musi Banyuasin, South Sumatra) to Sumber Jaya in July 1989. He sold his house in Teluk Payau to fellow Buginese, and bought a house in Sumber Jaya from a Buginese in which he now lives with his wife and six children. This house has no building permit, since it is located on a canal levee which should be free from buildings. His house is located on Jalur (Canal) 3 RT 19, near crossing Platform III. He bought it for Rp 500,000.

He has a grocery stand managed by his wife, while he daily operates a motorized boat (*tongkang*) that he owns. He still has a five hectares coconut plantation in Sungsang I village.

His major motive to move from Sungsang I village was to trade. He buys coconuts in Sumber Jaya and transports it with his tongkang to Palembang. The return from selling coconuts in Palembang and the grocery stand seem to considerably improve his prosperity. Moving from one place to another seem to be relatively easy, since this family owns a boat which is big enough to transport the whole family plus the furniture they need and even material to build a house.

Since Wero and his family have been settled in Sumber Jaya for quite a time, they feel no constraints in their interaction with the society in Sumber Jaya. He admits to have no definite plans for the future, but it seems that if there is an area which presents better prospects economically, he will migrate to that area. He seems not to worry about the education of his children, since they are still in primary school.

UMAR

Umar and his family moved in May, 1990 from Sungsang I village where he was a transmigrant from the Mount Kawi area in East Java. He, 55 years of age, his wife and Six Children lived in Palembang attending an Islamic Senior High School (*Madrasah Aliyah*). He sold his house, land and citrus to cover the cost of moving to Sumber Jaya.

Presently this family occupies a house formerly inhabited by an employee of the Department of Public Works attached to the Tidal Irrigation Project. He holds a Certificate of Occupancy issued by the head of Sumber Jaya village, for which he had to pay Rp. 25,000. The house is located on a piece of land of about 500 m2.

The prime motive to move to Sumber Jaya was to be

able to finance the education of his child studying in Palembang and the education of the other children in the future.

Umar derives his income from working as a part-time mechanic of boat engines in the Sumber Jaya area aside from share cropping on a rice field owned by a Buginese.

4. Spontaneous migration in Kalimantan

Although the coastal areas in Sumatra have been the most extensively opened by the spontaneous migrants, this is also occurring on a major scale in Kalimantan (Borneo) also. The author carried out a number of studies in South and Central Kalimantan and some of the results are presented below. This information supplements the information on tidal swamp land development in Sumatra.

The reason for including the swampy lands in Kalimantan in this study is to demonstrate that this spontaneous migration is occuring throught out the swampy lands of Indonesia. The situation on the Mentaya River is included because there are few transmigration schemes in this area and these settlers are true pioneers coming from other regions to settle in the vast expanses of these rain forests.

The settlements in Purwosari have been included in this paper on South Sumatra because it shows how the first settlements in the swampy areas were opened by the Dutch and how it encouraged spontaneous migration.

■ Spontaneous migration on the Mentaya river

Occurring practically unnoticed, a large and increasing number of Javanese and Madurese are migrating spontaneously to the swampy land along the Mentaya river and in the Pangkalan Pun, area in Central Kalimantan [9]. From Surabaya to the Mentaya and from Semarang to Pangkalan Pun, they join the Buginese sailing ships transporting copra to Java and returning to Kalimantan. The migrants work in the coconut plantations, learn the Banjarese cropping system, obtain permission to open the forest, and become farmers. Javanese and Madurese spontaneous migrants are flocking to this area for employment in the coconut gardens of the Banjarese and in the timber industry and eventually obtaining permission to open land for agriculture. On both sides of the Mentaya river in Central Kalimantan from Sampit to the sea, these spontaneous migrants have opened a massive area of the swamp forest for rice and coconuts.

It all began perhaps 50 years ago when the Banjarese began slowly opening the area, planting rice for a few years then switching to coconuts. After thirty years, they had major coconut plantations along the river, and harvest their coconuts. As the Buginese ships transported the copra to Surabaya, they assisted the development of the Mentaya area by returning from Surabaya with Javanese and Madurese spontaneous migrants who would work in the coconut gardens and observed the Banjarese cropping system. After they became acquainted with the Banjarese in this area, they asked permission to open the swamp forest for their own farms using the same system. The Banjarese have capital and hire Javanese to work in their gardens and rice fields. The Javanese and Madurese only have their labor power, and therefore work part time at opening the forest and part time for the Banjarese to earn a living. Once they have sufficient land they will work only in their fields and open more forest for agriculture.

Another system that is attracting many migrants from Madura to the Mentaya area is an agreement between the Madurese and the local inhabitants. The Madurese agree to open swamp forest for which the local people have the use rights and to do it in a three year period. It will take two years to clear the land, and they can plant a rice crop in the third year. After the third year, the Madurese have the right to buy some of this swamp forest which perhaps has not yet been opened. The Madurese provide the labor power and the Banjarese the swamp forest land. They want the Madurese to open the forest because they are strong, experienced farmers, brave to live in the forest, and once they have opened the forest they will become farmers. The Banjarese inhabitants apparently do not want to perform this work.

These spontaneous migrants can also get permission to open swampy land or land that has not been used for a long period without having to pay for it. If the land is by somebody else, then they would have to compensate the person who holds the use rights (*hak pakai*) to the land. Often, they will request permission for as much land as possible which sometimes is 10 to 20 hectares. In this case they have enough land to expand their operations since after the coconuts are four years old they will open more land for rice.

An example of how the Banjarese systems operates and how the Javanese/Madurese adopt the system is in the following discussion based on the author's visit to Samuda Kecil village on the Mentaya river, south of Samuda town, in Central Kalimantan. In this village which is representative of areas where spontaneous migrants and local resi-

dents have opened the tidal swamps for agriculture, the author stayed for several days interviewing the people about their resource use. The people are Banjarese who are local migrants and Javanese who are spontaneous migrants.

■ Samuda kecil : spontaneous migration of javanese and Banjarese to the tidal swamps of central Kalimantan [10]

In the village of Samuda Kecil, the land use in this village is primarily small holder coconut plantations and rice fields. Intercropped with the coconuts are coffee and other tree crops. it is in a tidal influenced, peat swamp with the peat being 1/2 meter in depth. The village has 800 hectares of coconut plantations and 329 hectares of rice fields. According to the village leader there are 306 families and 50 Javanese families. Based on information at the village office there are 724 people who have coconut plantations, 675 have rice fields (many have both rice and coconuts), 10 people are fishermen, 20 are laborers from Madura, 11 people are small-traders, and 3 people are wood sawers.

Their system of opening the forest, planting rice for several years, and then growing coconuts shows how these farmers have adopted to the local ecological situation and have devised a system that is productive and self sustaining over a long period of time. Because of the Government's efforts to open the tidal swamps for transmigration, it is essential to learn how these local people are able to prosper in these swampy lands over a long period of time and how Javanese can spontaneously migrate to the area from Java without any government assistance, find land, and become farmers. In general the system the Banjarese use to open up the tidal influenced swamps for rice and coconut production is the following.

Since land appears to be plentiful according to these people, they only need to get permission from the village leader to open an area. They claimed that the first Banjarese settlers, there are no local people in these swamps, came to this village in 1936 though this conflicts with their estimate that the coconut trees near the Mentaya river are from 50 to 75 years old. They select a small stream flowing into the river, widen and deepen it. When they reach the end of the stream, they can dig a canal which follows the natural drainage system. During the 50 years they have extended their canal from the river to a distance of 10 kilometers, and they are continuing the effort.

They will usually open a swamp area of 2.17 hectares at a time. Each farmer must first widen and deepen, or extend the small stream a distance of 30 depa (425 meters). The trees are felled in July because it must be in the dry season. In the wet season the swampy forest may be covered by one meter of water. The Banjarese will usually hire laborers who are either Javanese or Madurese to clear this forest which costs Rp 50,000 per hectare. Depending on the farmer, sometimes they will open the entire area at one time, and sometimes they will only open perhaps one-third each year. Besides felling these trees, the laborers must also cut up the logs. The do not sell the logs because it is impossible to move the logs from the field to the Mentaya river.

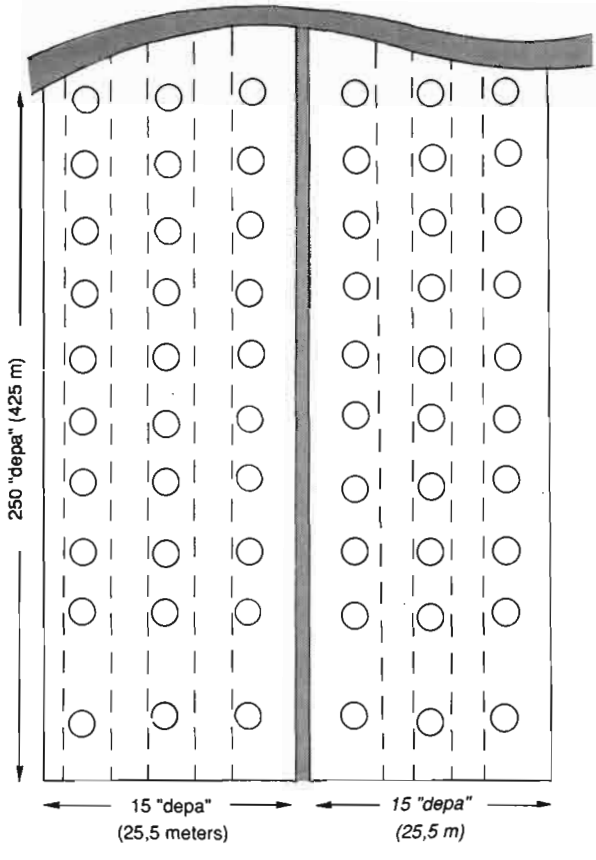
They can grow rice only one time per year, and they use local varieties since they feel the high yielding varieties are unsuited for these swampy, poorly drained fields. Each year the weeds are more sever and this is the main reason for eventually shifting to coconuts. They do nuts to plow their fields, rather they cut the weeds (sometimes the cutting is done underwater), poke a hole in the soil with a stick, and plant the seedlings. Also during this transplanting period they will burn the tree stumps that still remain in the fields.

After two years which is two rice crops, they will dig the ditch (*parit*) or small canal in the center of their fields (Figure 32) which is 250 depa (425 meters) long. The reason they must wait is that there are many tree stumps in their fields and the field is covered with water. Usually, it takes four years to burn out all of the stumps. The canal is one meter wide and one half meter deep. They hire Madurese or Javanese laborers to do this work.

In the third or fourth year, the farmers will plant coconuts their rice field. To prepare the field for the coconut seedlings, they first must construct small mounds (*tukungan*) of dirt. Each mound is approximately one meter by one meter and there will be 135 trees per hectare. Next, they must dig shallow canals between each row of coconuts. Again, they will use Javanese or Madurese laborers. After three to five years, the mounds will connect and form a continuous ridge for the trees. Besides coconut they will plant coffee trees, bananas, and vegetables on these ridges. In the shallow canals between the ridges they will plant rice for three more seasons.

After the coconuts are three to four years old, they must build up the mounds and deepen the shallow canals. These canals are to drain water out of the fields in order to protect the coconut "trees" roots from inundation. They must deepen these shallow canals and build up the mount every two years which after five years the mounds join to form a continuous ridge.

Fig. 32
MIXED CROPPING OF COCONUTS AND RICE
CULTURE COMBINÉE DE RIZ ET DE COCOTIERS



WLC / Jz. 1991

coconuts mounds, "rukungan" (after five years, mounds join to make continuous ridge, "baluran") - *butte devant recevoir un pied de cocotier (après cinq années, les buttes sont réunies pour former une levée continue)*

shallow depression between coconuts
dépression peu profonde entre les alignements de cocotiers

ditch , "parit" - *rigole de drainage, "parit"*

50 coconuts trees per row - *50 cocotiers par rangée*
300 coconut trees per field (2,17 ha) - *300 cocotiers par champ (2,17 ha)*
135 coconut trees per ha according to the farmers - *135 cocotiers par ha selon les cultivateurs*

In this sketch, it shows the first phase of the mixed cropping system where the coconuts are planted on the mounds and rice cultivated everywhere around the trees. The second phase is when the mounds are joined together on the levee and rice cultivated in the shallow depression. The third phase is only the cultivation of coconuts and canals used for drainage.
Ce croquis montre la première étape d'un système de cultures associées où les cocotiers sont plantés sur des buttes tandis que le riz est partout cultivé autour des jeunes arbres. La deuxième étape est atteinte lorsque les buttes sont réunies en une levée continue et le riz cultivé dans les légères dépressions situées entre les alignements de cocotiers. La dernière étape aboutit à une plantation pure de cocotiers et un maillage de canaux de drainage

The farmers can plant rice each season in between the coconuts for three to four years. Then, the trees are to high and they can no longer grow rice. However, on the ridge they will plant other tree crops among the coconuts. When they can no longer grow rice with the coconuts, they will ask permission to open another two hectares of forest. It my be continuous with their first fields, or be in a new location. Consequently, every seven or eight years they will initiate the cycle once more. Because of a shortage of laborers and not enough family members, they felt the ideal size of a farm is 4 hectares of coconuts and two hectares of rice, or a total size of six hectares. This would take a period of 20 or more years, which is probably the productive lifetime of the farmer and his wife.

An unsolved question in these tidally influenced swampy lands and peat soils is the long term trend of rice yields. Based on the interviews, it seemed that the farmers switched to coconuts because of increasing costs (weeding) of rice production and perhaps lower yields. They felt that returns from coconuts are higher than for rice.

According to the informants there were three methods of opening the forest to produce rice, and to establish a coconut plantation. For the Banjarese it depended on their size of operation. The smaller operations could be handled primarily by family labor and the larger size of operation would rely on hired labor. The Javanese would use all family labor for opening the forest and developing the coconut plantation.

Using this system of land clearance, rice growing, and after three years, developing a coconut plantation, the Banjarese farmers have holdings of 4 hectares and more. They are unable to expand much beyond 5 or 6 hectares because they do not have enough laborers in this area. Fifty years ago they began near the mouth of the river, opened the forest, and developed their coconut plantations. Slowly the main canal was extended until today it is 10 kilometers long, with the oldest coconut trees near the mouth and rice fields at the tail of the stream.

Madurese laborers come to this village, work in the rice fields and coconut plantations for 3 months then some return to Madura and others stay to open their own land. Some villages near Samuda Kecil are composed almost entirely of Madurese people.

Everyone in the village has land, the size of their operation depends on how long they have been in the village, how hard working, and the size of their families. When a new family is formed, they will open the jungle and begin their cropping sequence.

In Samuda Kecil there are spontaneous Javanese migrants which disproves the idea that most descriptions of the Javanese state that they do not want to leave their home villages on Java. This idea is used to explain why they do not migrate on their own to other areas and why they are reluctant to joint the government's transmigration program. Both of these ideas appear to be wrong based on our study in Samuda Kecil. Often spontaneous Javanese migrants are found in Kalimantan and Sumatra. They require three things before they move into an area:

1. Opportunities to work as hired laborers.
2. Access to land at no cost or a reasonable charge.
3. Satisfactory transport between Java and these islands so they can return to Java when necessary.

If these conditions are met, then they will migrate spontaneously as have the Javanese in Samuda Kecil village.

5. Regional integration

In the 1960's travel between islands, between regions and within regions in Indonesia was difficult, expensive and a major constraint to development. Although the green revolution in agriculture received most of the attention, yet it was the transport revolution that made the major contribution to the development of the country. In the 1960's a villager in an upland area of Java would not make a long trip to an unknown region, now this same villager could easily take a bus from the eastern tip of Java to the western tip of Sumatra in a few days and at a low cost.

This transport revolution has also had a major impact on the migration of peoples from one region to another. As part of their culture, the Minangkabau in West Sumatra and the Buginese in South Sulawesi have always migrated (*merantau*) to other regions to seek their fortune. But now the Javanese, Madurese and Balinese can spontaneously migrate to Sumatra looking for land and jobs.

A more recent recent revolution is the TV communications revolution which has made it possible for almost any person in Indonesia to have access to a TV set and to learn about other regions in the country. Although the villages of Java with their electrification is more advanced, yet in rural Sumatra also there are many TV sets powered by automobile batteries or small generators.

A third revolution begun with independence was the education revolution. Almost every Indonesian child goes to primary school, and on Java there is a major recognition even by landless agricultural laborers that their children must get at least a junior secondary education.

These advances in transport, communications, and education have also had a major impact in the coastal areas of South Sumatra. It has made it possible for spontaneous migration of the Javanese to these areas to work on plantations, and in the plywood factories, and to become farmers. This spontaneous migration has been the main topic of this paper and has caused a major transformation in these coastal wetlands.

During the last thirty years there have been major transformations in both land use and ethnic groups in the coastal wetlands of Indonesia. Many experts compare what has taken place in these wetlands to the opening of the Amazon Basin. Yet, Indonesia has clearly been much more successful in achieving a reasonable level of agricultural productivity, maintaining stability in these farming systems, achieving a reasonable level of sustainability, and achieving an equitable distribution to poor families.

As is obvious from the two maps in this paper on South Sumatra, these areas have been almost completely opened for agriculture and only have scattered areas of forests. What the actual cost of this clearance of the swamp forest is will not be know for decades but it has happened and now must be managed for the benefit of these people.

A major natural resource, the swamp forests, has been lost and a major settlement of people has been created in this wetlands. One can only feel sad about the destruction of this wetlands and hope that the people in these settlements can achieve a reasonable level of welfare so that this major sacrifice will at least end up by supporting these migrants.

With these communities throughout the coastal wetlands, the integration of these regions into the national economy has been accelerating with improved river and road transport and communications.

As in other areas of Indonesia, regional integration occurs (1) once there is a good transportation system for people and goods to move from these swampy lands to the markets in the major cities, (2) once there are good educational opportunities for the children of these settlers so that they can find employment in the booming regional economy, and (3) when the flow of information through the TV and radio brings information of the region to these people in the swampy lands.

Since these swampy lands have major rivers connect-

ing the settlements, an improved river transport system would integrate these areas into the regional economy. The plan to push roads through to these people in the swampy lands will probable have negative environmental impacts and thus it would be better to use the rivers rather than roads.

The educational system should be upgraded so that the children of these settlers could all reach at least the junior secondary level education and preferable the senion secondary level. Java has experienced substantial development, partly because of the level of education and this should also occur in Sumatra. It will also greatly enhance integration of the various ethnic groups in these swampy lands.

What has become evident in Indonesia is a very fast paced economic development, not only of Java, but also these regions in Sumatra, that is transforming the country. The regional integration of the swampy lands must be part of this advance for the country into the much talked about next step into the 'take off' stage of economic development.

Notes to the second part

(1) *The author has been following these developments in the coastal wetlands since the early 1970's when he collaborated with a major study of the Upang Delta sponsored by the Bogor Agricultural University. Since then he has assisted a number of research activities in these coastal wetlands in Sumatra and Kalimantan. He first arrived in Indonesia in 1968 though his research initially concerned farming systems in irrigated areas in Java and Sumatra.*

(2) *William L. Collier,* Fifty Years of Spontaneous and Government Sponsored Migration in the Swampy Lands of Kalimantan: Past Results and Future Prospects, Prisma: *The Indonesian Indicator, LP3ES, No. 18, 1980.*

(3) *William L. Collier, B. Rachman, Supardi, B. Ali, Rahmadi, and A.M. Jurindar,* Cropping Systems and Marginal Land Development in the Coastal Wetlands of Indonesia, *Workshop on Research Priorities in Tidal Swamp Rice, International Rice Research Institute, Manila, 1984, pp 183-197. These estimates of areas in swampy lands were first reported in the Indonesian Agricultural Sector Survey, Annex 1, International Bank for Reconstruction and Development, Washington, D.C., 1974, p 20.*

(4) *One of the earliest studies in Indonesia on the value of these coastal wetlands was by Bedjo Soewardi, Peter Burbridge and M.S. Sukandar Djokosudardjo,* Improving the Choice of Resource Systems for Transmigration, *Prisma, May 1980.*

(5) *M. Soepraptohardjo and P.M. Driessen,* "The Lowland Peats of Indonesia, A Challenge for the Future, *in Peat and Podzolic Soils and Their Potential for Agriculture in Indonesia, Proceedings ATA Mid Term Seminar, Soil Research Institute, Bogor, 1976, p. 15.*

(6) *William L. Collier,* Swamps are for People, *Keynote Address presented at the Tidal Swamps Seminar sponsored by the Ministry of Transmigration, 1978 (mimeographed).*

(7) *The author of this paper stayed several times in Sungai Cawang village in the 1978 to 1980 period. Some mention of his study is found in William L. Collier, et.al, Cropping Systems and Marginal Land Development in the Coastal Wetlands of Indonesia, Workshop on Research Priorities in Tidal Swamps, IRRI, Los Banos, 1984, p 190. Unfortunately, other papers and notes in which he presented the situation in this village have been lost due to termites and mold in his library.*

(8) *The author stayed in this village of Muara Telang a number of times in the 1978 to 1980 period. Surveys were conducted by the author and researchers from the Faculty of Agriculture at Sriwijaya University in Palembang in this period. This description of the Pesirah (traditional leader of the local clan) of Muara Telang is from William L. Collier, et.al.,* Cropping Systems and Marginal Land Development in the Coastal Wetlands of Indonesia, *Workshop on Research Priorities in Tidal Swamp Rice, IRRI, 1984, pp. 190 and 191*

(9) *This description of the Mentaya River Basin in Central Kalimantan is based on several surveys carried out by the author in this area in 1979 and 1980. This is taken from: William L. Collier,* Fifty Years of Spontaneous and Government Sponsored Migration in the Swampy Lands of Kalimantan: Past Results and Future Prospects, *Prisma The Indonesian Indicator, pp 45 and 46, September 1980.*

(10) *This description of the Samuda Kecil is based on several surveys carried out by the author in this area in 1979 and 1980. This is taken from: William L. Collier,* Fifty Years of Spontaneous and Government Sponsored Migration in the Swampy Lands of Kalimantan: Past Results and Future Prospects, *Prisma The Indonesian Indicator, pp 45 and 46, September 1980. A more detailed account of this village is in the dissertation of Greta Watson, Rutgers University.*

THIRD BOOK

WHAT IS AT STAKE ?

FIRST PART

Socio-economic integration

Muriel Charras

Fatimah Nyayu

Yulfita Raharjo

Achmad Romsan

Chapter 1

Land rights and spontaneous settlements

Achmad Romsan

The spontaneous movement towards agricultural colonization is clearly an important factor for agricultural development in Outer Indonesia, particularly South Sumatra which, after Lampung, is the second most important receiving province. Spontaneous settlers are defined as people who leave their homeland to go to rural areas in another region to live, without any support from the State. This movement began many decades ago in the wake of development projects (road and rail construction, for example) and colonial settlement programs. The movement grew with the increasingly large Transmigration schemes in South Sumatra and neighboring, and overcrowded, Lampung.

It is of course interesting to study spontaneous migrants in terms of the process of settlement in the new areas, and the question of how they obtain the right to work land is a key issue if sustainable rural development has to be promoted and fostered.

It has been mentioned in the Broad Lines of State Policy (GBHN) that land has a social function and is a part of agrarian development. It is to be used for increasing the people's welfare. For the three quarters of the Indonesian population that still lives in rural areas, land play a vital role in their daily lives. Landownership is closely related to social organization in Indonesia.

As Koentjaraningrat noted in *Villages in Indonesia* (1967), "Within the Indonesian nation live people representing a wide variety of ethnic groups (and) wide variety is also exhibited among her villages." To attain a degree of administrative uniformity and control, the central government has promulgated various laws. The most important one concerning village reorganization was the 1979 Law No. 5 Concerning Village Government

In South Sumatra, this law was effectively applied in 1983 with the Governor's decision to abolish the traditional *Marga* local organization. Many spontaneous migrants had arrived before, when the procedure for obtaining land was different. It is thus necessary to take into account the two periods: before the introduction of the 1979 law, and the present situation.

Primary and secondary data were employed in this study. The primary data was collected during the month of June 1990. Secondary data was gathered through library research, covering journals, legal texts, maps, research reports and other literature.

In collecting the primary data in the study areas, personal interviews were carried out with the head of the sub-district *(Kecamatan)*, former *Marga* heads *(Pasirah)*, village heads *(Kepala Desa* or *Kades)*, community leaders *(pemuka masyarakat)*, spontaneous migrants, and the local or indigenous people.

Interviews were based on open-ended questionnaire and lasted anywhere from 30 to two hours each. The open method of questioning was found to be more fruitful as it left the subjects free to discuss the specific problems they were most familiar with.

Some interviews with the spontaneous migrant settlers and the locals were arranged by the *Kades*. Other respondents were solicited door to door or in a random manner. The difficulty of reaching many scattered spontaneous settlements prevented any attempt at constructing a representative sample group, resulting in a analysis that is more descriptive and qualitative than quantitative. The subject of land ownership and land access being a rather sensitive question, the aim of this study will be to describe the spontaneous settler's situation and note the difficulties they have in obtaining land for agriculture. This study does not include however the spontaneous or indigenous within

Chapter translated from French by F. Vaissières & K. Luckcuck

the boundaries of forest reserves. The recent redrawing of these boundaries add a note of urgency to the question of secure ownership rights for both indigenous and spontaneous settlers.

This study was carried out in four district: Lahat, Ogan Komering Ulu (OKU), Ogan Komering Ilir (OKI) and Musi Rawas (MURA), where many spontaneous migrants were found attempting to gain access to land for coffee plantations and food crop agriculture. Villages were selected as samples for this study based on information obtained at the district and sub-district levels [1].

1. Land rights under the Marga Government

■ The Marga Government

In South Sumatra, the *Marga*, before it was abolished by the 1979 Law No. 5 Concerning Village Government *(Undang-undang No. 5 Tahun 1979 Mengenai Pemerintahan Desa)*, was the highest institution under the customary law (or *hukum adat)* which governed the traditional society, and it controlled the utilization of the community's natural resources.

The *Marga* was an area or a territory governed by a *Pasirah* or a *Depati* considered the head of the *Marga*. The *Marga* jurisdiction was based on natural demarcation such as rivers, valleys, the sound of the cock's crow or recognized but intangible boundaries. In performing his governmental functions, the *Pasirah* was assisted by the *Marga* Secretary or *Pembarab* who sometimes also acted as the Vice-*Pasirah* in case the *Pasirah* was unable to carry out his duties. In religious affairs, the *Pasirah* was assisted by the Religious Leader or *Penghulu* and the Priest or *Khotib* [2]. The entire province was divided into *marga*, leaving no areas uncontrolled.

The *marga* territory englobed a number of main settlements or villages, called *dusun*, which were in turn divided into *kampung*. The daily activities of the government were administered by the village and *dusun* head, the *Krio*, and by the head of the sub-village or *kampung*, the *Penggawa*, all of them under the authority of the *Pasirah*. In one sense, the *Krio* had jurisdiction more over people than over territory. If a group of people wanted to settle a remote area, usually referred to as a *talang*, they had to ask permission for this to their *Krio*, who would transfer the request to the *Pasirah* who controlled the land. The people of the new settlement were then administered by their former *dusun*.

As the head of the *Marga*, the *Pasirah* had absolute power. He held the legislative, executive and judicial authority. In producing any law, he was assisted by the *Marga* Representative Board or *Dewan Marga*. In the enforcement of *adat* law, the *Pasirah*, *Kerio* or *Krio* and the *Penggawa* could prosecute any member of the society who was suspected of violating *adat* law. The offender would then be judged at the *Marga* Court or the *Rapat Adat*. The Marga Court consisted of the *Pasirah* as the head of the court, with all the *Krio*, *Penggawa*, and *Khotib* as sitting members. In 1951, the judicial power of the *Pasirah* was abolished by the 1951 Martial Law, after which the role of the *Pasirah* in judicial affairs was to mediate private disputes (Selo Sumardjan, 1987).

Historically, the *Marga* Government had existed in South Sumatra for 200 years (R.H. Arifai Tjek Jan, 1987:3). The Dutch colonial government recognized the role of the *Marga* through the Ordinance on the Unity of the Indigenous People of the Outer Islands, State Gazette, 1938, No. 490 [3]. Many *marga* were combined to form larger units. Then, and until 1983, the *marga* were grouped under the *kecamatan* (sub-district), introducing a sort of double management.

The elections for the head of *Marga* were conducted in democratic fashion. The contestants campaigned from village to village and the people voted on the same election day. The elected *Pasirah* held his position for five years and could be re-elected for another five years through a referendum [4].

The *Pasirah*, assisted by the *Marga* Representative Boards, proposed an annual budget based on the *Marga* income [5]. This was derived from:

1) *Marga* tax: previously, all males in the community over the age of 18 had a duty to work for the *Marga*, according to *adat* law. This duty was then replaced by the *Marga* tax,

2) The annual auction of resources of, for instance, river fisheries, riverbanks and ponds,

3) Land leasing: the people from outside of the *Marga* could use the *Marga* land by paying a leasing fee,

4) Wedding ceremony services,

5) Market leasing fees,

6) Animal authorization, necessary for selling animals in the market,

7) Forest production: the *Marga* could plant, maintain and utilize forest resources, and

8) *Marga* income received from fines levied by the court.

The general framework for *Marga* organization was written down in the *Sumber Cahaya*, one of the first text of its kind, written in 1630 and revised over the centuries.

Individual *Marga* usually worked out their own style of land management within this framework. They designated the reserved forest (for conservation or sacred purposes), protected river banks and other areas off limits for agriculture.

■ Land rights under the Marga Government

The relationship between the members of *adat* society and the land is very close, because people live on the land, live from the land and are buried in it (B. Ter Haar, 1958:56). The strong bond between *adat* society and the land creates their title to the land.

The right to use land in a *marga* territory is called *hak ulayat* and it falls under the management of the *Pasirah*. The *ulayat* rights require that:

1) The *adat* community has the absolute right to exploit the unutilized land within the territory of the *adat* lands,

2) A foreigner or one who is not an *adat* member may use the land provided he has the permission issued by the head of *adat* society. Without such permission, use by outsiders will be considered to be in violation of the *adat* law,

3) A member of the *adat* society may draw benefits from the *ulayat* rights for as long as it is for the use of his family. If the land is used for the benefit of a foreigner, permission must be obtained before one starts to use the land,

4) Foreigners are allowed to take advantage of the *ulayat* rights with the permission of the head of *adat* society. They must present gifts to the *adat* society through this head. These gifts are seen as the payment for land utilization,

5) The *ulayat* rights cannot be relinquished, transferred or abandoned for any period of time, otherwise the unused land will revert to the community,

6) The *ulayat* rights cover land utilization and individual land rights (Imam Sudiyat, 1981:2).

There are two kinds of *ulayat* land rights, the individual and the communal. In general, land title or what is also called *ulayat* right under customary law, can be obtained through: opening forest or brush, inheritance, purchasing, transferring or giving, and prescription.

Any Indonesian indigenous person has a right to open the forest or the underbrush within the territory of his *ulayat* right. Every person must notify the *adat* head that they have selected a piece of land within the *ulayat* territory. Following a ritual ceremony, such as the slaughter of animals, the individuals put up signs on their land or erect poles to serve as borders marking the limits of their ownership [6]. By this action, they have established the legal relationship between themselves and the land. As a result, they have the right to utilize all the natural resources within their boundaries, and other people are not allowed to infringe on this right.

Under customary law, if they do not use the land or if they abandon it for a period of time, the *adat* head will give them notice that their title is in jeopardy. They have to take action to begin cultivating the land again, or else return it to the status of *ulayat* right so that it will be available for use by other members of the *adat* society. Normally, under the local agricultural systems in the province, people have to leave clearings to fallow several years following two seasons of food crops. Often the land is abandoned after the planting of rubber, coffee or fruit trees which secure their right to use the land. When their stock of rice declines, they will begin a new clearing either within the customary family land without permission or in new land with permission through the *Krio* from the *Pasirah*.

The use of a piece of land and the perennial trees by one individual creates land title recognized by the community. If the landowner dies, the land will be inherited by his children, normally the eldest son. The customary inheritance law in South Sumatra would seem much the same throughout the province, but in some regions where the matrilineal system is still applied, as in the Semendo region, inheritance will fall to the eldest daughter of the family. This system is called *tunggu tubang*, in contrast to the patrilineal inheritance law system. Sometimes the former is referred to "female" *tunggu tubang*, while the latter is termed "male" *tunggu tubang*. Under the female *tunggu tubang*, the eldest daughter receives all the properties, but this implies the right of management *(hak menikmati hasil)* over the land and unmovable properties. She cannot sell any of the properties she holds without the consent of her brothers. She also has duties, for example to take care of and finance her younger brothers and sisters if they are still in school and to attend to her brothers if they come home to visit. Those not classified as the *tunggu tubang* have to set off on their own from the family. Normally, they will search for new land to open for agricultural purposes. In these offshoot families, the eldest daughter (if any) will be the new *tunggu tubang*, and will inherit all the property, sustaining the system of *tunggu tubang*. In addition to the inheritance law system above, Islamic inheritance law, called *faraidh* law, is also applied. Under this law, the inheritance will be divided two to one between sons and daughters.

If, as in some regions, the customary law is not very strictly applied, the owner of the land can freely sell, give

or transfer his land to other indigenous people from outside his *adat* territory. The land transaction must be conducted in front of the *adat* head in order to establish the legal status of the land. When the customary law in a region is very strictly applied, such transactions are restricted to people from the same territory. The transfer must be legalized by the Village Meeting or *Rapat Adat*.

Customary law also recognizes that title may be obtained by prescription. This institution is used as a legal remedy for obtaining legal right over the land. Under customary law, there is no exact time limit after which the right over the land is considered to be in the status of prescription as it is in written law (Imam Sudiyat, 1981; Ter Haar, 1958; Selo Sumardjan, 1987; Amrah Muslimin, 1987; Surojo Wignjodipuro, 1982).

■ Land access for spontaneous settlers during the Marga government

Until 1983, newcomers had to ask permission from the *Pasirah* through the *Krio* before putting any land to use, be it unused land or land belonging to a family, as stipulated in the *Sumber Cahaya* concerning foreigners in the *marga* community. The candidate had to precisely situate the land for the *Pasirah* to extend his control over it if it was not in a protected area. When agreement was reached, the new settler had to pay a fee, *pacung alas*, nominal if for individuals desiring 1 or 2 ha of non-strategic land. The fee was paid to the *marga* fund. A fixed percentage was levied in the case of purchase and sale transactions with a member of the *marga* community. If the new settler did not use or work the land for more than three years, the land reverted to the community and could be attributed to other members of the *marga*.

Besides controlling land use, the *marga* also controlled the process of settlement. Sometimes a group of spontaneous migrants would ask for permission to settle and use agricultural land. Usually the *marga* council gave permission with certain stipulations depending on the situation. In Mendayun, Buay Madang, OKU, the migrant settlement has to be located at least two kilometers away from the main indigenous settlement, and two kilometers from the riverbank. This distance represented the perimeter used for intensive agriculture by the indigenous peasants (see Book I, Chap.3). It was also decided that the native houses in the original village will never be sold to a foreign family. Even if some of the *marga* did not apply this minimum distance, they all agreed to the separation.

2. The abolishment of Marga Government

In 1979, the central government promulgated the 1979 Act No. 5 Concerning Village Government. The objectives of enforcing the above act are mentioned in the Preamble, that is, to promote the unification of the system of government at the lowest level in all parts of the Indonesian territory, to strengthen and render effective village governments so they could carry out their activities and encourage public participation in development. In executing the above Act, the Governor of South Sumatra, through the Letter of Decision No. 142 KPTS/III/1983, of 24 March 1983, formally abolished the *Marga* government.

The above decision raised diverse reactions from scholars in South Sumatra, and made it all the more urgent to arrange a seminar on South Sumatra *adat* law from 26-28 November 1987 in Palembang. One paper submitted during the seminar pointed out that the main reason for *Marga* abolition was to attract more development funding for villages *(Bandes-Bantuan Desa)* from the central government. The Village Assistance Development Funding provided for every village in Indonesia was regulated by the 1984 Instruction of the Home Affairs Minister No. 26. The amount of the funding is Rp1,250,000 per village.

If the *marga* was considered equivalent to the village, the total amount of development funding available for South Sumatra would be 188 units. If the traditional *dusun* was taken to be the village or *desa*, that the number of units would increase to 2,190. One can imagine how much funding could be absorbed by the South Sumatra regional government. Based on the aforementioned Home Minister's Instruction, the funding allocation amounts to Rp-950,000 to be used for stimulating village development. The kind of development to be pursued is decided by the village social council (LKMD). A small portion of the Rp950,000 will be distributed equally to each section in the LKMD. Rp50,000 is to be used for the routine expenses incurred by the LKMD. Rp250,000 is for Family Prosperity Education (PKK). Of the Rp250,000, about Rp190,000 is to be used for the implementation of its program.

■ The main impact

The abolishment of the *marga* government has had significant impact in the field study villages. First, the *marga* territory has become fragmented into small tracts under the jurisdiction of the *desa* or *dusun*, but the village territory and its borders were never properly delineated,

since under the *marga* system the village border was of little importance; all the rights and authority were under the common *marga* government. As noted above, the *Krio* had to manage the people rather than a territory. No transfer of knowledge or information was instituted from the *Pasirah* to all his *Krio* for managing and preserving the environment in their territory. No defined territory was distributed to each new village. To use the words of one of the district heads *(Camat)*: "Now the *desa* and *dusun* are autonomous and we don't have the authority to determine the boundary of each one."

The original sources of *Marga* income have now been replaced with development funds from the provincial government sent directly to the *desa* or *dusun* LKMD, without the transfer of information concerning their management. By 1990 and because of the national economic difficulties, every village in Indonesia had to start reserving village land which had to be put under production to sustain a development fund, a reform inspired by the old *tanah bengko* of Java. A similar system had functioned in South Sumatra before the abolishment of the *marga* in 1983.

Unused land is now controlled by the Provincial Government and forest production, which previously belonged to the *Marga*, is now under the control of the Department of Forestry. This can be linked to the rapid development of estate land distribution over the last five years.

The village *(desa* or *dusun)* government is unable to maintain *adat* law because traditionally it was not prepared for such a role. It is only competent to execute Government programs linked with modernization efforts. Nowadays, an indigenous peasant will clear new land without asking permission from the *Kades* if the land does not belong to anyone.

And, a last example of the vast changes in traditional life and social control is the deterioration of the *Marga* public meeting houses formerly used for large meetings to inform the public (Selo Sumardjan, 1987:22-23).

■ The New Village Government

Now the village government is the lowest level of government under the system of provincial government following the district *(kabupaten)* and sub-district *(kecamatan)* as everywhere in Indonesia and in keeping with the 1979 Act No. 5 Concerning Village Government.

The duties of the *Kades* are: 1) To administer government activities at the village level; 2) to carry out social, development and security activities; 3) In social affairs, the *Kades* has the obligation to guide farmers in increasing agricultural production, to increase people's awareness of the need to participate in development, to guide people in sanitation and beautification, and other aspects requiring social guidance. In the matter of village security and stability, the *Kades* has to carry out the police function, as the executor of orders from higher authorities, establishes night-watch patrols, and report to his superiors any unsettled cases.

This Act also mentions the conditions that have to be met by those who run for the position of *Kades*. The requirements are the following: one must be faithful to one Supreme God; one must be loyal and obedient to Pancasila and the 1945 Indonesian Constitution; one must have good behavior and be honest, fair, intelligent and respectful; one must not have been involved in the September 30th Movement (G.30 S/PKI); one must not have been stripped of the right to vote by court order; one must not have been indicted or punished by decision of a court of law; one must be registered as a local resident for at least two years consecutively, unless one is a village native; one must be between the age of 25 and 60, physically and spiritually healthy and have at least a junior high school level of education or equivalent past experience and knowledge. The *Kades* is appointed by the *Bupati* or mayor of the *Kotamadya* on behalf of the Governor. The elected *Kades* will hold the position for an eight year term.

Importantly for this study, the *Kades* is in charge of controlling the movement of the population, through the issuance of travel documents *(surat jalan)*, moving documents *(surat pindah)* for villagers with good behavior, and the same for incoming migrants.

He or she must prepare and sign all documents related to the buying and selling of land between individuals, and documents certifying traditional rights to use land. The document have to be countersign by the *camat*, the district head. This is the first step that must be taken by an owner or user of a parcel of land in order to gain recognition from a higher authority. The village head and the *camat* cannot, however, issue such documents for land exceeding 2ha per person (if this is the case the documents have to be issued by the *bupati* or the Governor). He receives a certain fee, the amount of which is usually set by the Village Council and is shared with the *kecamatan* if the documents have to be processed at that level. Usually indigenous people do not use this procedure unless they want to apply for bank loans.

3. Spontaneous settlers and land access

■ The right to work agricultural land

Land ownership rights were obtained by spontaneous migrants at the research locations following land transactions made with the locals. According to *adat* law in South Sumatra, land transactions may be of two categories, *perbuatan hukum sepihak*, or "one-sided legal action," and *perbuatan hukum dua pihak*, or "two-sided legal action."

An example of the first type is the establishment of a village or the opening of a forest by a member of *adat* society. A "two-sided action" would include land purchasing transactions, called *adol* in Java and transactions that are directly connected with land, such as *menjual gadai*, *menjual lepas*, *menjual tahunan* (Bushar Muhammad, 1985:111-116).

Spontaneous migrants commonly practice land transactions with the indigenous people which have no direct relationship with the land, even though its object still regards land, such as crop-sharing, or *bagi hasil*. Nevertheless, there is a tendency among spontaneous migrants to conduct transactions with the indigenous people such as land-sharing, or *bagi tanah*, land puchasing, or *jual beli tanah*, land purchasing by installment, or *membeli tanah dengan mencicil*, land rental, or *sewa tanah*, borrowing land *(numpang)*, and land rental-purchase, or *sewah beli tanah*.

These transactions are considered as two-sided legal actions. Under the *adat* law in South Sumatra, these practices had never previously been practiced.

CROP-SHARING TRANSACTIONS

According to Prof. Gonggrijp and Prof. De Stopelar in their book entitled *Arbeid in de Javaanche Maatchapij*, the crop-sharing institution is a kind of payment *(pengupahan)* resembling the payment system employed in capitalist society (AP. Parlindungan, 1989:5). Other scholars, such as Rerolle, even speak of crop-sharing institutions as "nameless contracts" *(onbenoemde contract)* which englobe *sewa gadai*, *perseroan*, and *perjanjian upah* (wage contract) arrangements.

The institution of crop-sharing is still in existence in all parts of Indonesia and goes by the terms *maro*, *martelu*, *memperduai*, *toyo*, *tesent*, and *jejuron*. The term used depends on the region. Under the agreement whereby a landowner gives permission to another person to work his land, the cultivator, or *penggarap* has to give half, or *separuh*, of the yield to the landowner. This system has many social and economic aspects (AP. Parlindungan, 1989:6).

In the 1980 President's Instruction No. 13, dated 10 March 1969, Concerning Guidance for the Implementation of the 1969 Act No. 2 Concerning the Crop-sharing Agreement *(UU No. 2 Tahun 1969 Mengenai Perjanjian Bagi Hasil)* it is mentioned under Article 1, paragraph 1 (c) that the crop-sharing agreement, under whatever name, is conducted between the landowner on the one hand and another individual or legal entity on the other hand, under this Act called cultivator, or *penggarap*, by which agreement the cultivator is permitted by the owner to carry out agricultural undertakings on the owner's land by sharing crops equally between both parties. From the definition above one might observe that the institution of crop-sharing is a form of land utilization that requires some elements of production, first and foremost capital and manpower. Unfortunately, the Act does not function effectively as not all people are aware of the Act.

Basically, the institution of crop-sharing continues to function because many landowners are unable to cultivate all their land themselves. Sheltema mentions some factors tending to cause the emergence of crop-sharing institutions. Those factors are the lack of capital, laborers and animals to till the land, the factor of social status as exemplified by the *haj* men (who have carried out a pilgrimage to Mecca), the effect of the former *desa* apparatus, and other socio-economic factors. Owners who are merchants, women, or under-aged children are likely to share out their land as are those who have land far from the village or undistributed land inherited through the *tunggu tubang* inheritance system (AP. Parlindungan, 1987:7).

At the research locations, crop-sharing arrangements are obviously recognized and employed between indigenous people and spontaneous migrants at coffee plantations, except the arrangements do not always follow the strict rule, but rather depend on population and plantation density, labor supply and demand in the area, and the location of the piece of land (accessible or isolated). In the best case, from the worker's point of view, the sharing will be on a one to one basis. Each of them receive one portion. If the landowner provides food and other supplies, the share will be two for the landowner to one for the worker. Frequently the proportion is better for the worker when the landowner does not provide anything but the land or the plantation, or if the plantation is composed of old trees in need of rejuvenation or maintenance. Under this condition, the hired worker may sometimes receive two or three portions while the owner of the land receives one portion. The yield distribution of three to one is called *martelu* or *jejuron* (Bushar Muhammad, 1985:117).

Very often we see coffee smallholders allow their hired spontaneous migrant workers to plant food crops in between the young coffee plants for their own consumption and benefit with no share in production given to the owner.

When the land is under food crop cultivation, the sharecropping system also varies from one place to another. For irrigated rice, the usual share is 1:1 and the spontaneous migrant is expected to pay for all of the inputs. Often examples were found of workers being able to keep the entire production from the second planting season in the year. We found cases where the owner is an urban absentee who receives 1 part to 10 for the worker (cases noted along the road near Simpang, OKU).

As for yield-sharing in the case of brick-making, like in the case of Pak S. at Ujung Tanjung, Tulung Selapan, OKI, the share is ten to one, meaning ten bricks for the renter and one brick for the maker. This arrangement came about because Pak S. rented land and borrowed money from the owner for his project. The amount of bricks that have been paid are calculated on a weekly or monthly basis.

LAND-SHARING TRANSACTIONS, "PAROAN TANAH"

Now and then the transaction carried out between indigenous people and migrants do not concern sharing crop yield but rather the sharing of the land itself. We found this system mainly in the mountain areas.

Usually the two families work together from the beginning for the creation of a new coffee plantation. The land is chosen by the indigenous, usually on his family's territory but not always. They do not ask for permission to open a new clearing. It is enough to know that the land does not belong to anyone else. They clear a large piece of forest or land (nearly 2ha the first year) working together for the first two years of the plantation. During this first stage, the indigenous people will plant dry rice *(padi ladang)* followed by the spontaneous migrant, and they will share production on a 1:1 basis. After this, the local will often leave the plantation and the spontaneous settler will work the whole plantation and live alone. During this time, the migrant is able to borrow money for living expenses, usually having to pay it back with the first substantial harvest.

Before the first major coffee harvest, the plantation will be shared into two equal parts. Often the spontaneous settler will work on the part belonging to the indigenous owner with a sharecropping arrangement. This system is not secured by any written contract.

LAND-PURCHASING TRANSACTIONS

Under customary law, the purchasing transaction must be conducted or sealed by concrete or cash and real. Concrete or cash means the payment or the down-payment, or *panjer*. The down-payment serves to prevent the land being sold to another person. Real means the transaction to transfer right over the land is written and signed on stamped paper in front of the *adat* head or the *Kades*. The rights over the land are automatically transferred to the new owner when the selling price has been paid (Bechtiar Effendy, 1982:22), and is even considered legal if conducted in the absence of the *adat* head, *Kades* or the Land Certification Officer *(PPAT: Pejabat Pembuat Akte Tanah,* refer to the Supreme Court Decision, 19 September 1970, No. Registrasi Perkara 123/K/Sip/1970, and Article 5 of the 1960 Basic Agrarian Law No. 5).

LAND-PURCHASE BY INSTALLMENT

In reality, under the *adat* law system in the province of South Sumatra, the practice of purchasing land by installment is not commonly used among the locals. Ownership rights over the land are mainly derived from purchasing, inheritance and opening the forest. As increasing numbers of spontaneous migrants penetrated and assimilated into the local communities, there resulted a shifting of the local customs. One impact of such penetration is the creation of the system of land-purchasing by installment. The emergence of this institution is due to the inability of the spontaneous migrants to buy agricultural land with cash, as did Pak I. at Cahaya Mas, *Kampung III,* in buying his land from Mbah M., an ex-transmigrant from Air Sugihan.

RENTING OF LAND

The rental of land is another form of land transaction conducted by the spontaneous migrants in the villages researched. This transaction implies that the landowner permits the tenant to cultivate his land for agricultural purposes or to use it as a site for the construction of a house. Payment is in the form of agricultural production paid after the harvest or every month. We found this arrangement in Belitang where population density is quite high.

In South Sumatra this kind of transaction is called *sewa bumi* (in Tapanuli, North Sumatra, this kind of transaction is called *mengasidi,* in Kalimantan, *cukai* and in Bali *ngupetenin.*

THE "NUMPANG" LAND TRANSACTION

Numpang means staying with somebody, or using a house or land without paying anything. Although this type of access to land is transitory, lacking any legal status, it frequently allows the spontaneous migrant to save up enough capital to buy the land or another parcel.

The landowner grants the land to the cultivator. Different from a land rental transaction, in this case the owner pays nothing. This kind of system is commonly applied among the spontaneous migrants at the Batumarta Transmigration scheme where each of the original transmigrant families received 5 ha of land. It is also common with urban absentee owners who have an interest in seeing that their land be occupied and cultivated for the present time. When the owner decides to sell the land, the *penumpang* must leave without any compensation. This arrangement is very often used for housing.

In Java, this transaction is called *magersari* while in Priangan (West Java) it is named *lindung* or *indung* (Bushar Muhammad, 1985:120).

LAND RENTAL PURCHASE TRANSACTIONS

The system of land rental/purchase agreements, similar to that of purchasing land by installments, is never practiced by the *adat* society in South Sumatra, but it is employed by the spontaneous migrants as a way of obtaining agricultural land. At first, the migrant rents the land in the form of a part of the production. Once the amount he had paid equalled the price of the land, he is considered the new owner.

With the exception of "forbidden land", which are outside village jurisdiction and without individual ownership (and which are beyond the scope of this study), land access in South Sumatra always involves an arrangement between local population and new settlers. Most of these transactions are known by the head of the village and his council who, at best, will legalize them.

■ Evidence of land ownership

It is commonly perceived that as the need for land for development increases, the land available for carrying out the development becomes harder to find. One solution is land clearing, which is carried out through giving compensation to the people affected. In this context, the government or private agency will only pay compensation for the land if the owner can show clear evidence of land ownership. This means that people have to have complete and authentic documents to support their claim to ownership rights over the land. The fact remains that land ownership in the villages are most often based on *adat* rights which are difficult to prove under the State or written laws.

To protect the people's land ownership rights based on adat law, the Government of Indonesia suggested that people register their lands. The requirement for land registration is provided for in Article 19 of the 1961 Act No. 5 Concerning the Basic Agrarian Law. This article aims at legal certainty. Legal certainty, as it is mentioned under this article, entails the legal certainty of the location, size and measurements of the land, and the legal status of the ownership. Land registration can also function to aid the owner in obtaining a land certificate (K. Wantjik Saleh, 1985:56-57).

However, since many people lack an understanding of the urgency to register their land, sometimes the *adat* society views the obligation of registering land as a strange exercise given that the land has often been in their family's possession for generations. As long as the boundary of land is clear and there are no other claims on it (A. Romsan, 1986:66) land ownership will not be challenged. The reluctance of the indigenous people to register their land is also due to the high cost of the administrative formalities and the fact that if all the land owned under *adat* law (including the forest plantations) were to be registered, they would have to pay an extremely heavy IPEDA land tax.

PRONA PROGRAM

In terms of land registration the Government introduced another mechanism, the so-called National Program to register land or *Program Nasional (PRONA)*. The objective of Prona was to assist underprivileged people *(orang yang tidak mampu)* in obtaining land certification. The Prona application process is inexpensive and quick. The application is collective submitted. There are two types of Prona, for those living in the urban areas *(Prona Perkotaan)* and rural areas *(Prona Pedesaan)*.

The Prona Program unfortunately does not work as well as was expected, and it does not help all underprivileged people to obtain a land certificate. Information gathered in the field suggests that various problems are preventing efficient implementation of the program. The Prona program is distributed in a sub-district for a certain number of certificates which are awarded a little in each village, rather than village by village and including the

entire population. The agricultural land in the villages is not at the same location but is separated widely. This situation creates extra expenditures for the land registration official who checks the land on the spot; this results in making Prona a long and expensive process of achieving land certification. The criterion of underprivileged people *(orang yang tidak mampu)* is not clearly defined, since there are many people who are able to pay who are also applying for the Prona program.

The program has no sufficient funds since it was designed with the previous General Election in mind, thus there are sub-districts which will get Prona while others will not.

LAND OWNERSHIP DOCUMENTS

With reference to the evidence of land ownership, the research in the field revealed that there were many types of proof of land ownership. Land ownership was proved by the Information Certificate *(Surat Keterangan)*, the Certificate Informing Legal Right Over the Land *(Surat Keterangan Hak Atas Tanah)*, the Certificate Informing Customary Legal Right Over the Land *(Surat Keterangan Hak Adat Atas Tanah)*, the Certificate Informing Land Ownership *(Surat Keterangan Pemilikan Tanah)*. In addition, there are also the so-called *akte* and the *segel*, proofs of ownership derived from a land purchasing transaction. It should be noted that the *akte* is the result of the action to transfer ownership rights through purchase, while the *segel* means the stamped paper on which an *akte* is written, thus they are synonyms in everyday use. Related to the land ownership certificate is the certification by the *Kades* that the land as it is mentioned on the certificate is located within his jurisdiction. Implicitly, the certificate issued by the *Kades* is a legal instrument justifying land ownership. The certificate from the *Kades* is the first phase that must be accomplished by the land owner in applying for a land certificate *(Sertifikat Tanah)*. The latter is issued either by the *Camat* as the officer of the PPAT *(Pejabat Pembuat Akte Tanah)* or the National Land Board *(Badan Pertanahan Nasional/BPN*, which was previously called the Office of Agraria). In other words, the certificate from the *Kades* is basic consideration for the *Camat* or the *PPAT* or the *BPN* for the issuance of a land certificate *(Sertifikat Tanah)* which is the strongest evidence of land ownership. The following is a discussion of the above certificates.

Segel or Zegel :

Segel, or *Zegel* as it is sometimes named, on *Segel* paper or printed and stamped paper is one evidence of land ownership transferred through a buying and selling transaction that is commonly used by people at the villages researched. The stamped paper is signed by the parties involved. Those parties are the seller, the buyer and the witnesses. Therefore, the signed printed and stamped paper must be acknowledged by the *Kades*. If the transaction is not written on printed and stamped paper, people often use plain paper with stamps, or *meterai* attached using the same procedure as above.

In comparison to all the land certificates mentioned above, the *segel* has the lowest legal status. This kind of land certificate can easily be overruled by an instrument considered as stronger evidence of land ownership. Most people in the villages have ownership certificates on printed and stamped paper. In remote areas, frequently people employ oral "good-faith" agreements. The transfer of ownership is not declared on a piece of paper and is not acknowledged by the *Kades*. This kind of ownership is difficult to prove in terms of written law. By appending the signatures of the parties involved on legal paper, the right over the land automatically shifts to the new holder.

The certificate informing legal right over the land :

This kind of certificate *(Surat Keterangan Hak Atas Tanah)*is issued by the *Kades* and acknowledged by the *Camat*. The acknowledgement made by the *Camat* here does not imply approval by the *Camat*. The *Kades* issues this kind of letter in the event the landowner does not have complete proof of land ownership. The *Kades* will only recognize the right over the land or the right to use the land. This recognition does not extend to the right to own the land. If the land is taken for development, the owner of the land will only receive compensation for the usage he is deprived of and not for the land itself. Often spontaneous migrants own their land based on this certificate.

The certificate informing customary legal right over the land :

The difference with the above certificate is that this one *(Surat Keterangan Hak Adat Atas Tanah)* depends on the landowner showing evidence that the right to land ownership was obtained through the *adat* law tradition and that his family has owned the land in question for generations. In terms of land compensation, he will get two kinds: compensation for the land, and compensation for lost usage, based on the *tanam tumbuh* (major crops).

According to the 1961 Government Regulation No. 10 (for the implementation of the 1960 Act No. 5), the Certificate Informing Customary Legal Right Over the Land will only be issued by the *Kades* if the land has *adat* status. That letter is signed by the *Kades* and is acknowledged by the *Camat*. The Certificate Informing Customary Legal Right Over the Land will be taken into account when applying for the land certificate *(Sertifikat Tanah* issued by the *Camat* in his capacity as officer of the *PPAT)*.

The certificate informing land (ownership) :

The *SKT* certificate *(Surat Keterangan (Pemilikan) Tanah)* resembles the Certificate Informing Land Ownership or the *SKPT*, the only difference being that the work ownership *(pemilikan)* is now missing. The *SKT* or *SKPT* is signed by the *Kades* and acknowledged by the *Camat*. It contains the acknowledgement of the *Kades* concerning the size and measurements of the land and its physical boundaries, as well as the original title of the land. Either the *SKT* or the *SKPT* will be taken into consideration by the *Camat* when issuing the Land Certificate of ownership.

Here, as mentioned above, the *Camat* functions as the officer of the PPAT as obliged by Article 19 of the 1961 Government Regulation No. 10. The officials mentioned under the above articles are the Notary, the head of Agraria, civil servant or any other official who has passed the test given by the Home Minister. If the above officers are absent at the sub-district level, the *Camat* will take over their functions as any other institution having the same level (see Article 5 of the 1961 Act No. 10 Concerning Foreign Investment; see also the "Perkembangan Hak Ulayat setelah Berlakunya UUPA di kecamatan Talang Kelapa oleh Kelompok Mahasiswa FH.UNSRI: 17-19).

■ The vagueness of the official instructions

The 1972 Home Minister's Regulation No. 6 gave authorization for people to open land measuring less than two hectares. This authority is provided for under Article 11 which declares: "The head of the sub-district or *kecamatan* may make decisions pertaining to the authorization to open land if the size of the land is less than two hectares"[7]. The *Camat* makes his decision taking into consideration the information produced by the *Kades* through his issuance of a land certificate. For area exceeding twoha, the authorization has to go through the *Bupati* (district head) and for very large blocks, through the Governor.

IN 1984, the Instruction of the South Sumatra Governor No. 868/KPTS/I/1984 Concerning the Prohibition for the *Camat* to Give Permission to Open Land was issued. This new instruction was certainly the result of the realization of the growing deforestation problem in the province of South Sumatra. It stipulated that neither the *Camat* nor the *Kades* had the knowledge required to ensure environmental protection (such knowledge was lost with the *Pasirah)*.

Legally, the meaning of the word "open land" in the Governor's Instruction is broad and unclear due to the absence of any description of land classification, such as forest land, brush, and so forth. One can observe that the elucidation of Article 6 of the Home Minister's Regulation, in paragraph (1), suggests that the issuance of licenses to open land are for rural development and agricultural extensification. What is implicit here is that the term "open land" is meant to refer to agricultural activities.

The question remains, is this Governor's Instruction effectively applied in the villages? In other words, do the *Camat* and the *Kades* have the means at their disposal to implement the Instruction?

Information gathered from field research indicates that while some of the *Kades* are aware of the existence of the Instruction, others are not. In effect, many land certificates or *SKT* have been issued by the *Kades* and *Camat* after the Instruction was issued in 1984.

For the indigenous people, it is clear that one could easily claim land ownership by applying to the *Kades* for an *SKT* on the grounds that the land was once used by his or her ancestors. With regard to spontaneous settlers, the *Kades* has an interest in ignoring the instruction in his effort to develop his or her village and attain the mark of 500 families, the minimum required to qualify as an official village entitling it to the village development allowance that will soon be attributed.

Another question is what will happen to those settlers who have already paid for the certificate if their land is requested for a large development project?

4. Conclusion

One major finding of this study is that spontaneous settlers, arriving without any aid from the State, do participate actively in the regional economy, mainly through the extension of agricultural land which results in increased production. The settlement process directly involves the indigenous and local administration.

The arrival of large numbers of spontaneous migrants introduced new sharecropping arrangements that were unknown before in the region.

Land rights are obtained by purchase from other migrants or from the locals; migrants may also get land at very low cost as unoccupied land is still available. To legalize their ownership, spontaneous migrants normally apply for the *SKT*, which costs them from Rp7500 to Rp30,000. The use of *Segel* or printed and stamped paper is a traditional means of transferring land rights or ownership for both spontaneous migrants and local people. Other examples of certificates used are: the Certificate Informing Legal Right Over the Land, the Certificate Informing Customary Legal Right Over the Land, and the Certificate Informing Land Ownership.

The legal situation for indigenous people and for migrants is the same as far as land ownership security and compensation in the event of large project development or the creation of protected forest is concerned. A migrant is usually more conscious, however, of the risk of not having a proper certificate than an indigenous person who places his trust in the *adat* community. As soon as they have begun working their own land, the spontaneous settlers will try to obtain at least an *SKT* certificate or a document proving his customary rights over the land. The study found more systematic application for these documents in the food crop areas as opposed to the coffee plantation areas. This factor may be due to the increased concentration of new settlers which incite their village heads to obtain certification while in the coffee areas the demand is more scattered.

In areas opened to agricultural development, there are no real land conflicts or unrespected sharecropping arrangements between South Sumatra populations and spontaneous settlers.

Conflicts are frequent and increase with time between the smallholders, either indigenous or outsiders, and those who intend to create large projects, either institutions or individuals: large estates, forest concesions, military camps or Transmigration schemes. Financial compensation given to small farmers is allways below the market price.

Another problem is the settlers' eviction from forbidden areas. Boundaries have been changed recently but local authorities are not concretly informed. Land certificates for such areas are at times issued and already paid for by the settlers who carry out heavy works to put their land under production. In cases of ignorance or abuse from well informed people, it is always the smallholders who are punished and expelled without any compensation.

Any action to make land access easier and ownership more secure would be advantageous, not only for the spontaneous migrants but also for the local populations. Local administrations should be informed of the exact boundaries of the forest reserve and the action to take for environmental preservation. Better management by the village head will depend on a more precise definition of the village territory.

Each region of Indonesia has its own customary law and village organization, so care should be exercised when generalizing the conclusions of this study outside of South Sumatra.

Notes to chapter 1

(1) *For OKU, among the settlements selected were Kedaton, Mendala, Surya Mendala, Triyoso-Mendala, Trimulyo-Mendala and Talang Jipang in the Peninjauan sub-district; Jatisari in the Muaradua sub-district; Sarekat Jaya and Tanjung Durian in the Simpang sub-district; and Mendayun in the Buay Madang sub-district.*

In OKI, Cahaya Mas in the Mesuji sub-district was chosen, along with Kota Tulung Selapan and Ujung Tanjung in the Tulung Selapan sub-district.

In district of Lahat, the villages of Bunga Mas and Wonorejo in the Kikim sub-district; Kedaton in the Pulau Pinang sub-district; Kota Tanjung Sakti and Airpanas in the Tanjung Sakti sub-district, and in the Ulu Musi sub-district the villages of Padang Tepong and Muara Beliti.
The village chosen for the MURA district was Megang Sakti near Tugu Mulyo.

(2) *In comparing various regions of Sumatra, the* Marga *Government is similar to the* Kuria *in Tapanuli, North Sumatra, the* Nagari, *in West Sumatra, and the* Mukim *in Ache. See H. Amrah Muslimin, "Hukum Tata Negara dan Administrasi Adat," paper delivered to the Seminar on South Sumatra's Customary Law, Palembang, 26-27 November 1987, p. 4 (unpublished).*

(3) *This Ordinance outlined at that time several specific aspects of* Marga *government: 1. The* Marga *government is an Indonesian legal entity; 2. It is to be governed by the head of the* Marga *and other* adat *leaders and assisted by the* Marga *Representative Boards; 3. The* Marga *have the right to levy tax on their people; 4. The* Marga *have a right to sentence any offender of customary law with a corporal punishment or imprisonment for a maximum of three days, with enforced labor or with a maximum fine of fl. 10. This ordinance was thereafter reconfirmed by the Decision of the Government of South Sumatra No. G.b/53/1951 of 9 May 1951.*

(4) *The qualifications of the candidates are stipulated by the Decisions of the Governor of South Sumatra No. G.b/54/1951 and No. G/55/1961. They state: "Anybody, either male or female, can be elected as the head of the* Marga. *He or she must be from the* Marga *society, between 21-55 years of age, and able to read and speak Indonesian. Elementary education or past experience can qualify a candidate to be head of the* Marga."

(5) *To get some idea of the financial situation, it should be realized that one* Marga *in South Sumatra was able to give a salary to its* Pasirah *that was higher than the salary received by the District Supervisor and the District Assistant* (Asisten Wedana *or* Wedana). *See Selo Sumardjan, 1987.*

(6) *informant: Raswan MD, Sekwilcam, Ulu Musi.*

(7) *Unofficial translation.*

Chapter 2

The spontaneous movement and regional dynamics

Muriel Charras, Fatimah Nyayu, Yulfita Raharjo

In this chapter, we will attempt to determine what effect the arrival of spontaneous migrants has had not only on the region's economic development but also on its social environment. While no research was devoted expressly to this theme at the outset, the present chapter will attempt a sort of synthesis based on the results of various team members who have dealt with specific topics in the same region. Field studies could not cover the whole of this vast province for reasons of time and funding, therefore a zone was chosen which could represent the various environments relevant for the study, notably: a zone of older planned *"kolonisatie"* settlements, a mountainous region, and a piedmont and peneplain zone. The Baturaja- Belitang-Lake Ranau triangle, a sub-region in its own right, offered the advantage of being included almost entirely within one regency (Ogan Komering Ulu, henceforth OKU; see Fig.33).

I. Strong support for agricultural development.

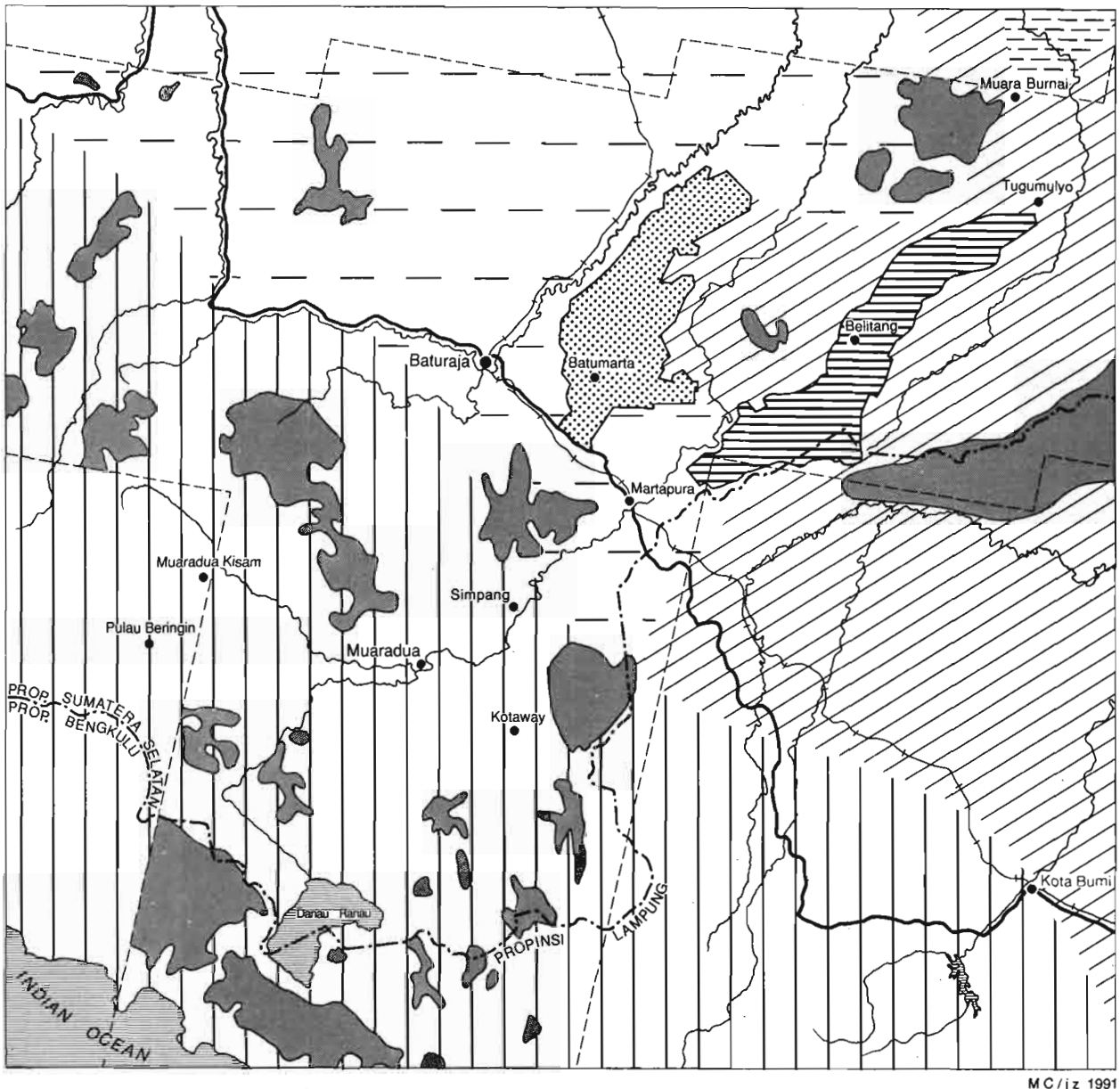
■ The Baturaja-Belitang-lake Ranau triangle

The regency of OKU has an average population density (76 people/km^2) and its economy places it among the better-off *kabupaten* of South Sumatra. It is the gateway to Lampung province either by the Trans-Sumatra highway or by train (Palembang-Bandar Lampung). The *kabupaten* covers 12,000 km^2 and is divided into 14 *kecamatan* with 482 villages and three medium-sized towns: Baturaja, the administrative center of OKU (73,000 inhabitants), Martapura (around 15 000 inhabitants) situated on the Trans-Sumatra highway, and Muaradua (20 000 inhabitants) located in the mountain zone. The local population is composed of five local ethnic groups, the Ogan Ulu, Komering Ulu, Daya, Ranau and Semendo. Outsiders such as the Javanese, Sundanese and Balinese have settled mainly in rural areas. In economic centers, one also finds ethnic Padang, Batak, Chinese and even some Indians in Baturaja.

OKU is composed of three agricultural sub-regions:

- The coffee area is concentrated in the valleys and on the slopes of the mountainous region with Muaradua being the main town situated at the center of the valley systems. This area produces one third of the province's coffee. The area must import much of its food, however, especially its rice. Locally, rice is planted in *ladang* or swidden fields, rarely in irrigated or flooded fields.
- The rice and food crop area is centered around Belitang district. This area is considered to be the rice bowl of the province: 456,000 tons were produced in 1989/1990, an average of 7 tons of paddy per ha in two harvests. As no urban concentration has developed, Gumawang retains a rural character despite its large daily market, hospitals, public and private schools, public services dealing with agriculture, and the many public servants residing locally. The town of Martapura, once a small but dynamic town, is today merely another stopping point along the Trans-Sumatra highway.
- The piedmont and peneplain are the domain of indigenous settlements surrounded by fruit orchards and rubber. The latter is cultivated in traditional extensive fashion by the locals and, since 1986, intensively within the Transmigration settlement of Batumarta. A distinction can be made for the right bank of the mid- Komering River where traditional rubber plantations are less numerous.

Fig. 33 REGIONAL SKETCH - *CROQUIS REGIONAL* BELITANG - BATURAJA - DANAU RANAU



M C / j z 1991

1) main production areas - *grandes zones de production*

irrigated rice fields (*kolonisasi* scheme 1937 - 1940)
riziculture irriguée (programme "kolonisasi" 1937 - 1940)

food crop area (Transmigration and spontaneous settlement 1950 - 1987)
zone de cultures vivrières (Transmigration et colons spontanés 1950 - 1987)

coffee area (indigenous and spontaneous settlement)
zone de café (population locale et migrants spontanés)

planned rubber smallholding (Transmigration scheme 1976 - 1984)
petites plantations organisées (Transmigration, 1976 - 1984)

indigenous agricultural pattern based on rubber plantation, rubber jungle (with some spontaneous migrants)
système agricole local avec forêt d'hévéa (infiltration progressive de colons spontanés)

Palembang hinterland, *lebak* pattern (high indigenous population density)
arrière pays de Palembang, système agricole du "lebak" (forte densité de population locale)

residual dense forest - *forêt dense résiduelle*

SPOT satellite imagery available
images satellite SPOT disponibles

2) communication network - *voies de communication*

Trans-Sumatra highway - *route Trans - Sumatra*

railway - *chemin de fer*

sources - *sources*
field surveys - *enquêtes de terrain* 1990
SPOT satellite imagery (forest 1986/87)
images satellite SPOT (forêts 1986/87)

Baturaja, situated at the junction of the roads to Lampung and Palembang (212 km to the northeast), is the active administrative and economic center to which is now added the nucleus of smallholder rubber plantations at Batumarta. Situated on the Ogan river (navigable until the 1950s), Baturaja was a city harboring many merchants from Palembang. They have since moved to more lucrative pursuits, to the coastal timber trade, for example. The Dutch were present early in the three urban centers (Baturaja was the seat of the *assistent resident* from the end of the 19th century) and in several coffee and tea plantations around Lake Ranau (dating from 1918). In the towns, they helped set up major Chinese communities which to this day have held on to their dominant role in economic networks.

To work as laborers in the plantations, and in the construction of communication infrastructures (roads and railways), the Dutch brought in predominantly Sundanese manpower from Java. The large landowners of the region followed this example and went to fetch laborers in West Java both for agriculture and for making roof tiles. Most of these early migrants remained and constituted the first generation of spontaneous settlers.

OKU regency received a sizeable and regular flow of transmigrants from 1937 to the present (146,000) who settled in the piedmont and peneplain area (Table 21). The first arrivals in Belitang *"kolonisatie"* were soon able to benefit from the irrigation network they participated in building. The second wave (BRN) arrived just after Independence and were left to fend for themselves.

Table 21. PLANNED SETTLEMENTS IN OGAN KOMERING ULU REGENCY - *LE PEUPLEMENT ORGANISE DANS LA CIRCONSCRIPTION OGAN KOMERING ULU*

By periode — ***Par période***

	Periode	*Population settled*
Dutch	Kolonisatie	15.141
Prapelita	51/69	67.379
Pelita I	69/74	12.356
Pelita II	74/79	11.553
Pelita III	79/84	28.539
Pelita IV	84/88	12.352
Total	**37/88**	**147.320**

Table 21. (continued/*suite*)

By settlement — ***Par village*** — **1937 -1988**

KECAMATAN	Project name	Year	Population Settled
Cempaka	Karang Menjanga	1963	1.756
	Maju Rahayu	63/73	180
	Taman Agung	1967	665
	Sri Bantolo	66/73	895
	Sumber Rahayu	66/73	1.282
	Margo Mulyo	66/73	1.769
	Purwosari	66/73	523
	Karang Menih	66/73	488
	Sri Budaya	66/73	707
	Suko Harjo	66/73	1.224
	Way Hitam	1974	7.590
Buay Madang	Bangsa Negara	1963	397
	Rasuan/tgl Nangi	1963	79
	Mendayun/Jatirej	63/72	362
	Rasuan	1974	2.925
	Kota Negara	1974	2.407
	Batumarta V	1980	1.835
	B. VII	1980	1.962
	B. VIII	1980	1.718
	B. IX	1980	1.455
	B.XIV	1984	1.116
	B. XV	1984	1.255
	B. XVI	1985	1.651
	Bangsa Negara	1985	2.385
	Jatisari	1987	1.711
	Pandan Sari	1986	750
	Tanjung Tiga	1988	966
Baturaja Timur	Batumarta I	1978	1.978
	B. II	1978	2.436
Peninjauan	B. III	1978	2.370
	B. IV	1979	1.622
	B. VI	1980	2.341
	B. X	1980	1.450
	B. XI	1981	3.388
	B. XII	1983	2.176
	B. XIII	1983	2.245
	Lubuk Batang	1983	1.436
Martapura	Bunga Mayang	1983	1.665
Belitang	Kolonisasi	37/40	15.141
	Way Hitam IV	1983	7.788
OKU	No location	51/69	61.211
Total	**OKU**	**37/88**	**147.320**

Sources : Various statistical issues in Departement Transmigration OKU and Jakarta

From 1976 to 1982, the transmigrants settling at Batumarta received 3 or 5 ha of land, including 1 ha planted with rubber; this was one of the best packages ever offered to transmigrants. Since 1986, some of these modern smallholdings have entered into production.

Population is not spread out evenly in OKU; major concentrations are found in and around the irrigated rice area. The overall annual growth rate excluding Transmigration remains average (2.6%). This is because local outmigration is rather strong, with Ogan (from kec. Pengandonan and Peninjauan) going to Lampung and Komering (from *kec.* Buay Madang and Cempaka) migration aimed at the towns. Elsewhere, there has been a constant movement from the rice and food crop sub-region (*kec.* Belitang and Buay Madang) towards neighboring districts in OKI from the end of the 1960s (particularly to *kec.* Mesuji and Lempuing/Kayu Agung).

Within the regency, the rice area has also lost population to the coffee plantation areas around Muaradua, a rural region which, in absolute figures, has had the strongest growth in the province (note the first five *kecamatan* of Table22).

Officially there remain about 300,000 ha of dense forest (*hutan lebat*) covering less than 25% of the regency's surface, a small amount if one considers the regency's topography [1]. Forest exploitation, however, still contributes Rp 40 million annually to local revenue. Furthermore, two private companies have been newly appointed to manage forest estates (*Hutan Tanaman Industri*) covering an area of 16,000 ha in Martapura and Pengandonan. Local governments have started resettlement programs for those living in forests or areas to be protected.

Since 1983, large areas have been given over to private companies so they may establish large plantations, one of which has already planted oil palm to the north of Baturaja and another sugarcane in Cempaka district. To these can be added the land long earmarked for the army: first, to resettle retiring veterans (*TRANSAD* project, Buay Madang), second, for a training camp. The camp, located between Baturaja, Martapura and Simpang, has recently been extended on the southeastern bank of the Komering towards Lampung.

The industrial sector of the regency is active though it is dominated by small enterprises specializing in the transformation of agricultural production for the local market. In all, 309 enterprises employ 1038 people; 209 of these are registered companies employing 507 people. A sort of enclave, the State cement works located to the north of Baturaja has not induced major industrial activity. According to official data, 78% of the population of OKU regency is still involved in agriculture. Trade, restaurants and hotels account for 8% of the employment and industry for 3%.

These features are responsible for the dual structure of

Table 22. OKU REGENCY : POPULATION CHANGES PER KECAMATAN
EVOLUTION DE LA POPULATION PAR KECAMATAN DANS LA CIRCONSCRIPTION DE OKU

Kecamatan	Population	Transmigrant settled			Annual population growth % with Transmigration			without		Density persons/km²	
	1988	61/71	71/80	80'	61/71	71/80	80/88	71/88	71/88	1971	1988
1 P. Beringin	27,471				1.8	2.6	4.2	3.3	3.3	9	16
2 Banding Agung	62,836				2.8	4.7	1.6	3.2	3.2	17	29
3 Muaradua	77,208				2.1	5.0	1.8	3.5	3.5	28	50
4 Muaradua Kisam	23,778				2.3	3.5	2.4	3.0	3.0	18	30
5 Simpang	63,278				3.1	7.2	3.0	5.2	5.2	28	67
6 Martapura	73,835	***		1,665	5.6	6.1	3.0	4.6	4.5	57	123
7 Baturaja Barat*	25,125				2.3	3.4	3.7	3.6	3.2	364	189
8 Baturaja Timur*	54,468		4,414		*	*	*	*	*	*	466
9 Sosoh Buay Rayab*	7,943				*	*	*	*	*	*	21
10 Pengandonan	41,011				0.8	0.2	1.5	0.8	0.8	43	49
11 Peninjauan	46,949		3,992	13,036	0.9	2.2	4.7	3.4	0.7	15	26
12 Buay Madang	178,082	838	10,518	16,804	6.4	3.3	2.0	2.7	1.7	97	153
13 Belitang	130,584	***		7,788	4.4	4.0	2.6	3.3	2.9	94	163
14 Cempaka	100,657	4,755	12,345		5.1	2.2	1.7	2.0	1.2	89	125
OKU	**913,225**	**67,000**	**31,269**	**39,293**	**3.7**	**3.7**	**2.5**	**3.1**	**2.6**	**45**	**76**

*** : Transmigrants prapelita, no number by kecamatan but by regency ; * : Baturaja split into three kecamatan

Sources : Kantor Statistik Palembang, Sumatra Selatan

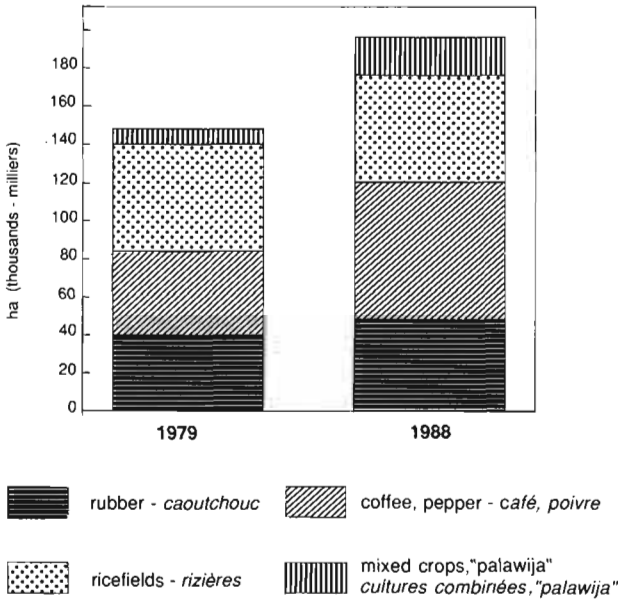
the regency's market. The presence of small industries, agricultural production and high population density create many opportunities for small traders. Also, the large volume of export commodities makes it possible for wholesalers to emerge. Since 1989, Baturaja has been connected to the automatic digital telecommunications system. The highway provides the opportunity for the regency's production to reach a larger market. Fresh fruits (*rambutan, duku, durian* and banana), for example, are send to Jakarta or Bandung. Food crops are sent to the provincial market while export crops are increasingly being directed to Bandar Lampung, transit port to Jakarta, rather than to Palembang.

■ Land extension and diversification of agricultural production

The contribution of spontaneous migrants to agricultural growth is obvious even though it is difficult to measure with precision at this stage of the study (Fig 34).

As seen in the cartographic analysis of the dynamics and processes of land settlement (Book I, Chapter 3), the limits of agricultural cultivation have been considerably extended in the OKU *kabupaten*. This extension of cultivable land concerns essentially the areas where spontaneous settlers are found.

Fig. 34
LAND EXTENSION AND DIVERSIFICATION IN OKU
ACCROISSEMENT DES SURFACES CULTIVÉES ET DIVERSIFICATION A OKU



Sources - *Sources* : Departemen Pertanian OKU, Baturaja MC / j z 1991

Table 23. CHANGES IN AGRICULTURE
EVOLUTION DE L'AGRICULTURE

1979 -1988 Regency of OKU

CULTURE	Growth	1979 - 1988 (%)
Rubber		
Area ha.	10,953	*25.5*
Prod. t.	- 3,330	*- 22.0*
Coffee		
Area ha.	30,115	*60.0*
Prod. t.	- 2,123	*- 9.6*
Pepper		
Area ha.	1,063	*382.4*
Prod. t.	820	*982.7*
Sawah		
Area ha	2,078	*3.3*
Prod. t.	257,599	*129.6*
Corn		
Area ha.	4,496	*179.5*
Prod. t.	8,612	*461.5*
Cassava		
Area ha.	2,096	*52.8*
Prod. t.	47,029	*148.3*
Soya		
Area ha.	2,091	*224.6*
Prod. t.	2,182	*276.2*
Peanuts		
Area ha.	2,910	*228.4*
Prod. t.	3,090	*278.4*
Mungo		
Area ha.	- 186	*33.1*
Prod. t.	19	*4.8*
Total Ha	55,616	*70.8*
Cows	35,033	*58.2*

Sources : Departemen Pertanian OKU, Baturaja

Data on cash crops, though not very reliable, indicate an increase of 45% in surfaces under coffee, rubber and pepper production between 1979 and 1988, or a gain of 42,000 ha. Rubber is not concerned by the spontaneous movement; the increase in area is mainly due to the addition of small holdings within the Batumarta transmigration center. The substantial drop in production reflects the discontinuance of tapping during periods when coffee is more profitable (Table 23).

The increase in pepper planting is sizeable. It was primarily introduced on the Kotaway plateau and to a lesser degree in Batumarta in association with coffee by new settlers originally from the region or from Java. The principal extension is due to coffee, but the production

shows signs of instability. On the one hand, massive land-clearing automatically follows any increase in the price of this commodity. But on the other hand, a fall in price, especially if it lasts for two consecutive years, will cause some farmers to neglect their plantations. First of all, locally-run plantations more than four years of age are neglected for their low profitability. Then the more isolated parcels, far from access roads, are left aside once transport costs become prohibitive. Fall in yields may also be explained by the death of *dadap* shade trees (*Eurythrina lithosper* or *E. subumbrans*) in certain districts such as Banding Agung, Muaradua and Simpang.

For food crops, the growth in cultivated area and production must also take into account the effect of Transmigration settlers. Together with spontaneous settlers from Inner Indonesia, they have introduced significant diversity into production systems, especially with the inclusion of *palawija* (cassava, corn, and various varieties of beans) which are not cultivated for surplus by the locals. Between 1979 and 1988, according to local statistics, 11,500 ha of dry land food crops were added. This was accompanied by significant progression in yields, the most spectacular being the sharp growth in maize, soya and peanut yields. The area of land planted with maize grew from 2,500 to 7,000 ha, while yields doubled (from 0.7 to 1.5 t per ha). Cassava yields went from 8 to 13 tons per ha. This does not take into account the extension of vegetables cultivation, for which statistics are either unavailable or unreliable[2].

The sharp increase in paddy production is largely due to production intensification (an increase to two annual harvests and the use of improved seeds), primarily in the irrigated perimeters of Belitang, where technical irrigation is possible. Intensification has also occurred in smaller perimeters based on simple village irrigation, often exploited by spontaneous settlers bound by sharecropping arrangements. The intensification of rice fields in Belitang was also made possible by spontaneous migrant agricultural labor. Rice produced on *ladang* was not considered in the figures, since the area devoted to such farming is difficult to determine from one year to the next and it is often a first stage in an evolving cultivation system. According to official statistics, however, OKU is the regency where the greatest area of *ladang* has been opened (22,000 ha in 1988) in the entire province, a situation which is in part explained by the shortfall in irrigated rice in mountainous regions [3].

The specific nature of spontaneous migrant agricultural can be dealt with by comparing their situation with those of transmigrants and of local populations. The soils found in the peneplain where Transmigration villages are situated are often of low fertility, and the use of fertilizers remains low. Not only do transmigrant economic conditions determine the lower than recommended levels of fertilizer use, but availability at key moments and on a regular basis in markets and cooperatives remains a problem. A study in Batumarta (Bakir Ali 1988:31) shows that while gardens (measuring 0.25 or 0.50 ha per household) and rubber parcels (1 ha per household, hh) are used to the full extent, less than a quarter of the remaining land (between 2 and 3.5 ha per hh) are worked by the transmigrant or another person, or in other words, some 4400 m2 cultivated out of the 20-25,000 m2 allocated per family. The fact that rubber trees have begun producing does not explain the disinterest in food crops, since many migrants, friends or family of the original transmigrants (referred to as spontaneous transmigrants) cultivate these parcels often without compensation paid to the owners. This system is called *numpang*.

The relatively low yields to be gained in Transmigration villages is a fact that is generally recognized elsewhere, as is the importance of off-farm work to support the family budget. Nevertheless, the spontaneous migrant looking for land outside the Transmigration villages receives preliminary experience either in the irrigated rice zone where fertilizers are regularly available, or as a worker for an indigenous landowner. His understanding of distribution circuits and the agricultural potential of the region is better and his plan is calculated on the basis of these elements. On dry fields devoted to food crops, the example of Kampung Baru, Cahaya Mas and Bumi Agung show that the use of fertilizer is early (beginning with the second or third plantation) and more systematic, despite the difficulties of access during the rainy season.

The comparison with indigenous agriculture essentially concerns coffee plantations. Studies have shown that migrant parcels were as densely planted as those of local people: between 2700 and 4000 trees per ha, compared with the recommended density of 1500. However, those worked by migrants from Inner Indonesia on sharecropping, annual contract, or ownership basis are more homogeneous, better maintained, and have longer production lives. Indigenous people usually plant rubber, fruit trees, and teak, the latter to mark the boundaries of their parcels. Migrants only plant coffee, except around the house where they might plant vegetables, banana trees and, if they own the land, fruit trees to provide shade. Weeding is less systematic among the local planters, while Javanese or Balinese plantations are cleaned regularly, about 6 to 8 times a year. More and more, local planters are using teams of migrant laborers to do this work. One might add another difference: the length of active plantation utilization. Locals have a tendency to neglect their plantation following the bumper harvest of the fourth year, especially if the coffee price is not sufficient. They have many other more profitable activities, be they agricultural or off-farm.

The principles of the swidden agricultural system can

be found among indigenous planters. These parcels, on which certain large trees have survived the burning off of underbrush, on which various tree species have been planted, and which have been scantily weeded will, once neglected, rapidly regain the forest cover necessary for soil regeneration. The settler not only holds on to his parcel from year to year, adding fertilizer, and renewing the trees through pruning, but he also takes over older indigenous plantations on a sharecropping basis or purchases plantations from other migrants.

We might therefore note that in the agricultural domain, there is a two-way transmission of knowledge concerning coffee planting, and a complementarity in food crop production. The latter remains a specialty of the groups from Inner Indonesia.

2. A sturdy component for rural development

The contribution of migrants arriving in a spontaneous manner from other regions is not limited to the strictly agricultural sphere. The mass of arrivals dispersed in small towns and newly created villages also plays a role in the region's rural development taken as a whole.

■ Accelerated development of infrastructure and services

The development of infrastructure and services takes place within the framework of the national effort touching all regions of the country. It is therefore difficult to analyze independently the impact of spontaneous immigration on regional development over time, all the more so because older data are unavailable. However, this development has unmistakably been quickened by the increase in population densities which give the region priority for new projects. The population density of the OKU *kabupaten* went from 31 to 76 people/km² between 1961 and 1988 with the aid not only of Transmigration but also, as we have seen, of spontaneous settlers.

Transmigration gives each new village a package of infrastructure and services (roads, schools, health centers, marketplaces). Nevertheless, most of the time these services are made available only to transmigrants and perhaps some migrants from Inner Indonesia residing in outlying villages. In the villages created by spontaneous settlers, services are first set up by the villagers themselves: roads

Table 24 EDUCATIONAL DEVELOPMENT FROM 1980 TO 1988 (OKU regency and South Sumatra province) - *EVOLUTION DU NIVEAU DE L'EDUCATION ENTRE 1980 ET 1988(circonscription de OKU et province de Sumatra-Sud)*

School level	Education Infras. OKU		Percentage increase 1980 / 1988	
	1980	1988	OKU	South. Sum.
Elementary				
Schools *	358/45	728/36	89.6	102.5
Teachers	2,552	5,237	105.2	130.8
Pupils	101,474	167,634	65.2	71.8
Junior H.S.				
Schools	2/3	38/13	240.0	301.2
Teachers	163	1,696	940.5	226.2
Pupils	3,175	31,570	894.3	216.3
High School				
Schools	1/9	6/26	220.0	92.8
Teachers	103	650	531.1	86.2
Pupils	940	8,721	827.8	78.3

* : School first number is public, second is private - Teachers and pupils are from both public and private schools.
Sources : BAPPEDA, 1988

are opened and maintained and schools begin functioning within the first few months of a settlement's opening. These private schools (Table 24), which soon serve a high volume of pupils, are generally recognized by the provincial education services within two or three years. The same goes for the new roads created by the migrants; in a few years they receive subsidies.

In areas where spontaneous habitation remains more individual and dispersed, the addition of population in the village and district administrative units enables the local authorities to ask the provincial social services for an extension of their infrastructure and services: improvement of roads, creation of markets, expansion of schools with the addition of teachers, and the provision of permanent health centers.

By 1988, the OKU regency was one of the most developed in the province, aside from Palembang and the Musi Banyuasin district which benefits from development in the provincial capital. On the basis of many indicators, the regency is close to the Lahat regency, historically more densely populated (152 people per km²) [4] and currently the most economically dynamic regency of the interior (Table 25).

Table 25. SOUTH SUMATRA: LEVEL OF INFRASTRUCTURE AND SERVICES DEVELOPMENT IN 1988/1989 (SELECTED REGENCIES) - *SUMATRA SUD: INFRASTRUCTURES ET SERVICES EN 1988 - 1989*

Kabupaten	Elementary school		Junior H. School		Hospital	Physician	Nurse	Health centre	Asphalted road	
	one school for km²	one teacher for pers.	one school for km²	teacher for pers.	bed / '000 pers.	/ '000 pers.	/ '000 pers.	permanent '1 for km²	km for km²	km per '000 pers
OKU	14	174	79	538	4	20	2	400	0.029	3.0
OKI	35	145	187	780	23	23	2	902	0.010	3.6
Muara Enim	19	146	120	584	3	15	2	640	0.021	2.8
Lahat	13	149	67	517	8	19	2	360	0.019	4.8
Musi Rawas	41	184	272	782	6	13	1	1340	0.006	4.4
Musi Banyuasin	30	181	189	678	2	19	2	990	0.011	3.7

Sources : Various institutions at the provincial level, 1990.

■ Diversification and intensification of activities

The impact of spontaneous settlers on the diversification of nonagricultural activities is felt in many ways. By working the land of locals, spontaneous settlers allow the landowners not only to increase the area under cultivation, but also to do other nonagricultural activities such as transportation, trade and construction, either inside or outside the region itself. Spontaneous migrants supply the manpower necessary for such activities, and at the same time bring new activities to the region. In Baturaja, porters working in the market, as hired hands for coffee dealers, or as pedicab drivers are for the most part spontaneous migrants (mainly young Sundanese men). The entire region is dotted with roof tile and brick-making operations run by Sundanese and Javanese. This previous experience no doubt has encouraged their important presence in the modern brick and cement construction sector which draws its workers and small entrepreneurs from Java. Javanese carpenters and cabinet makers are also found.

Ibu Samirah, 53, a rooftile maker in Batu Putih, moved to Baturaja with her husband in 1965 from Kebumen, Central Java. She had heard from rooftile makers there that jobs were available in Baturaja. During a particularly difficult year, they decided to go try their fortune and left with Rp 10,000. In Baturaja, they found work as employees in a rooftile factory owned by a rich haji *from Cirebon. There they met many workers from Cirebon, Pati, Kebumen and other areas of West Java, all of whom were nonpermanent. Usually they would return to Java after one or two years. After a dozen years of circular migration between OKU and Central Java they decided to settle down and were able to afford a piece of land in Batu Putih (about 7 km from Baturaja). It was cheap and unfertile land but good for making bricks and rooftiles. They now have a nice house and a brick oven.*

In the markets, one finds Javanese specialties, including rattan and bamboo handicrafts, *tahu* and *tempe* soybean cakes made nearby with locally-grown soybeans. The culinary specialties of Java and Madura, *noodle-bakso*, *gado-gado*, *sate* and medicinal herbal preparations (*jamu*), developed first to satisfy the limited ethnic clientele (people from Inner Indonesia), are now consumed by all groups.

Ragil, 36, has long been a bakso *noodle vendor. He now is the boss of a* bakso *noodle shop in Baturaja and is one of the largest* bakso *suppliers in town. He owns six carts and hires twelve workers. All of them are children of transmigrants from Belitang. He arrived in Baturaja for the first time in 1970 at 16 years of age. He left Pale village, Wonogiri, Central Java, after dropping out from the second year of junior high school, to visit his sister who lived in Baturaja as an ice-cream seller.*

His sister gave him money to set himself up in business. He started by selling noodle bakso. *Every six months he would go home, until he realized that in doing so he was spending nearly all his profits on transportation. In 1975, he married a girl from his village in Wonogiri and brought her back to Baturaja. He hardly ever visited Java once he had begun his family. Instead, he saved his money and invested in his business. He bought a modest house in one of the older* kampung *of Baturaja.*

Today, he is a successfully established bakso *seller. He returned recently to Java twice and encouraged two relatives and some friends to join him in selling noodle* bakso *in Baturaja. Each time he returns to Java, he updates his* bakso-*making techniques. He recently bought a machine to mince meat so he can make bakso more rapidly in larger quantities. As Ragil says, "my friend's and my choice to move to Baturaja was highly motivated by friends and relatives."*

■ Migratory chains more evident in nonagricultural spheres

These activities, which have developed mainly in small towns, have sustained major migratory chains. The phenomenon is more evident than in the agricultural sector where one meets more reticence on the part of early settlers to assume responsibility for new migrants. The spontaneous migrant who succeeds in developing a small enterprise in town will have little qualms about seeking manpower in his village of origin, as we can see in an examination of migrant life histories.

Ibu Marni is the owner of a small restaurant in Pasar Pagi, Baturaja. Originally from Cirebon, she came to Baturaja with her husband twenty years ago looking for a better life. They opened a food-stall (warung) *selling* gado-gado *and ice; it has since become a small restaurant. Her husband died four years ago, but she continues to run the restaurant, helped by five girls recruited from her home town. She estimates that she has been responsible for bringing more than twenty girls from her home town to Sumatra. Some are married, some have moved to other jobs and she has given others to her friends as domestic servants.*

As long as she can remember, Baturaja has been full of migrants. Nowadays, the town is really bustling (ramai)*, with transportation to Java available and inexpensive. She noted that now there are many varieties of food from different areas sold in the market. When she first sold* gado-gado*, the customers were exclusively migrants; such is no longer the case, indicating a mixture of ethnic groups and tastes.*

The other type of migrants in Baturaja are the porters (*kuli*). They carry heavy loads such as rice, coffee and other food and cash crop products in the markets. Many of these porters come from one village, Baleraja, near Tangerang, West Java. In Baturaja, they are considered "*orang Banten*" or "*orang Serang*."

Karma, 20, works in a coffee storage warehouse owned by a Chinese. He said that he and his friends came to Baturaja during what was the slack season in Baleraja, recruited by a middleman (mandor)*. They preferred Baturaja over the closer cities of Tangerang or Jakarta because they knew the* mandor *well and it would therefore be easier to find work in Baturaja. In addition, his father and grandfather had also worked as porters in Baturaja.*

Solichin, 50, is from the Banten area. As a young boy, he was aware that people from his area migrated, first among them his own father. He first came to Lampung in 1964 and worked as a market porter. There, the tempting offer of a recruiter brought him with a group of eight other people to Baturaja. He was told that if he managed his money well, he could buy a piece of land in Baturaja. Unfortunately, he spent too much money in transportation back and forth between Baleraja and Baturaja. Today, like some of his friends, he stays in Baturaja for about 6 months out of the year, the other six months he goes back to Baleraja to help his wife prepare the small parcel of land they own. The land being unfertile, harvest comes only once a year. Therefore, he has had to find extra jobs. As a day laborer in South Sumatra, he receives Rp 8,000 per day (gross). Together with five other friends, they rent a room from a local landlord for Rp 15,000 per month.

Junaid, 20, dropped out from the first year of technical high school. He worked as a becak *driver in Baturaja for six months last year and has just returned two months ago after a return home to Cikupa (near Baleraja). He claims that he is not strong enough to work as a* kuli*, though they receive better pay than a* becak*. He decided to go along with friends to* "merantau" *to Baturaja to acquire work experience, as he had no job in Cikupa. In the future, if he is able to save money, he hopes to open a mechanical shop in Baturaja and persuade his parents to sell their land in Cikupa and move to Baturaja. At the moment, he stays with friends in a rented house owned by a local for Rp 6,000 a month. He and his friends minimize the cost of transportation from Java to Sumatra by getting lifts from trucks.*

Migration begins as a seasonal or circular affair, concerning most often very young adults, the majority of them male. This migration can repeat itself over a number of years, each time bringing a new contingent of migrants. The benefits are first reinvested in the sending area, up until the point where permanent installation in the receiving area appears more promising, if the social environment is attractive and employment prospects better than in the region of origin. Some of these workers, in turn, will both want to and will have the means to set up their own enterprise in the same sector of activity and in the same region. It is of course very difficult to evaluate the proportion of those who settle permanently. Despite the presence of successful Javanese migrants in Baturaja, such as Ragil and Ibu Murni, there are still many poor urban Javanese and Sundanese who work on a daily basis as *kuli* and *becak* drivers. They remain trapped in low-status and low-paying employment with little opportunity to develop other skills.

Urban migrants usually live in a sort of enclave where they feel more secure if they are surrounded by their own people. Most were brought by a relation or a friend and thus logically settle near them. One of the oldest and largest enclaves in Baturaja is Talang Jawa. One of its neighborhoods, called Talang Bandung, has many people of Sundanese origin.

Founded in 1948 when some migrants from Java cleared unused land and settled down, Talang Jawa has grown by 1990 to three *dusun* totalling over 1068 households and 5,852 inhabitants. Located one kilometer from the town center, Talang Jawa has an area of only 98 ha, giving a population density of 6,096 per km2 and making it the most crowded *kampung* in Baturaja. The name was given by the local people, but Talang Jawa is actually composed of 60% Javanese, 30% Sundanese and 10% other (Batak, Padang and other groups; *Monografi Talang Jawa*, 1989/1990).

It is interesting to note the diversity of their main

occupations. Though the majority are still doing manual labor, there are signs of social mobility in those who have obtained government jobs as public servants, health assistants or servicemen, for example.

Thus, we have seen the important role of friends, relatives and recruiters in bringing new migrants to OKU, particularly Baturaja. Their role is mainly to provide information, find work for migrants and in some cases provide accommodation for them until they are financially independent.

■ Spontaneous migration from other Sumatran ethnic groups

Though migrants from Inner Indonesia constitute the most numerous group in the small towns of OKU, they are not the only outsiders present in the region. They were preceded by the Minangkabau from West Sumatra.

As far as people can remember, the first trader from Padang (West Sumatra) was a man called Karim, who came with a friend in 1924. In 1936, Karim's nephew, Badaruddin, visited them and remained to work as a tailor. Since then, many relatives and friends have come from the original village in West Sumatra. They have become tailors, traders in plastic ware, consumption items or food, or involved in a number of other occupations.

Migratory chains are also well established. In Baturaja, the Minang from Pariaman are often involved in the clothing or restaurant sectors. Those from Sulit Air sell stationary, are itinerant traders in the markets and also run restaurants. Minang from Maninjau are hairdressers. These examples of specialization do not correspond with anything in the regions of origin. They illustrate the employment opportunities available to the first settlers and the migratory chains which resulted.

Judging by the interviews, it would seem that the Minang community is shrinking and that this migratory flow has been redirected to other places where higher profits can be made in trade. This is not to say that Baturaja is losing its dynamism, since those who have succeeded remain. But newcomers, usually arriving with little capital, have less chance of making quick profits than before due to the competition from the many migrant groups present. For example, we are beginning to see young ambulatory traders from Jakarta and especially Bandung selling clothes produced in their region of origin.

The Batak of North Sumatra are the latest arrivals in the saga of migrations to OKU. They bring their specialization in service station garages, gasoline sale and tire repair for which they are well known all along the Trans-Sumatra Highway. They are beginning to be seen in itinerant markets selling manufactured products and sweets which they produce themselves. They do not seem, however, to have penetrated the other distribution circuits for agricultural production as is the case in the northern part of Sumatra.

■ An expanding and diversifying market system

During the colonial period, a Dutch assistant resident was posted in Baturaja. The little town was a trade center for the main cash crops of the region, including rubber, coffee, pepper and *damar*. Trading was dominated by Palembang people and by the Chinese whose network was commanded by that city [5]. At that time, the farmers sold their goods to Chinese or Palembang traders in Baturaja who then sent the produce mainly to Palembang (using the steam riverboat), and also to Lampung (by train). From Palembang a large part of the production was exported to Singapore. The main traders sent boats loaded with manufactured goods back to Baturaja. Migrants (Javanese and Sundanese) were already present working as porters. Many Javanese also worked as plantation workers (in, for example, the Sipatuhu plantation) and Sundanese were employed in construction. The Minang first appeared as traders in the itinerant markets before they set up business in the small towns. At this point, there were still no Batak present.

Some important changes resulted from the Japanese Occupation and Independence. Boat traffic came to an abrupt halt and more and more production was sent to Jakarta via Lampung. Palembang traders disappeared from the area but Chinese traders remained in the towns (Baturaja, Martapura and Muaradua) and thanks to their intermediaries retained their monopoly on agricultural commodities. Many of the former plantation workers gained access to neglected private plantations and spread throughout the mountain valleys and plateaus, followed by friends and relatives, along with descendants of former settlers from Belitang. They opened up land for themselves or were recruited by locals to work their land.

Local people, relatively absent from trading networks until then, were able to occupy a special role as broker, mediating between the producers and the Chinese wholesalers (*pedagang pengumpul*). Nowadays, the only sector that seems to bypass the Chinese, at this level, is the collection of fruit production which is carried out directly from the producers (or their local representatives) in the fields by Jakarta and Bandung trucker-dealers. Local populations have also invested the transport sector.

Aided by their long experience in the region and their almost total control of food crop production, the settlers from Inner Indonesia are beginning to participate in trade networks. On the bottom of the ladder, Javanese and

Balinese sell part of their own production in the markets. Vegetables from Sabutan are most often brought to Muaradua by women farmers to be sold to wholesalers of local origin, regular buyers (who sell in restaurants or transform the produce). In an example where Inner Indonesians control all aspects of a production process, Javanese grow soybeans, confection soybean cakes, and then sell them. In the Belitang zone, some buy crops at harvest and sell inputs, but their zone of operations is limited to their region. They sell in Gumawang, Baturaja and Muaradua. This is explained by the confidence and the understanding which develops easier between people of the same origin. Conversely, it is more difficult for them to penetrate wider circuits due to their more limited knowledge in comparison with the indigenous traders. Some have tried to bypass the Gumawang level to send production directly to Bandar Lampung or Palembang, but they were unable to compete due to the lack of sure contacts (for truck rental, hire of a trustworthy driver, or for rapid discharge of their commodities in the large central markets).

As far as coffee is concerned, the marketing network is dominated at the summit by traders of Chinese origin, though they use local collectors who go collect the production directly in the fields, on the nearest roads, or in the weekly markets, or who seek contracts with other traders or coffee hullers in the villages. The participation of people from the region or the province is stronger than that of settlers from Inner Indonesia who are usually simple producers. Nevertheless, some Javanese planters have become brokers for Chinese. The trader puts up the capital for a huller, often a small truck, and sometimes offers high-yielding seeds. The planter runs the coffee huller, collects and transports the production. In one case encountered, the Javanese planter was also able to improve and enlarge his holdings by new sharecropping arrangement with a local farmer. He hired five adolescents directly recruited in Java on annual contracts.

These cases still remain the exception rather than the rule, as ethnic specialization remains common in economic activities. What this illustrates is the unequal relationship that exists between locals, migrants and the Chinese [6].

As for migrants from Inner Indonesia, the differences in the mode of participation in local economies is very strong between transmigrants and spontaneous settlers. Women from Transmigration villages go to the markets of their village, but more rarely do they venture to outside ones. Generally, local traders come to collect the production in the fields. Rare are those who have links extending beyond their village or the network of villages within a transmigration project.

3. The boundaries of new social environments

Although spontaneous migrants clearly support the rural economy of their receiving areas, a major question concerns their role and their importance in transforming the receiving area's social environment. An analysis of this is very complex, requiring first a good understanding of the social structure of the indigenous people in the receiving area, and second an evaluation of the opportunities for various migrant groups to put down roots in the new area. This study, due to its short length and the necessity to conduct rapid village-by-village appraisals, can in no way claim to cover this multi-faceted question. Nonetheless, it is interesting to discuss several elements here based on the comparison between the situation of sponsored transmigrants and spontaneous migrants particularly as it pertains to the degree of their acceptance by local people.

■ Relations with local communities

While research conditions did not allow long-term or in-depth research into village relations—the only way of uncovering problems—it seems clear that in the region there are few major conflicts between spontaneous settlers and local people. Unwritten contracts are generally respected and not a single case of disputed landownership was reported, at least in area where new settlement are allowed. The resentment openly expressed by local people almost always concerns Transmigration, and through it, the transmigrants. The confiscation of large territories, always poorly compensated for, has had a lasting impact on relations. The economic isolation of transmigrants has its social counterpart. As everywhere else in Indonesia, transmigrants are considered the Government's spoiled children because of the large investments made in their favor. The homes are ready, the land cleared and the coveted social services (schools and health centers) are provided for them. They are isolated from the outside as a result, leading them to reproduce the model of their society of origin, while at the same time adapting it to the new structures imposed on them by the government and adapting themselves to their village neighbors themselves coming from varied background [7].

The 10% of land officially set aside for local families is usually distributed but rarely is it occupied, at least during the first stage. Indeed, it is psychologically quite difficult to live and go to school with a group which does not use the same language, or follow the same customs and

behavior. In time, transmigrants are more willing to use the national language and, with an improvement in their economic situation, local people come back and occupy the parcels that were allocated to them, sometimes buying additional parcels as is the case in Batumarta.

In this region, transmigration are called the "*Trans*", a nickname that is slightly insulting and at the same time tinged with pity. There is pity for them because they share little in the rural development around them. They were given the poorest land and their economic situation limits their participation. Spontaneous migrants, often called the "*Spontan*" are clearly differentiated by locals from their "*Trans*" kin; spontaneous migrants themselves accept this distinction.

As we have seen earlier (in Book I, Chap.3 and Book II, Chap. 1), the process by which migrants without state aid settle is radically different from the above in the regency studied. Interaction and exchange between various ethnic groups takes place in defined spheres: when seeking employment or land, when selling agricultural production or at markets, and between children sharing the same school benches. Differences nevertheless remain depending on the type of settlement.

INTERACTION AMONG COFFEE SMALLHOLDERS

The migratory process in these regions is spread out and must operate through prior contact with the local people. Before settling either on their land or in a share-cropping arrangement, most migrants have worked either with locals or with former settlers who already have extensive experience and contacts with the locals. The level of interrelationship between spontaneous migrants and the indigenous people in the receiving area differs widely depending on the mode of installation.

When a young adolescent works at the home of a local, and is relatively isolated from any major migrant community, it is very likely that the assimilation by the receiving community will be complete. This situation has long existed as many young men were brought to construction projects or were sought directly by locals in Java to be used as laborers since the beginning of the century. Some of them remained in the area following the end of their contract and often married a local girl.

Local people often speak of the adoption of one or more Javanese boys (*anak angkat*) who live with them and work for them, are fed and taken care of, even kept until they are ready for marriage with ceremonial expenses being paid for by the local patron. In almost all the villages visited in OKU, Lahat and Musi Rawas, we were able to find at least one Javanese man over fifty years of age who had raised a family with a local girl and whose children were unable to speak Javanese.

Yet, with the constant growth of the migrant community in the study region, young men employed by locals are less and less isolated from members of their community of origin. No doubt long-term study of particular migrants would show that the proportion of intermarriages between locals and migrants decreases as the migrant population increases. Nevertheless, compared to the transmigration villages, mixed marriages are much more frequent. It should be noted that intermarriages between migrants of different origins (Javanese, Sundanese, Madurese, Balinese) also seems more frequent than with locals. This situation only reveals affinities and that, for the time being, the group from Inner Indonesia forms a social group which identifies itself as nonlocal.

When a migrant family arrives, it almost always settles on the periphery of an indigenous village. It will later be joined by all new arrivals, families and single people, often regardless of their Inner Indonesian origin, at least at the beginning. A neighborhood thus forms. When a hamlet settlement is opened far from the village, it often begins with a similar partitioning between locals and migrants. But later on, the hamlet acquires homogeneity with the departure of the locals who in any case have their main home in the village. This almost automatic spatial segregation between outsiders and locals corresponds to the social distance that the two communities retain.

In a general sense, however, the first settlers (before the community becomes large in size as on the Kotaway plateau), have frequent and essential relations with the locals, for seeking work and land, for setting up a business or handicrafts, for practicing the same religion, for taking care of administrative affairs and for the schooling of children. This rapidly leads to joint participation in leisure activities which do not depend on a specific culture (sports, preparation for national holidays, *arisan*). It is among these first settlers that one finds the most pioneers with knowledge of the local language and thus better able to actively participate in local economic networks.

If one compares this situation to that found in "*kolonisatie*" and Transmigration villages, local integration can be considered clearly superior and can therefore explain in part the more rapid economic results migrants have.

INTERACTION IN FOOD CROP SETTLEMENTS

Here it is necessary to distinguish between two types of settlement: those which are destined to form an autonomous village and those which are attached to a local village and will form a *dusun* on the village territory. Likewise, in both cases there are high concentrations of outsiders and de facto spatial segregation. As we have seen, the creation

of the *dusun* is authorized beyond the traditional boundaries of settlement and cultivation. Certain indigenous villages have placed the limit at two km from the village and the river, others have maintained a distance of seven km, and still others have reserved a sole bank of the river. In the two cases, it must be noted that the first recruitment of settlers is made, in the many examples studied, among migrants who have been in the region for at least five years, whether they be spontaneous migrants, offspring of the *"kolonisatie"* era or from Transmigration. The reasons articulated are that the success of the project can only be made with a core of people who intimately understand the environment's capacity. Later, once the pioneers, as we might call them, have founded and organized the settlement, recruitment can be made on a larger basis among newly arrived migrants and by direct recruitment in Java or Bali.

In the village type of settlement, the interrelations between locals and migrants are reduced to the minimum, meaning social interaction by the village chief or a few pioneers families with the local authorities and traders (dealing with problems such as the collection of production or the furnishing of basic supplies to the migrant communities). The school milieu is ethnically homogeneous and the interaction process is very slow. The situation is comparable to that found in Transmigration villages, though somewhat improved due to the action of the leaders who, in the beginning, have a better knowledge of the receiving area.

Often several local families (young couples) are found in these settlements who have come on their own accord, usually settling strategic locations (along the main lines of communication, at road crossings, or in or around the marketplaces) with an eye to setting up commercial activities. Although these isolated families retain their fundamental social links with their original social environment never too far away, they are or will be an essential factor for the second generation in the process of interpenetration of the two communities, a process that despite all their efforts remains very slow.

When a *dusun*, or local village neighborhood, is formed, the migrant community finds itself in the minority. Interrelations between the two communities are most frequent in the marketplace, when looking for work in agriculture or outside of agriculture, when searching for land and, especially, in the schools which bring together children from local villages. Usually a special relationship exists between the leader who negotiated the settlement with the head of the village and his council. Often the new neighborhood is formed around several pre-existing local families and the official leadership of the neighborhood (*kadus*) remains, at least at the beginning, in the hands of a local. These preliminary conditions tend to favor more frequent and essential interaction between the two groups [8].

■ Limits perceived on the willingness to absorb migrants

This distance, which from the start creates spatial segregation, must be understood as a sign that certain limits exist in the capacity to absorb spontaneous migrants. The decision to receive spontaneous migrants still depends entirely on the local population. Certain villages categorically refuse to let families from Inner Indonesia settle and make no attempt to use their manpower. Not only isolated villages here and there, but it seems entire regions, such as the area around the town Kayu Agung, have adopted such positions. Other villages, making full use of Javanese workers but remaining very vigilant and disinclined to sell their land (as in the case of kec. Pengandonan).

On the contrary, one can note that certain village chiefs determined to settle spontaneous settlers often pressure their constituents to sell unused land. In one of the villages visited, problems arose because a land sale was made by a family member without the presence of the family head responsible. This type of pressure also exists at the level of the provincial authorities who see the settling of migrants as a way of increasing the provincial development budget.

Other conditions are sometimes expressed. While on the whole religious tolerance is the rule, in the creation of two *dusun* the local people laid down conditions that only Moslem migrants could be authorized to settle, thus excluding Christians and Hindu Balinese. In another village, it was stipulated that no traditional indigenous house could be sold to the migrants; the village itself was deemed part of a cultural heritage that had to be preserved. The *sawah*, flooded rice fields, and orchards are also seen as part of this heritage. In a general sense, the less desirable land (from the point of view of soil fertility, accessibility and traditional value) is what is sold. This behavior shows that there is on the part of the indigenous people a realization of the danger that a massive influx of migrants can pose for their own identity.

In the current economic times, one reason the spontaneous migrants are tolerated is that they actually fill local needs, particularly by furnishing the manpower which is often lacking in agriculture and in towns. They occupy a niche left vacant, diversifying both production and activities.

In certain regions of South Sumatra, there is a convergence of interests between the indigenous and migrant strategies. Migrants who arrive in South Sumatra are still principally of the "pioneer" type, in opposition to a "follower" type who could flood the countryside, overburden the economy, and endanger the identity of receiving area populations. All the more so because the latter have had to face rural flight depriving them of their most dynamic elements.

For the time being, OKU's growing demographic pressure is being absorbed as capacity remains to take in migrants in the valleys of the mountain regions and in bordering regencies (notably Ogan Komering Ilir and Muara Enim). The regency of Lahat seems, however, to have reached a certain limit. It no longer offers attractive conditions to pioneer candidates: there is work available in the rice fields and in plantations but little land available to buy at prices affordable to migrants. They therefore go look elsewhere, especially in Musi Rawas, where population density remains low. Many migrants invited to work on the plantations situated on the north slope of Mount Nanti (*kec.* Pengandonan) are leaving that region as it offers little hope for access to landownership. They are going to the neighboring district (*kec.* Semendo) where sharecropping and land share arrangement are more attractive.

■ Laying down roots in migrant communities

The settling of migrants in their new environment depends in part on the strategic plans of each; either the migration is part of an individual effort to gain an agricultural homestead or it is a transitory experience hopefully lucrative enough to carry out another project outside of the receiving area.

As we have seen above (Book II, Chap. 2) "on the whole, migrants see their lifestyle as somewhat or even clearly better than it was in the sending area. However, many say they feel less "at home" in the new area, either because they do not yet have their own land, agricultural yields are insufficient, they feel isolated from their family and friends, or feel a sense of isolation because they are cut off from social activities and services. Therefore, they clearly state that they are staying there because economic conditions force them to". Among these people—and they account for a large percentage of the total—long-term settlement is not a foregone conclusion. An embryonic social environment will not be sufficient to sustain the family in need of moral support and solidarity if serious illness or death of the spouse or a child occurs. Consecutive poor harvests or the weight of debt can force them to continue on a migratory path that rarely leads back home (due to the shame failure breeds), but rather further on to more isolated areas or to the towns in the region.

Usually, once they possess sufficient land, with legal title, to enable satisfaction of household needs, migrants express a desire to settle there rather than move back to their place of origin. As villages and hamlets mature, and social life takes form, long-term settlement becomes more probable. These spontaneous migrants react like the first groups settled during the *"kolonisatie"* period (55 years ago) and like transmigrants since. Returns to the sending area become less and less common and investments are made exclusively in the receiving area.

Still, with the frequent sending of children to their place of origin to continue their education, one wonders if the parents will spend their old age in the community they have contributed to forming. In areas where legal title is not available, farmers generally plan to return to Java when and if their area is closed to settlement, or if they amass enough capital to make a living in the sending area. In this case, the degree to which migrants put down roots depends essentially on state policy pertaining to aid.

It would seem that the conditions for long-term settlement improve with the migrant community's growth and with the diversification of its activities. At the same time, one also notes that growth in migrant communities favors social reproduction of a kind increasingly similar to that of the sending-area society.

Under these conditions, can one speak of a new social milieu? Allowing for variation in specific economic conditions and keeping in mind the changing nature of each situation, it might well be better to speak of a juxtaposition of new social environments evolving in novel ways and maintaining between themselves a certain social distance.

Notes to chapter 2

(1) Data is drawn from regency administration figures. For a discussion of deforestation based on cartographic analysis, see Book III, Part II, Chapter 1.

(2) 1979 and 1988 data are from the provincial office of agriculture, complemented by a comparison with data from the following publications of BPS Jakarta: Agricultural Census (1983) and Agricultural survey (1985); Land area by utilization in Outer Java (1987).

(3) In the Lahat regency, the practice of planting ladang *for one or two seasons with food crops has practically disappeared. Besides the fact that rural population density is high, rice needs are met by the many small irrigated fields found locally.*

(4) Apparently, for many years the figures on total land area for the Lahat regency have been erroneous. Officially, the areas is noted as 4034 km² while in reality it is in excess of 6000 km², which would give a density of somewhat less than 100 inhabitants per km².

(5) Certain elder people mentioned the presence of Palembang traders of Arab origin.

(6) In the pasang-surut *region, the collection of agricultural production and the distribution of manufactured products is taken care of by those who have the means of transport (boats), most often people of Chinese origin. Preliminary studies with Bugis spontaneous settlers, some of whom are farmers and traders, seem to demonstrate the establishment of autonomous circuits to bypass the traditional local network. A credit system is set up by a Bugis (often the leader of a settlement) with the loan due at the harvest. This Bugis trader provides consumption goods (often purchases are grouped and made directly in Palembang) and he will buy the crops at a slightly higher price than the Palembang merchants and will be paid on the basis of past loans. There is thus a parallel marketing circuit that only links up with the regional economy in the final phase of transactions in Palembang.*

(7) Each Transmigration village brings together groups of families of different ethnic origin (Javanese, Madurese, Sundanese and Balinese, in the case of South Sumatra). The place of origin of members of the same ethnic group is also quite often different.

(8) The problems of share of power have not been touched on as such though they would be a extremely valuable area of research.

SECOND PART

Regional development and the environment

Alain G. Beaudou

Frédéric Durand

Marc Pain

The retreat of forest areas is without doubt one of the major, or at least one of the most visible consequences of the agricultural colonisation of the southern part of Sumatra. Whether it be from direct field observations or from the comparison of soil utilisation maps of different periods, one can but notice the extent of clearing carried out since the turn of the century. Southern Sumatra is leading a transformation which is tending to become generalised throughout the whole region.

Despite the significant risks that can result from this and which in no case should be overlooked, the forest retreat seems irreversible for the present, not only because the demographic pressure appears to make it difficult to control but also because it is impossible not to subscribe to the valid concept of converting further land to agricultural use in order to guarantee self-sufficiency in food for a country where the constraints on arable regions due to over-population are patently obvious and long-established.

Without wishing to revive a controversial debate on such a sensitive subject, three points deserve to be underlined:

- Direct settlement or heavy immigration into any lightly-populated and lightly-cultivated environment cannot be accomplished without risks, as much in terms of the indigenous societies as the natural environment of the receiving regions.

- The establishment of agricultural settlements, a government policy essential to relieving congestion in the over-populated areas of Java and Bali, makes deforestation necessary on the other islands of the Indonesian Archipelago. In a system that is still basically rural, a policy of agricultural development in unpopulated or lightly populated forest areas seems to be the best way of guaranteeing the vast majority of migrants a subsistence living, or access to a satisfactory means of income. However, in the absence of strict controls, these advances could be jeopardised in the long term by the effects of systematic clearing.

- The allocation of responsibility for deforestation cannot be satisfied by the pillorying scapegoats. In general, spontaneous migrants are blamed for the any damage observed and made responsible for undermining the environment. Government officials, the press, certain documents, and public opinion at large, have no trouble in attributing to these migrants what should be a shared responsibility for a broad and complex phenomenon.

Confronted with these facts and assertions, it becomes essential to ascertain the real extent of the transformation undergone by the receiving regions, to evaluate the possible environmental reactions to the production systems that have been used, and to consider what solutions would allow an economically sufficient immigration while limiting as far as possible the environmental damage and managing for the best the total natural resources.

It is in this manner that, having confirmed a widespread decline in forest area and having attempted to determine the ecological and economic risks at a regional level, an inventory of the living environment of the population would be drawn up. With this aim in view, the analysis should be followed by a study of each landscape as a function of its level of settlement, morpho-pedological support and production systems, in summary, to attempt a risk evaluation weighted by the notion of scale, the demographic load and a detailed examination of the soils under cultivation.

Observations carried out should be considered in the light of the limitations imposed by development and legacies of the past, whether they be natural, historic or of an administrative nature. A province with a long history of settlement is not a neutral space. Any planning for environmental management and regional control can not overlook these constraints.

Chapter 1

On the regional level, the risk of a widespread forest retreat

Frédéric Durand

The long-running debate between those advocating tropical forest clearing for development purposes and those sensitive to the environmental risks in general still leads to emotional declarations and peremptory assertions.

It is interesting to note to what extent the study of the causes and effects of deforestation remains unsubstantiated and lacking in scientific method.

The phenomenon is undoubtedly complex. The forest cover can alter without really receding. The responsibility for deforestation is often divided among those involved in an unclear manner. For instance, should forestry companies be held responsible for agricultural land clearing made possible by the use of their access roads ? Moreover, the consequences are the outcome of several parameters which are often inextricably linked. For example, during a period of drought, how can the respective shares of responsibility be attributed to local clearing or types of agricultures which affect evapotranspiration on the one hand, and to year-to-year climatic variations on the other hand ?

The receding of the forest, which at present seems necessary for economic reasons, can nevertheless turn out to be unprofitable or even damaging if carried out in an uncontrolled manner. It is therefore mandatory that this phenomenon and its possible consequences be understood and evaluated so as to permit better resource management and, possibly in the future, more rational planning.

1 . A significant reduction in primary forest area

■ A long history of forest retreat

Southern Sumatra is an area where human activity began modifying the natural environment a long time ago as it was the sight of the old kingdom of Sriwijaya [1].

In 1860, the British naturalist Wallace already observed a withdrawal of the primary forest when, during a visit to the village of Lorok, up-stream from Palembang, he noticed that almost all of the land in the area was under cultivation and that forest remained only on flooded ground that was unsuitable for agriculture [2]. On questioning the inhabitants, he was told that the nearest virgin forest was 40 or 50 kilometres away.

In 1902, the authorities were already complaining about damage in the Palembang area (later to become Sumatera Selatan province) caused by itinerant farming and by felling methods detrimental to the forest [3].

Chapter translated from French by F. Vaissières & K. Luckcuck

At the time, the Lampung districts, although closer to Java, contained a forest area greater than that of the Palembang Residence, which had been, until the beginning of the 19th century, the seat of an important Sultanate. In 1905, the population density in Lampung was less than 5/km² , while in 1930, despite massive migration, the density was still less than that of the neighbouring residence.

The forest retreat map for the period 1930-1980 (separate sheet No. 1) plainly shows that clearing was more widespread in what is now the province of Sumatera Selatan than in the far South of the island with, however, significant differences with respect to topography and types of forest. In the period 1920-1930, most of the flooded forests on the east coast as well as the high-altitude vegetation of the Barisan Range were saved, while the valleys, the central plains and the western coast were opened up for farming and timber production.

The conditions in the provinces began to reverse from the thirties with the beginning of large-scale transmigration programmes, such as the Metro programme in Lampung [4], and the extension of the railway network. From this period, the province became a centre of development attracting population not only from Java but also from the Palembang Residence [5].

The first natural reserve in Sumatra was created in Bengkulu in 1915, a sign that the forest area was already shrinking. In that particular case, the main objective was to protect the growing areas of the world's largest flower, *Rafflesia arnoldi*.

But from 1935, the need was felt to create forest reserves in order to preserve the botanical heritage and to protect the catchment areas. Three new reserves were thus established: Way-Kambas (Lampung), Sumatera-Selatan I (Palembang Residence), and Berbak (Jambi)[6].

According to a Dutch estimate made in 1938 at the end of the colonial period [7], the primary forest of Lampung still covered between 60% and 70% of the area of the districts, whereas those of Sumatera Selatan and Bengkulu would then have only accounted for between 40% and 50% of land use [8] .

If, in these last two cases, the estimates appear somewhat pessimistic, they nevertheless testify to the reality of a phenomenon which had its beginnings 50 years earlier.

■ Deforestation speeds up after independence

From the 1950s, the new Republic of Indonesia resumed its population displacement programme, southern Sumatra being the preferred migrant destination. Of the population transferred between 1951 and 1974, 69% were sent to this region, in particular to the provinces of Lampung (34.2%) and Sumatera Selatan (33.8%) [9].

By the end of the 1960s, with the exception of the forests of Java, those of Lampung were amongst the most dilapidated in Indonesia.

A survey [10] of about 16,000 km², almost half of the province, carried out using JANTOP maps, showed only 30.5% of primary forest [11]. The phenomenon then only became more widespread, as evidenced by a further reduction in primary forest to 15.8% in the early 1980s, the majority of primary forest clearing having been carried out in areas of dense tropical forest (Table 26).

Table 26. EVOLUTION OF LAND USE IN CENTRAL LAMPUNG PROVINCE 1969 - 1980/1985
EVOLUTION DES SURFACES D'UTILISATION DU SOL DANS LE CENTRE DE LA PROVINCE DE LAMPUNG

	1969	1980/85
Marshes	2.4%	2.7%
Marshy forests	4.6%	4.5%
Dense tropical forest	25.9%	11.3%
Secondary forest	16.4%	8.5%
Secondary and derived types mosaic*	6.5%	15.9%
Fallow with *Imperata cylindrica*	9.2%	2.8%
Dry farming (*ladang*)	26.0%	33.8%
Irrigated rice fields (*sawah*)	2.0%	3.9%
Small holdings	5.7%	9.4%
Commercial estates	1.3%	7.2%

Source: From Pain M. "Transmigration et migrations spontanées, Propinsi Lampung", 1989, p.349
* New growth, fallow with *Imperata cylindrica* (*alang alang*), sometimes combined with farming.

A section running across the three southern provinces of Sumatra, from Lake Ranau to the plains located downstream of Baturaja, was used as the framework of a second comparative study. An area covering approximately 9,250 km², as defined by three 1986 SPOT [12] images, was compared for three different periods: during the 1930s using Dutch maps, from 1969 to 1976 [13], and in 1986. The evolution, represented by the synoptic diagram in the figur and maps Nos.3 and 4 of separate sheet No.5, reveal a dramatic change in the natural environment.

Before the Second World War, forest areas still dominated and represented slightly less than 75% of land use. However, a relatively clear difference is apparent, as previously mentioned, between Lampung [14] in the south and the existing province of Sumatera Selatan in the northern part of the map.

Forest still completely covers the first of these provinces, but for a thin strip on the Indian Ocean coast on both sides of the built-up area of Krui, the volcanic soils to the east of Lake Ranau, and the Liwa-Kenali basin. On the other hand, the river valleys of the Ogan, Komering, Lengkayap and Saka as well as the hills around Baturaja, Muaradua, Martapura and Pangandonan, are noticeably cleared, even though primary forest remains an essential element of the landscape.

From the end of the 1960s, a distinct reduction in the original area of forest can be noted. In the quadrilateral studied, it already represented less than 50% of the total surface area. This retreat was primarily a result of clearing, already carried out during the 1930s, in the large valleys, along the main road and rail links, on the west coast, and around Lake Ranau. Although the land area developed was significantly smaller, overall it was confined to the same localities.

These changes, located outside the zones developed directly by the Ministry of Transmigration, were the product not only of the local inhabitants but also, from this time on, of migrants coming from the first official programmes. This is particularly so for the Javanese who came to settle at the foot of the Gunung Raya volcano after the war. They built terraced paddy-fields, their traditional technique but little used in Sumatra (photo 40), on the banks of Lake Ranau. By 1971, spontaneous migrants accounted for one third of total Javanese arrivals in Lampung [15].

Except for lower-slope rice paddy-fields or river floor terraces, as well as root vegetable cultivation in non-irrigated fields, small-scale family tenant farming remained the basic system of production. This consisted mainly of coffee and fruit production on the hills and mountain slopes, and rubber, usually in conjunction with secondary forest, in the plain regions. With tenant farming, the forest cover does not always completely disappear, but often ends up as shrubbery having the appearance of a variably maintained agro-forests.

In 1986, in parallel with considerable small holding development, some new factors appeared: large-scale private forestry concessions and commercial plantations, and new transmigration programmes based on the PIR [16] system. Under their influence, the landscapes of southern Sumatra experienced substantial changes (Table 27).

Table 27. THE PERCENTAGE[1] OF THE DIFFERENT TYPES OF LAND USE IN THE AREA STUDIED
LES DIFFERENTS TYPES D'UTILISATION DU SOL (EN %) DANS LA REGION ETUDIEE

	1969/76	1986
Dense evergreen rain forest	48.4	16.5
Flooded or marshy forest	0.3	0.5
Secondary forest	36.7	42.4
Secondary and derived types mosaic[2]	1.0	7.8
Fallow with *Imperata cylindrica*	3.2	2.4
Dry farming (*ladang*)	0.7	2.8
Irrigated rice fields (*sawah*)	0.9	0.7
Small holdings	8.8	24.9
Commercial estates	-	2.0
Total	100.0	100.0

[1] The percentage for each group was determined by counting, after copying the two land use maps, 1969/76 and 1986, onto graph paper. The counting was carried out by Jalizar. Area covered by the three SPOT images 278/358,278/359 and 278/360

[2] Secondary and derived types mosaic : new growth, fallow with *Imperata cylindrica* (*alang alang*).

1920 - 1930

from notation on the original map : "Only jungle is confirmed."
repris de la rubrique : " Only jungle is confirmed"

1969 - 1976

F D - M P / Jalizar 1990

1986

sources - *sources*

- forest in 1920 - 1930 - *forêts en 1920 - 1930* :
  Sumatra 1/250 000 HIND 1042, 1945
- topographic maps - *cartes topographiques* JANTOP, 1969 - 1976
  SEAMEO BIOTROP
- Y. Laumonier *et al.* International Map of the Vegetation,
  Southern Sumatra - *Carte internationale du tapis végétal*
  Sumatra Sud - 1983
- SPOT satellite imagery - *images satellite SPOT* 1986

primary forest existing at different periods
forêt primaire aux différentes époques

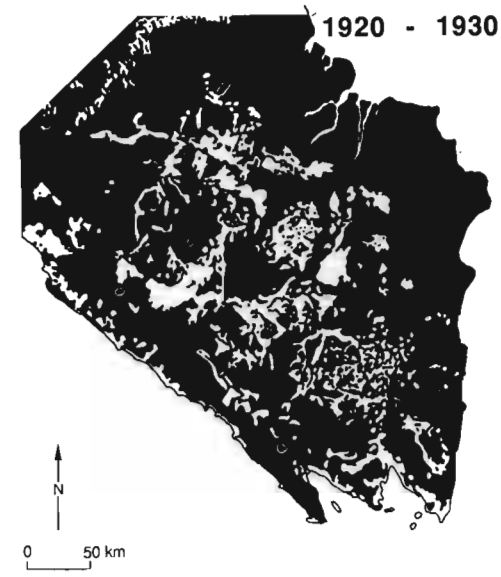


Fig. 35
EVOLUTION OF THE FOREST COVER FROM 1920 - 1930 to 1986
EVOLUTION DU COUVERT FORESTIER DE 1920 - 1930 à 1986

Along the strip studied, primary forest covered a mere 17% of the land by the end of the 1980s, corresponding to a 2/3 loss in area in less than 20 years. The dense residual forests are found for the most part at high altitude or in flooded areas and are more difficult to improve. The majority of the plains forests have been logged over or converted to agriculture, and it may be considered that a theoretical limit has been reached as most experts are in agreement in recognising that, in tropical zones, a forest cover of 15% to 20% represents a strict minimum if a reasonable ecological balance is to be maintained.

As for secondary forest, its growth is slow. A part of its area has been lost to lower forest forms or to agriculture, but it has also spread to regions formerly covered with dense forest. It should be noted, however, that forests of a secondary type are often found in zones that have been heavily cleared and then usually converted to small plantations. Furthermore, a part of what now appears as secondary forest in satellite images and aerial photographs is, in reality, extensive rubber cultivation.

The other run-down forms of forest [17] have experienced some expansion, and occupy more than 10% of the study zone. The establishment of agricultural estate in some of these areas has, however, limited their growth.

Although, of the land under cultivation, that under irrigated rice-paddies (*sawah*) remained stable and that under dry farming (*ladang*) increased slightly, it was the appearance of the agro-industrial estates, in the process of being set up in 1986, that was undoubtedly one of the most significant changes and perhaps the forerunner of future upheavals, as Sumatera Selatan had set aside some 870,000 hectares, 8.5% of the province, for them. It should however be noted that these agro-industrial projects were sometimes imaginary and in some cases amounted to a mere "freezing" of the land for speculative suppression purposes.

The strong growth of small scale cultivation, which accounted for only 8.8% of the region at the beginning of the 1970s but more than a quarter in 1986, should also be underlined, particularly if that part of the secondary forest often combined with rubber plantations, as already noted, is added to it.

The significance of deforestation, as shown by these two examples, can equally be demonstrated by comparing separate sheets Nos. 2 and 3. A quantitative evaluation of the three provinces combined is, however, tricky, due to the disparate nature of the data and criteria. In addition, data often only exist for restricted areas and are sometimes incoherent. Nevertheless, two exhaustive examples are given in Table 28.

The 1988 RePPProT maps of the Ministry of Transmigration, although more recent and drawn on a larger scale, 1:250,000 compared to 1:1,000,000, than the 1983 Laumonier map, indicate a significantly greater area of forest. Several factors could, however, lead to the belief that they are not so close to the true situation.

In the first place, as the section on methodology indicates, these maps have often been drawn from satellite pictures with little field verification, with the result that extensive rubber plantations that already existed on the 1969 JANTOP maps, still appear as primary forest in 1988. In addition, dual terminology is often employed on these maps, for example, "primary and secondary forest" or "un-differentiated forest comprising mangroves, nipa palms and coconut trees", making reliable counting virtually impossible. Finally, the estimate derived from the Laumonier map corresponds more closely to the assessments made in the two in-depth studies presented previously.

As clearing and development have continued without abatement, the proportion of primary forest can only have reduced. The implied risks, even if the sufficiently detailed studies needed to determine them precisely are not always available, cannot be taken lightly as their effects

Table 28. THE PERCENTAGE OF PRIMARY FOREST REMAINING IN SOUTHERN SUMATRA
PROPORTION DE FORET PRIMAIRE RESTANTE DANS LE SUD DE SUMATRA

Provinces	Laumonier, 1983 [1]	RePPProT, 1988 [2]
Lampung	11.7	18.9
Sumatera Selatan	17.8	34.7
Bengkulu	56.6	53.4
Southern Sumatra	21.7	34.0

[1] Counting was carried out after copying the plant cover map onto graph paper.
[2] Source: RePPProT, "Review of phase 1 results, Sumatra", vol 2, 1988.

have already started to be felt in Sumatra by way of erosion phenomena, a change in the rate of flow of water courses, fires and perhaps, although it may be difficult to demonstrate, localised droughts.

2. Risks for the environment and the local economy

The forest heritage, especially in the inter-tropical zone, is subject to opposing interests which hinder its good management.

The forest is simultaneously a land stock to be cleared, a source of raw materials, a protection for the land, a factor in the hydrological balance of the region and a genetic "bank" for the future. In the absence of rational management, the development of a single element usually jeopardizes one, or even all, of the other elements in the long term.

■ Threats that are hard to quantify ecologically

THE RISKS OF SOIL EROSION

The risks of erosion vary as a function of numerous factors such as soil, topography, the alteration to or clearing of the forest and, on conversion to agriculture, the crop types chosen. As soils and topography are studied in detail in the next chapter, this section focuses its attention on the effects brought about by the different groups involved.

From the point of view of the soils, the forest performs a multiplicity of functions. It protects them from rain and wind, guarantees the regeneration of the fertile humic layer and controls the concentration of chemical constituents by means of a complex process, as each plant family preferentially regulates the presence of certain elements such as phosphorous for the Dipterocarpaceae, potassium for the Lauraceae or nitrogen for the Leguminosae[18].

Three important modifying elements in this equilibrium should be noted:

- The forestry companies remove, in principle, only 8% of the trees, which should limit the risks. In reality, however, destruction exceeds 50% of the plant cover, while access roads facilitate the incursion of migrants and undergo serious erosion and heavy run-off which can rise to 90 times that in a primary forest, as shown in Table 29.

- The highly capitalised major agricultural projects, which are mainly made up of official transmigration programmes and agro-industrial farming. In this case, the use of heavy equipment such as the bulldozer creates serious damage comparable to that caused by the forest roads. The available financial resources can, however, be used to reduce these problems through the carrying out erosion control works or the supply of fertilizer.

- The spontaneous land-clearers, native inhabitants and above all migrants, are those which seem to generate the most problems or, in any case, are those which are most suspected as, in order to locate good vacant land, they are often led to clear productive or protected forests, mostly on the hilly areas and slopes.

In the absence of an anti-erosion scheme, the degree of deterioration of the soil becomes a function of the crop types selected. In principal, perennial plants such as coffee and rubber trees offer greater protection than seasonal crops. But even shrubby plants such as the coffee tree are not safe.

Table 29. EROSION AND RUN-OFF ON THE FOREST ACESS ROADS OF INDONESIA.
L'EROSION ET LE RUISSELLEMENT SUR LES ROUTES FORESTIERES D'INDONESIE

	Erosion tonnes/ha/month	Run-off m^3/ha/month
recent road, in use	12.90	189.14
recent road, not in use	10.80	148.56
road abandoned 2 years ago	6.15	42.70
road abandoned 3 years ago	3.20	19.22
primary forest without roads	0.00	2.09

Source: Rusland and Manan (1980), in Hamilton and King "Tropical forested watersheds, hydrologic and soil response to major uses or conversions", Westview Replica Editions, Boulder (Colorado), 1983, XI-168 p.

In the Musi basin, a team from BCEOM [19] noted that in certain places, before the coffee had been able to form a contiguous canopy, there could be a soil loss up to 5 cm in thickness, equivalent to 650 tonnes per hectare. Analyses carried out in 1987 showed that the Komering and Lematang Rivers were carrying 0.71 and 0.57 g/l of silt repectively, roughly equivalent to an erosion of 1 to 1,4 tonnes/km^2 over the catchment area or, in other words, a soil loss of 1 mm/year (Musi report, pp. 3.14 and 3.15).

Similarly, a study based on the "C factor" [20] carried out in the Upper Komering region [21], points out that the risk of erosion can be several orders of magnitude higher beneath perennials than beneath primary forest (Table 30).

This data should, once again, to be used with care, as a study carried out by BCEOM [22] based on the same factor, gave noticeably different results, the erosion risk for coffee and rubber trees being, respectively, 57 and 100 times higher than that for primary forest.

Consecutive violent flooding, accompanied by heavy rain and exacerbated by massive runoff, has been observed for many years in the whole of southern Sumatra, from Lampung to Jambi. Landslides, that cause the loss of hundreds of hectares and even carry roads away, constitute a severe risk affecting just as much the environment as the local economy, and wipe out in one go the efforts of the migrants, who then have to relocate and carry out new clearing.

There is no shortage of examples: the Wonosobo *kecamatan* in 1986, the Lake Ranau region in 1988, and the Batanghari valley in 1991. Nevertheless, at the regional level, erosion has not yet reached catastrophic proportions.

The locations vary widely from one region to another, mainly as a function of the soils (see Second part, Chapter 2) and the density of the rural population which, for the province of Sumatera Selatan alone, varied from about 10/km^2 to more than 200/km^2 in 1988 depending on the *kecamatan*.

There does not always appear to be a logical correlation between population density and land deterioration. According to official figures [23], the four *kabupaten* actually the most affected by the problems of erosion are Lahat, OKU, Muara Enim and Musi Rawas, whereas, although the first three are the three most heavily populated, the fourth, on the contrary, has the lowest average population density in the province. This could equally be caused, however, by a deficiency in the statistics.

In 1984, at the end of the 3rd five-year plan, the Forest Ministry had already determined the land area in a critical situation to be : 305,200 ha for Lampung (9.1% of the province), 594,000 for Sumatera Selatan (5.8%) and 561,900 for Bengkulu (26.9%).

The situation has since appeared to improve slightly, with the area in Sumatera Selatan decreasing from the 1984/85 level of 594,000 ha to 559,422 ha in 1988/89. This is, however, the result of a mathematical trick, as the data do not take into account the possibility of further land dilapidation, and the Forest Ministry only subtracts re-afforested and restored areas from the original figure.

Table 30. EROSION RISKS AS A FONCTION OF THE "C FACTOR" IN THE UPPER KOMERING REGION
LES RISQUES D'EROSION EN FONCTION DU "FACTEUR C" DANS LA REGION DE LA HAUTE KOMERING

	C factor	erosion risk multiplier
Dense forest	0.002	1
Secondary forest > 10 years	0.004	2
Secondary forest 1-9 years	0.020	10
Savannah	0.070	35
Sawah	0.010	5
Ladang	0.300	150
Rubber plantation	0.020	10
Coffee plantation < 4 years	0.380	190
Coffee plantation 5-10 years	0.140	70
Coffee plantation > 20 years	0.030	15

Source : Kooiman, 1987.

THE STABILITY OF THE CATCHMENT AREAS

Forest is known for its "sponge effect" which promotes the hydrological stability of the region. Although this effect is difficult to measure with precision, numerous studies, using pairs of catchment areas that have undergone different development, have enabled it to be demonstrated that the annual discharge in the water courses increases whenever forest cover is completely or partially removed [24].

Clearing does reduce evapotranspiration and seepage capacity while promoting runoff which, on bare soil, can be up to 75 times more significant than in primary forest (Table 29).

These phenomena undermine government efforts to develop irrigation in Southern Sumatra. Due to a lack of water or silting, dams and reservoirs may become unusable for at least part of the year. The same is true for the river transport network.

For these reasons, the Governor of Lampung province decided to displace 5,000 families, beginning in 1974, who were living in the forest reserve of the fertile basalt plateau of Sukadana, even although this action would not have the desired effect [25].

In 1985, as 22,000 families were living there the authorities felt compelled to despatch the army to destroy the villages so as to ensure that half of the population could be displaced [26]. Since then, the situation has remained critical as, even if a portion of the population determines to give up its lands for other usually poorer lands, new migrants are always found to replace them despite the threats of the police.

The head of the Forestry Department of Lampung, ir A.M.S. Panjaitan, confirmed recently [27], that for several years now as a result of deforestation, "irrigation problems which upset farm working are encountered during the dry season, while conversely, during the wet season, floods, erosion and landslides are encountered".

In 1990, nearly one million hectares of catchment area in southern Sumatra were declared critical zones requiring urgent restoration [28]. The zones in question were the river basins of the Way Seputih and Way Sekampung (396,300 ha) in Lampung, the Musi (419,700 ha) in Sumatera Selatan and the Ketahun (155,500 ha) in Bengkulu.

A POSSIBLE CHANGE IN THE CLIMATE

Of all the risks, that of climatic change at the regional and global levels is one of the most controversial. It is true that there are no absolute answers to these questions, even though it is undeniable that the tropical forest plays a consequential role as a rainfall regulator through evapotranspiration, as a temperature controller, or as a storage medium for the carbon needed to fight against the greenhouse effect [29].

At present, it is difficult to state, without risk of error, what consequences will flow from a considerable reduction in tropical forest cover. This lack of certainty should not, however, overshadow what is known. The example of the Lesser Sunda Islands, formerly heavily wooded but of which some, such as Sumba Island, are in the process of becoming desert following a reduction in their forest cover to less than 10%, shows that the danger is far from absent, even if the situation in Sumatra is somewhat different.

In terms of the local climate, studies carried out in the Indonesian portion of the neighbouring island of Borneo [30] demonstrate that the variation in air temperature and humidity between a primary or secondary forest and perennial or seasonal crops, can be substantial. For example, the midday air temperature, which rarely exceeds 23°C in virgin forest, can go as high as 28°C in evergreen plantations and 36°C in fields of annual crops. The broad range of these parameters is also plainly evident from Table 31.

Table 31. MAXIMUM DAILY VARIATION IN AIR TEMPERATURE AND HUMIDITY
VARIATION JOURNALIERE MAXIMALE DE LA TEMPERATURE ET DE L'HUMIDITE

	variation in temperature	variation in humidity
Primary forest	31%	12%
Secondary forest	36%	19%
Perennial crops	59%	35%
Seasonal crops	86%	71%

Source : Kuswata Kartawinata, 1984.

Even if the forest does not directly generate any significant climatic changes, it certainly does allow the effects of year-to-year variations to be reduced. It can, for example, limit the consequences of periodical drought, such as occurred in Indonesia in 1981, 1982 and 1987, and which was especially dramatic from August to October 1991, as it was not possible to irrigate more than 4 million hectares of arable land. Numerous fires broke out, devastating forests and crops, and disrupting naval and air traffic to such an extent that planes could not land at Palembang airport [31].

DEPLETION OF THE FLORA AND FAUNA

A further consequence of deforestation, with effects that are sometimes just as difficult to determine, is the depletion of the flora. The Malay region of the world is, together with the Amazon basin, one of the earth's richest areas, with more than half of the planet's botanical families spread over 25-30,000 species. At the current time, only several hundred species are used or preserved while a great number, notably in southern Sumatra, are in the process of disappearing without ever having been classified [32].

A study, carried out by the Direktorat Bina Program Kehutanan [33] on the ligneous species alone, listed 594 types in Sumatera Selatan province from 1968 to 1982, of which only 369 had a botanical name and only 81 were marketed. In Lampung province during the same period, 515 tree species were classified, of which 244 were unknown and only 73 marketed [34].

The reduction in tree varieties, a result of selecting only those species that can be used by the timber industry, has also accelerated in recent years due to the large scale planting of fast-growing tree varieties such as *Eucalyptus*, *Acacia* or conifers. This practice presents several serious dangers.

In the first place, single-crop cultivation, or that with little variety, is usually more affected by disease and pests.

In addition, the likelihood of improving the species is jeopardised. If the classic example of rice is examined, more than 25 wild varieties have been discovered in the Indonesian Archipelago, some of which should enable agricultural productivity to be improved through genetic engineering. In certain situations, it is feasible to envision the establishment of seed banks, but it is still imperative that there be methodical inventories and that the existing ecosystems not be destroyed before they can be studied. These problems are exacerbated by the fact that most primary forest species, including those of the *Dipterocarpaceae* family, have seeds which do not survive for more than a few weeks. At least 8 varieties of this family, which provides the majority of Indonesian timber, will not grow in Sumatra at an altitude of more than 200 m [35]. These varieties are found in exactly those plain forests which are the first to be cleared. While the disappearance of the flora is also, in the long term, depriving medical research of a potential storehouse of products, studies have demonstrated the importance of such plant-based medicinal substances in the pharmacopoeia of numerous countries, the USA for example, where they account for 40% of the total [36]. For the moment, the only member of the plant kingdom that is protected in Southern Sumatra is the *Rafflesia*, the world's largest flower.

The fauna of the archipelago offers the same benefits as the flora, although its level of endemism is slightly lower [37]. In Sumatera Selatan province alone, only 64 species are registered on the list of protected animals and are assured of escaping extinction as their natural habitat contracts. Among the large animals still found in the vestigial forests of southern Sumatra are detailed, one type of tapir *(Tapirus indicus)*, the Sumatran rhinoceros *(Rhinoceros sumatrensis)*, and one species of elephant *(Elephas maximus)*. For the last of these, a breeding centre project costing 148 million rupees has just been set up on 200 ha at Bukit Serelo in the *kabupaten* of Lahat [38]. As its habitat shrinks, this animal is forced to forage in the neighbouring fields. Every so often, in the area of the Sugihan River (*kabupaten* Musi Banyuasin), a herd of more than 230 elephants causes serious damage and, with the present advance of clearing, it is hard to maintain the 200 ha required for each creature.

Primary forest dynamics are extremely complex phenomena that man is still far from understanding and mastering. Numerous animal and plant varieties such as the epiphytes, the *Nephentes* or certain species of ants and spiders exist in close symbiosis, so that the extinction of a single one of them can bring about the disappearance of many others.

The savage loss, in less than a century, of complete tracts of forest and, as a result, a broad spectrum of plant and animal life, is depriving mankind of biological development models as well as a substantial genetic and biochemical stock. Unquestionably, in today's world, it is not realistic to wish to maintain the whole of Indonesia's forests in their natural state, but it is at the least imperative to preserve this wealth in the national parks and reserves. Now these are subject to inadequate supervision, often evidenced by "no dialogue", even though the forest has already been cut down. The Gunung Raya reserve (Fig. 36) provides a distressing illustration of the level of safeguards, with more than 4/5 of the climax forest vanishing in 1986. The Way Kambas reserve in Lampung province, nevertheless the last refuge of the flora and fauna of the

Fig. 36 THE GUNUNG RAYA RESERVE
LA RESERVE DE GUNUNG RAYA

Primary forest remaining according to SPOT, 1986, n° 278/359, 278/360 at 1:500000 (original scale : 1:250 000) - *Forêts primaires restantes d'après SPOT, 1986, n° 278/359, 278/360 au 1:500 000 (échelle d'origine : 1:250 000)*

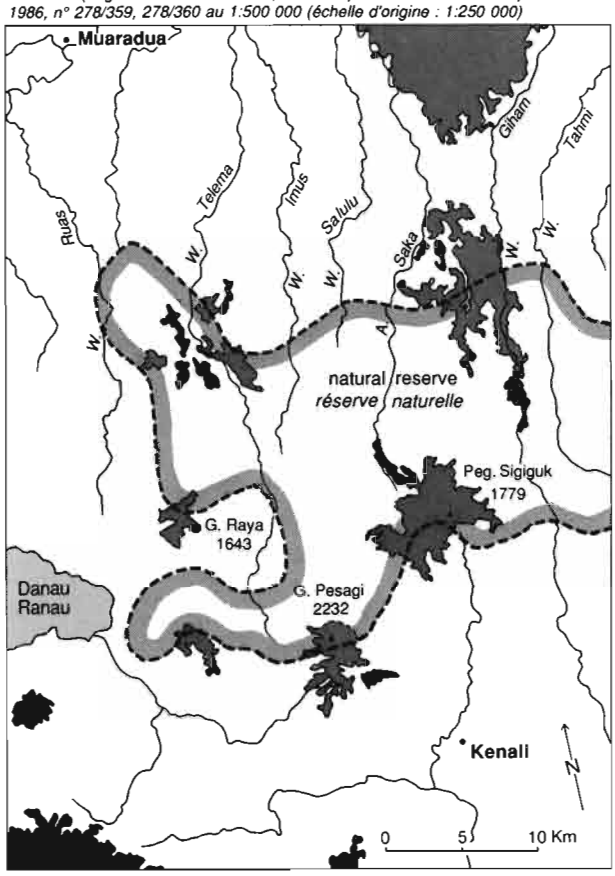


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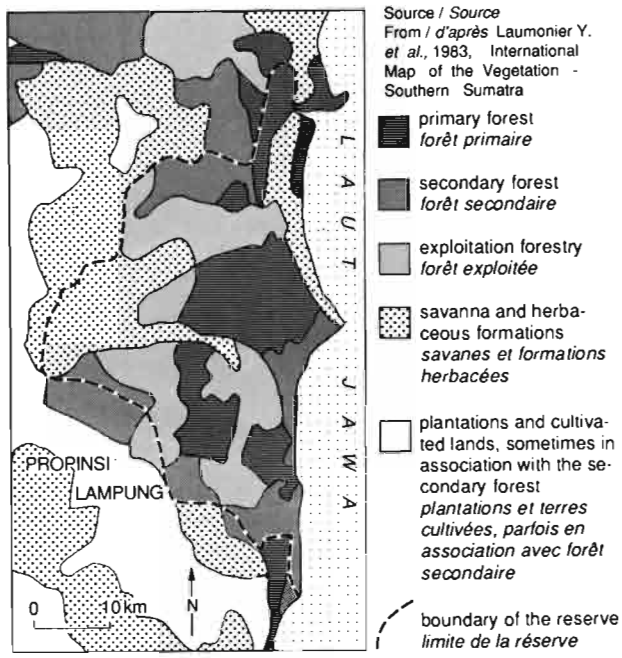
Fig.37 THE RESERVE OF WAY KAMBAS AT THE BEGINNING OF 1980'S - *LA RESERVE DE WAY KAMBAS AU DEBUT DES ANNEES 1980*



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peat forests of southern Sumatra, had already met with a similar fate at the beginning of the 1980s (Fig. 37).

■ The regional economy under threat

FOREST DEVELOPMENT IN JEOPARDY

Besides the loss of a latent genetic treasure, the ecological problems that have just been cited can have more or less direct repercussions on the national economy of Indonesia or the local economy, and above all on the timber industry which holds a prominent position in the balance of trade. At the end of the 1980s, as a result of a prohibition on the export of rough timber from 1985, Indonesia became the world's leading producer of tropical plywood, its third most important export item behind petroleum and natural gas.

But, while 20 years ago, Indonesia's forest resources were second only to those of Brazil, an FAO report dated January 1991 points out that the country's production capacity could be below its needs during the next 5-year plan (1994/99).

The south of Sumatra is one of the most affected zones. In 1987, the Atlanta report [39] already revealed that the timber supply resources of Lampung and Sumatera Selatan were more than 40% below the combined demand of the sawmills and plywood factories, without taking into account that required for paper pulp, chipboard, or industrial and domestic fuel. For the moment, Bengkulu is the only province of the region that still has adequate reserves (Table 33).

Industrial capacity, a casualty of inadequate statistics which assess timber supply at 3 times its true value [40], continue paradoxically to increase, adding to costs and making it necessary for factories to import timber from other regions.

These problems, directly linked to the decrease in productive forest area, are beginning to be acknowledged by the authorities. In 1991, provincial forest services suggested that the deterioration rate for productive forest was 80% in the province of Lampung [41] and 40% in Sumatera Selatan [42].

As a rule, the blame for this is placed mainly on the "shifting" farmers. At least three other causes must also be kept in mind : failure of the timber companies to respect the legislation, illegal exploitation of the forest, and poor raw material management.

An official study carried out in 1989/90 [43] on a group of 527 Indonesian forestry concessions indicated that only

Table 33. ANNUAL TIMBER SUPPLY AND DEMAND IN SOUTHERN SUMATRA (m^3)
POTENTIEL ET BESOINS EN BOIS DANS LE SUD DE SUMATRA (en m^3/an)

	supply	demand*
Lampung	189,000	388,000
Sumatera Selatan	1,551,000	2,557,000
Bengkulu	460,000	121,000
Total	2,200,000	3,066,000

Source: Atlanta report, 1987.

* Demand for sawmilling and plywood manufacture only.

22 of them complied fully with the regulations, 56% violated them openly, while 40% only implemented them to a degree.

During 1990, foresters in Sumatera Selatan province seized more than 50,000 m^3 of illegally cut timber with a value in excess of 5 million dollars. This gives some idea of the magnitude of the traffic in which certain companies are accused of being involved.

Considerable waste is produced by the less than optimal felling techniques used by the timber industry. On average, more than one third of the usable timber felled is discarded in the concessions as a result of poor handling [44], while industrial discharge in the form of sawdust or debris on the river Musi alone amounts to some 1.3 million m^3 per year. It was necessary to wait until 1991 before a company contemplated turning this material to profit by using it in the manufacture of chipboard [45]. Moreover, foresters are just starting to become interested in certain timbers, such as those of the rubber and coconut trees, which up until now were routinely burned when the plantation yield dropped too low. In the *kabupaten* of Lampung Selatan, a project contemplating the use of old rubber tree trunks should output more than 200,000 m^3 per annum, thus possibly doubling the province's capacity without disturbing new primary forests [46].

GROWING PRESSURE ON THE PLANTERS

According to its constitution, the Indonesian nation is the owner of all land, sea and natural resources in the Archipelago but most of the forest remained the property of local communities until 1957, when they were placed under the management of province administration. In 1967, when the law of the basic rules of forestry (U.U. No. 5, 1967) was enacted, the management was transfered to central goverment, and three years later, the traditional rights over forests were "frozen" (*dibekukan*) in the name of the general interest. To the extent that they do not conflict with its projects the government nevertheless recognises the traditional land rights of the farmers and, if requested, can grant an ownership right or a right of user over land converted to agriculture. Hence, in principle, every Indonesian has a right to two hectares of land, which may be procured directly from the regional authorities (the village chief, the *camat* or the *bupati*, depending on the region) or through the transmigration programmes, but since 1970, communities may no longer have their forest on their disposal.

As the demand for property rose in southern Sumatra, obtaining land became more and more difficult. In the *kabupaten* of OKU, one hectare of forest or fallow land located close to transport, which, at the beginning of the 1960s, was worth no more than 75,000 rupiahs, could be bought in 1990 for over 2,000,000 rupiahs, more than two years' salary for a farm worker.

Most migrants don't really have the choice, and settle in the forests or purchase cheap land, more or less in good faith, that has been illegally cleared by local inhabitants who have sometimes obtained false title to the property.

The situation has deteriorated even further over the last few years with the arrival of the agribusiness companies, who are not at all reluctant to bribe local authorities so as to acquire land cheaply. Using these means, the company PT Bunga Mas Laksana secured the expulsion of farmers in the *kabupaten* of Muara Enim, for an average compensation 25 times lower than the legal minimum [47]. Dispossessed, these farmers often have no other option but to join the spontaneous migrants.

The contraction of the wooded areas also has an effect on the daily life of the inhabitants, as it makes firewood more expensive and, as already noted, forces wild animals to forage in the fields for their basic needs. In areas where forest remnants still exist, growers must fence their land fastidiously and often have to give up producing sweet potatoes, cassava or corn that are destroyed by trespassing

wild pigs and monkeys. This presents a three-sided dilemma which is difficult to resolve.

If the authorities provided themselves with the means to conserve the extensive wooded areas, there would no longer be land available to the inhabitants and companies for development; alternatively, if only limited areas under forest cover were conserved, timber production would be reduced and damage caused by wild animals would increase; finally, if the forest effectively disappeared, the regional economy would be threatened by the resultant ecological risks.

Thanks to the forest planting projects, one solution seems nevertheless to stand out as a way of breaking this "vicious circle".

The Minister of Forests, ir. Hasjrul Harahap, urged forestry companies to develop such undertakings especially in the provinces of Sumatera Selatan and Kalimantan Timur where deterioration was substantial [48]. At the same time, the Ministry of Transmigration was studying a forest planting programme (HIR [49]) to be carried out by migrants on the pattern of the PIR projects.

These measures have the benefit of guaranteeing the upkeep of large wooded areas, while at the same time providing an income for the inhabitants and the raw material for the timber industry. However, in their current form, they present two considerable dangers.

Because of a concern for immediate returns, the proposed plantations are principally fast-growing species which can have a deleterious effect on the soil and which are more prone to fire pest and diseases than the natural mixed forests.

Moreover, the projects proposed by the forestry companies, like those of the Ministry of Transmigration (HIR), do not contemplate offering the planter ownership of his land or even his dwelling, as do the PIR projects. As a result, many farmers are in danger of becoming ordinary paid farm labourers [50] on government or privately owned land.

Confronted by this array of problems, the situation varies dramatically from region to region so that generalising becomes tricky in a zone as large as southern Sumatra.

With this in view, the study should proceed to examine the landscape and the living environment of the population. Analysis will centre on the morpho-pedological environment and the systems of production, an evaluation of the level of settlement, and the risks that demographic overload and uncaring development bring to bear on the environment.

Notes to chapter 1

(1) *Attested from the seventh century, A.D., COEDES G.,* Les Etats hindouisés d'Indochine et d'Indonésie, *de Boccard, Paris, 1964/1989, 494 p.*

(2) *WALLACE A.R.,* The Malay Archipelago, *Graham Brash (Pte) Ltd, Singapore, 1869/1989, XXIII-515 p.*

(3) *HAAS W.H. VAN DER, N° 1941,* in PUDOC, Indonesian Forestry Abstracts, Dutch literature until about 1960, *Centre for Agricultural Publishing and Documentation, Wageningen, 1982, XVIII-657 p.*

(4) *Although the first attempts at transmigration to Sumatra began about 1905, it was only in 1937 that the "Central Commission for Emigration and Colonisation of Outlying Territories" was created, cf. BLANADET R.,* Les fronts pionniers en Asie du Sud-Est, *L'Harmattan, Paris, 1984, VIII-749 p.*

(5) *SEVIN O., "Histoire et peuplement",* in Transmigration et migrations spontanées, Propinsi Lampung, 1989, pp. 13-123.

(6) *Departement Kehutanan,* Sejarah Kehutanan Indonesia, *Jakarta, 1986, volume 1, XXIII-229 p.*

(7) *Batavia Centrum,* Les Indes Néerlandaises, *report on topographical works (1934-1938), 1938, 15 p.*

(8) *It should be noted that the administrative boundaries between Lampung and Bengkulu have been altered since independence and that, in particular, what is now Kecamatan Pesisir Selatan was formerly part of Bengkulu.*

(9) *BLANADET R.* op. cit. *p.468*

(10) *PAIN M., "Organisation de l'espace et développement régional",* in Transmigration et migrations spontanées, Propinsi Lampung, *1989, pp.285-399.*

(11) *25.9% of dense forest and 4.6% of marshy forest.*

(12) *Nos. 278/358, 278/359 278/360 of 21 July 1986.*

(13) *24 JANTOP maps were used for the area under study, 16 dating from 1969 and the remainder from 1976.*

(14) *As the section only covers a limited portion of Bengkulu province, meaningful conclusions cannot really be drawn.*

(15) *BLANADET R.,* op. cit.

(16) *In the PIR (Perkebunan Inti Rakyat) projects, small plantations of a few hectares (usually 2 or 3) were given to the inhabitants as a part of vast agro-industrial programmes.*

(17) *A patchwork of derivative species, regrowth, and fallow with* imperata cylindrica

(18) *KARTAWINATA K.,* Environmental effects of different types of land use, *LIPI/MAB, 1984, 129 p.*

(19) *BCEOM*, Musi river basin study, *technical report No. 9, environmental survey, 1989, 68 p.*

(20) *The C factor is one of the parameters in the soil loss equation, perfected in the USA (American Universal Soil Loss Equation), which is expressed in the form:*
*A = R*K*L*S*C*P, where,*
A= the quantity of soil carried away (tonne/hectare) for a certain rainfall, where R = the erosion capacity of the rainfall (in joules/ m^2/ hour)
K = the erosion propensity of the soil per unit of R for a 9% slope
L = the ratio of the soil loss on a slope of a given length to that on a slope 22.1 m long
S = the ratio of the soil loss on a slope of a given gradient to that on a 9% slope
C = the ratio of the soil loss for a given plant or crop to that for a bare surface
P = the practical protection factor (conservation practice factor) being the ratio of the loss on ground with anti-erosion improvements to that on ground farmed without precautionary measures

(21) *KOOIMAN A.* The factor C, relations between land cover and land use and aspects of erosion, specifically for the Upper Komering catchment, South Sumatra, Indonesia, *ITC, Rural and land ecology course, Enschede (The Netherlands), 1987, VI-122 p.*

(22) *BCEOM*, op. cit., *p.30.*

(23) *Sekretariat Tim Pembina Penghijauan dan Reboisasi Tingkat Pusat*, Lokasi dan luas lahan kritis pada SWP. DAS prioritas sebagai sasaran rehabilitasi lahan dan konservasi tanah dalam Repelita V, *Jakarta, March 1990.*

(24) *BONNEL M., "Progrès dans la recherche sur le ruissellement et l'érosion en forêt"*, in Actes du 10ème congrès forestier mondial, *1991, volume 2, pp. 114-126.*

(25) *BLANADET R.*, op.cit. *p. 591.*

(26) *PAIN M.*, op.cit. *p. 356.*

(27) *Suara Pembaruan, 21 August 1991.*

(28) *Sekretariat Tim Pembina Penghijauan dan Reboisasi Tingkat Pusat, op.cit.*

(29) *LUNA LUGO A. "Bosque y clima, effecto de la forestacion y de la deforestacion sobre el clima"*, in Actes du 10ème congrès forestier mondial, *1991, volume 2, pp. 39-48.*

(30) *KARTAWINATA K.*, op.cit.

(31) *Kompas, 31 August 1991, Jakarta Post, 10 October 1991.*

(32) *LAUMONIER Y.*, Contribution à l'étude écologique structurale des forêts de Sumatra, *doctoral thesis, Toulouse, 1980.*

(33) *Direktorat Bina Program Kehutanan*, Jenis-jenis pohon disusun berdasarkan nama daerah dan nama botaninya, *buku 58 B, Sumatera Selatan, 1982, 42 p.*

(34) *Direktorat Bina Program Kehutanan*, Jenis-jenis pohon disusun berdasarkan nama daerah dan nama botaninya, *buku 15, Lampung, 1983, 37 p.*

(35) *LAUMONIER Y., "Search for phytogeographic provinces in Sumatra", in BAAS P.* et al. *(Eds)*, plant diversity of Malesia, *Kluwer Academic Publishers, 1990, pp. 193-211.*

(36) *WHITTEN A.* et al., The ecology of Sulawesi, *UGM, Yogyakarta, 1987.*

(37) *PFEFFER P., "Faune de l'Asie tropicale"*, in Ressources naturelles de l'Asie tropicale humide, *UNESCO, 1974.*

(38) *Kompas, 11 October 1991.*

(39) *FAO, Indonesia file No. 3, E-022 c1/INS, 1988.*

(40) *According to the ITTO (*Rapport d'avant-projet, reboisement des forêts surexploitées de la région Asie/Pacifique, annexe II, Indonésie, Malaisie *1991, V-146 p.), the area of productive forest was 573,000 ha for Lampung, 3,643,500 ha for Sumatera Selatan and 469,700 ha for Bengkulu, making a total of 4,686,200 ha. Assuming an average annual production of 50 m3 and a 35 year felling cycle, this yields an annual supply potential of 6,694,600 m3.*

(41) *Suara Pembaruan, 21 August 1991.*

(42) *Suara Pembaruan, 11 February 1991.*

(43) *The number of forest concessions varies from one source to another. It is usually around 520, as quoted here from the daily newspaper Suara Pembaruan (11 February 1991), but an article from Kompas (14 September 1991) put forward a figure of 565 concessions in November 1989.*

(44) *SIMARMATA et al., "Volume dan klasifikasi limbah pene-bangan pada beberapa hutan di Kalimantan dan Sumatera", in Lembaran Penelitian, Pusat Penelitian dan Pengem-bangan Hasil Hutan, No. 20, 5 p.*

(45) *Suara Pembaruan, 26 June 1991.*

(46) *Kompas, 28 September 1991.*

(47) *A compensation of 30,000 rupees per ha, whereas the legal minimum price fixed by the bupati is, in principle, 750,000 rupees per ha. Tempo, 14 September 1991, Kompas, 24 September 1991.*

(48) *Kompas, 26 September 1991.*

(49) *HIR (Hutan Inti Rakyat) or forest nucleus (about 3 ha) entrusted to the inhabitants.*

(50) *In Indonesia, only government employees receive a pension. Ownership of a plot of land is often a farmer's only guarantee for the time when he can no longer work.*

Chapter 2

Landscapes : real risks and acceptable risks

Alain G. Beaudou & Marc Pain

The creation of a field or plantation necessitates the momentary removal of the plant cover. Once the land has been cleared, unless certain cultivation techniques are used, the slope and the type of soil determine whether or not erosion occurs. The elements that must be taken into account are the length of the slope and its steepness and, amongst the most important of the soil characteristics, the thickness of the organic layer, the nature of clayey minerals and the texture. Dangers are almost always present whenever land is being developed. When significant development operations are being carried out, it is possible to determine these risks at the landscape level, most especially as a function of the of the soil type.

Field observations carried out in the southern part of Sumatra have shown that these two factors, slope and the nature of the soil, can counterbalance each other. A steep slope does not automatically suffer from heavy erosion, even if it is cultivated without using classical anti-erosion measures. Conversely, slight slopes sometimes show signs of major erosion. As a result of these facts, the accent here will be placed on determining the correlation between all elements of the landscape.

The presentation of morpho-pedological landscapes will therefore be taken up by examining not only the aspects of landform and soils, but also those of spatial occupation - production methods, intensity of clearing, population density - and the analysis of observed forms of erosion, each case being placed in its context. A brief inventory of landscape types is then followed by the body of the report, which focuses on the dialectic phenomenon of erosion. Soil types are analysed in detail and the possible consequences of clearing and cultivation studied for each of them.

1 . Morpho-pedological landscapes

Very schematically, the region is characterized by the presence of five main morpho-pedological landscapes, coastal areas, plains, hills, areas of volcanic origin, and mountainous areas, some of which can be divided into several sub-types.

The sketch shown in figure 38 is the result of a bibliographical analysis supplemented by field observations taken in the southwest of the province of Sumatra Selatan, along a cross section stretching from the Prabumilih plains to Lake Ranau on the border with Lampung province. Among the documents used, special mention must be made of the LREP (Land Resource Evaluation and Planning Project)[1] documents, the most recent available. This program for the pedological mapping of Sumatra and the setting up of a Geographical Information System was completed in 1990, but the publication of the maps and their legends is still continuing.

A number of pedological terms might be unfamiliar to non-specialist of soil sciences. To remedy this, extremely simplified definitions of the principal notions of pedology will be indicated each time that this is necessary. The soils are described using the terms and principles of the new American Soil Taxonomy classification [2]. This classification, used by the majority of pedologists in the area, replaces earlier classifications. A simplified lexicon can be found at the end of the chapter.

Chapter translated from French by G. Smith & K. Luckcuck.

■ Marine terraces

Marine terraces are found on the sea shore of the west coast of Sumatra. This landscape is little represented in the region studied. Its old coastal levels, uplifted, eroded and dissected, are often horizontal and sometimes have very slight slopes. The soils most frequently encountered are of the large Inceptisols group, rather thin soils for tropical regions. They are characterized by the presence of alterable minerals, but most of the soluble elements present in the original rocks have already been displaced and have accumulated in certain spots or have even been eliminated from the soil.

■ Plain regions

This group is characterized by landforms of moderate amplitude and relatively slight slopes, less than 8-15%, which can be divided into three sub-groups :

VALLEYS AND ALLUVIAL PLAINS

These are recent landscapes developed on holocene and pleistocene sediments, unfolded, represented by lake and fluvial alluvial deposits (old meanders, anastomotic deltas, terraces) and colluviums. They occupy 5.6% of the mapped area, but are obviously much more widely developed in the huge Musi catchment area which covers almost the whole province.

These are basically plains landscapes where the degree of slope is less than 3%. They are most extensive in coastal zones and in the downstream reaches of large rivers. These plains are much less extensive along rivers such as the Ogan River which cuts through a more hilly region.

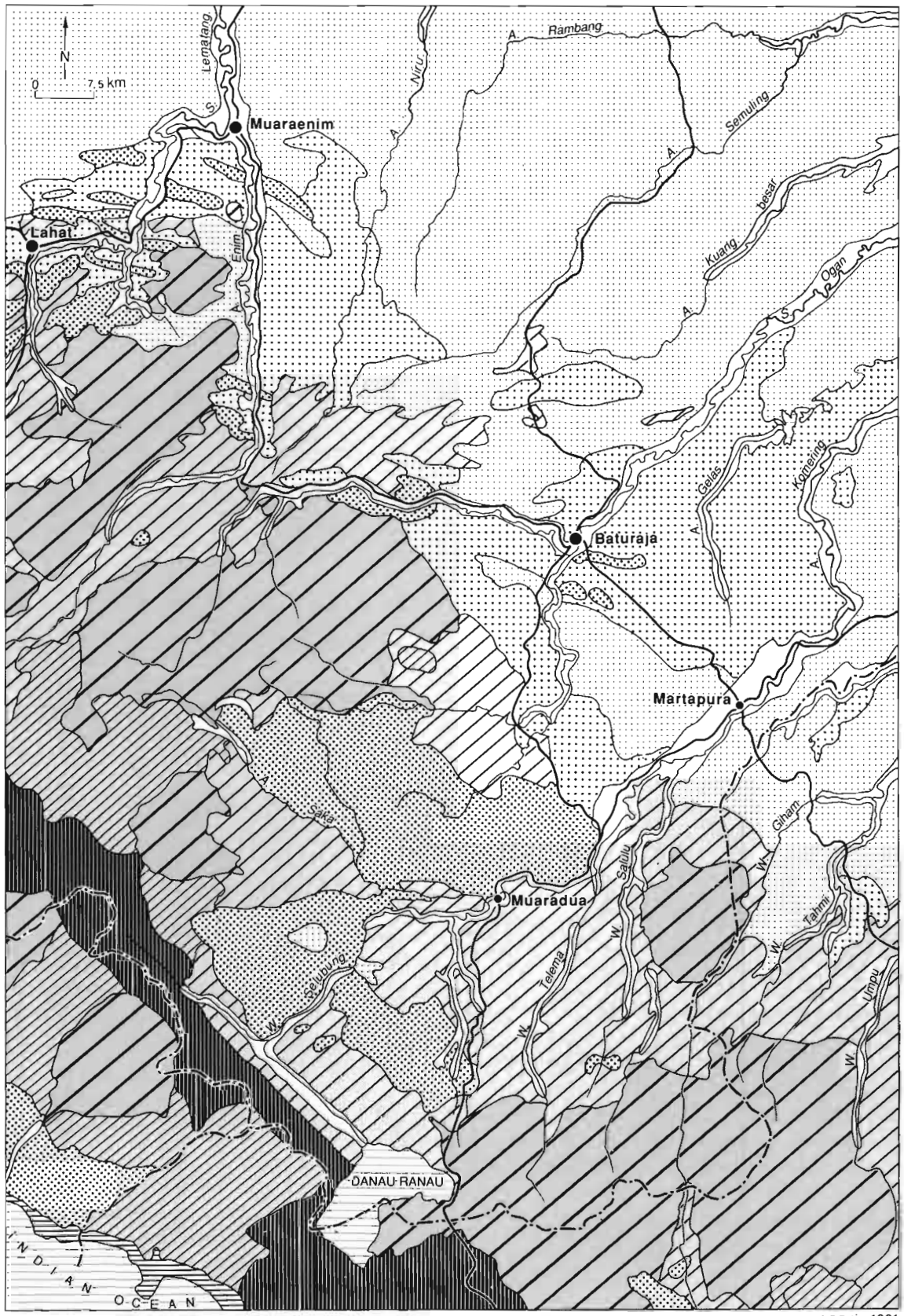
The soils are classified among two large groups of the Soil Taxonomy, Inceptisols and Entisols. The latter are soils in which the pedological layers are still poorly differentiated and where the nature of the original matter is often recognizable.

PLAINS ON ACIDS TUFFS

Situated principally at the north of the studied region, these are vast stretches formed on material of volcanic origin, the Tuffs. The Tuffs are deposits of fine and friable volcanic material, often in a shallow marine environment, which subsequently consolidated. The main formations are those of Palembang, Ranau and Lampung. Quite often these tuffs are called "Ignimbrites".

LAND FORM - *MODELE*	SLOPES- *PENTES*	SOILS - *SOLS*
marine terrace group - *terrasses marines*		inceptisols
SLIGHT SLOPES - *PENTES FAIBLES* :	< 8%	
alluvial plains and valleys - vallées et plaines alluviales	3%	inceptisols- entisols
acid tuff plain - *plaines sur tufs acides*		inceptisols - oxisols - ultisols
plain on fine felsic sediments - *plaines sur matériaux sédimentaires acides*		inceptisols - oxisols - ultisols
MODERATE SLOPES OUTSIDE VOLCANIC SYSTEM *PENTES MODEREES DES SYSTEMES NON VOLCANIQUES* :		
hills - *modelé collinaire*	*15 -25%*	inceptisols - ultisols
MODERATE AND STEEP SLOPES OF VOLCANIC SYSTEM *PENTES MODEREES A FORTES PENTES DES SYSTEMES VOLCANIQUES*		
hills - *modelé collinaire*	15 - 25 %	inceptisols - ultisols
dissected plateau - *plateau disséqué*	15%	inceptisols -oxisols - andisols
strato volcanoes - *strato volcans*	>30 %	andisols - inceptisols - rocks
VERY STEEP SLOPES - *TRES FORTES PENTES* :		
mountain range - *dorsale montagneuse*	25 - 75% and more	inceptisols - ultisols

Fig. 38 SKETCH OF MAIN MORPHO-PEDOLOGICAL LANDSCAPES (SUMATERA SELATAN PROVINCE)
ESQUISSE DES PRINCIPAUX GROUPES MORPHO-PEDOLOGIQUES (PROVINCE DE SUMATERA SELATAN)



sources - *sources :*
Center for Soil Research, *Land Resource Evaluation and Planning Project (LREP), Soil Data Base Management,* SUMATRA,Bogor, 1989.

AGB/jz-1991

The slope can be rather marked and reach values in excess of 8%. The degree of dissection of this landscape, the general aspect of which can be assimilated to a plain landscape, is variable, sometimes giving birth to rather evident convex landforms, though always of slight unevenness.

The main types of soils encountered can be classified among the major Inceptisols, Oxisols and Ultisols groups. Oxisols are red or yellow soils, rich in quartz, kaolinite, and iron and aluminium oxides. The layers are thick and little differentiated. Ultisols, in tropical regions, are also red or yellow. They present numerous similarities with Oxisols. The main difference lies in the fact that they are leached and have very poor upper layers contrasted with one or more deeper layers in which are accumulated some of the elements that have disappeared from the surface.

PLAINS ON SEDIMENTARY MATERIAL

The landscapes grouped under this classification, found in the region of Baturaja and Muaraenim, are very close to those on acid tuffs both in terms of landforms and soil types. Although slightly less extensive than this group, they nevertheless cover 11% of the area under study. In a landscape with uniform slope, dissection causes the appearance of more convex forms with slopes sometimes reaching 15% and an amplitude always less than 50 m. These are in fact "old" landscapes, eroded and dissected, and made up for the most part of folded pre-quaternary matter of variable nature but dominated by an acidic chemical character.

Like the plains landscapes on acidic tuffs, these soils can be classified among the major Inceptisols, Oxisols and Ultisols groups.

■ Hills

A region of hills, well represented in the region of Muaradua, is characterized by convex and plane-convex forms. This landscape results from orogenic and erosive processes. The differences in level range on the one hand from 10 to 50 m and on the other from 50 to 300 m. The original matter, of varied nature, is not volcanic. The slopes can be pronounced. They vary between 15 and 25/35%. The soils encountered are classified among the Inceptisols and the Ultisols.

■ Areas of volcanic origin

One group of landscapes is the product of volcanic activity of an acidic to moderately basic nature, quaternary or tertiary. In these landscapes, linked to the Barisan Range which runs like a sash from southeast to northwest, we find more or less eroded strato-volcanoes, lava flows, volcanic plateaus and lahars. The landforms are thus varied and can be classified into three main groups.

HILLS ON VOLCANIC MATERIAL

This landscape is similar in many ways to the hill landscape on non-volcanic material. The slopes are relatively pronounced and their value varies between 15 and 25/35%. The differences in level are also of the order of about 100 m. The soils are classified among the Inceptisols and the Ultisols. However, the nature of the original material can differentiate, usually to a slight degree, these Inceptisols from the Inceptisols of non-volcanic landscapes.

PLATEAUS

They are more or less sharply dissected and offer a rather pronounced overall slope measuring between 8 and 15/25%. The edges of the plateaus are characterized by steep, very steep or even sometimes sub-vertical slopes. When the dissection is greater, convex or plane-convex landforms appear with slopes in excess of 25/35%. The soils are Inceptisols, some of which, the Oxisols, have andic characteristics.

Soils with andic characteristics are typical of volcanic regions. They are characterized by the presence of an organic rich surface layer, sometimes very thick, as well as by the existence of allophanes, clayey minerals which result from the rapid transformation of volcanic glass. They are most often dark coloured soils, almost black, of low density and highly thixotropic, formed under conditions of moderate temperature, reduced insolation and constant humidity. Prolific in this region, they cover 15.5% of its surface.

STRATO-VOLCANOES

These volcanoes are characterized by steep slopes, always exceeding 35%, and the presence of soils with andic characteristics (Andepts, of the Inceptisol group), sometimes associated with rocky outcrops. The Andepts possess very thick black layers. The sides of these strato-volcanoes are intensively cultivated. The strato-volcanic type landscape covers 19.2% of the study area.

■ Mountains

A mountainous ridge, the Barisan Range, associates steep to very steep slopes and high altitude "plateaus", with less pronounced slopes. Generally, in this region, slopes vary between 25 and 75%. Various soils are encountered but they usually can be classified among the Inceptisols and the Ultisols. This mountainous landscape is not very extensive in the area under study (4.2%).

For this study of the Ogan Komering Ulu and Lahat region, where field observations were concentrated, we have examined only three types of landscape (plain, hill, and volcanic) and land use, in an area which stretches from the plains landscapes, where Oxisols and Ultisols dominate, to the volcanic landscapes of the Barisan Range where Inceptisols and andic soils mainly occur.

2. Erosion phenomena counterbalanced by the nature of the soil

The landscapes observed were intensely cultivated by indigenous peasants and, more recently, by spontaneous migrants. In certain cases, the risks of over-exploitation and over-population are critical.

The environmental hazards, however, merit careful evaluation with special consideration of the direct relationship between certain essential characteristic of the milieu, soil and slope, its exploitation and its degradation, which is manifest in certain situations but much less evident in others.

A detailed analysis of the local conditions and soil types thus appears necessary for each of the landscapes described in the previous section. This is followed by a detailed description of the environmental consequences of uncontrolled and undisciplined spontaneous development.

This systematic approach, perhaps repetitive but chosen for reasons of conceptual clarity, is mixed with proposals whose aim is to promote a well thought-out use of the possibilities offered by the region.

■ In plains landscape

Under this name are grouped the alluvial valleys and plains, the plains on acid tuffs, and the plains on sedimentary matter. Only the last two types will be studied. These landscapes are characterized by a generally flat landform, with moderate slope of a few percent. These plains, however, are more or less deeply dissected by the hydrographic network. Thus convex and plane-convex landforms appear with slopes ranging from 8 to 15/20%, values which are notably higher that those of the principal geomorphological structure. The existence of such secondary landforms can often give the impression, during a field survey, that one is no longer in a plain.

According to the criteria used by the LREP plains are distinguished first of all by the nature of the underlying geological material. In fact, the various materials being essentially of acidic nature and of fine to average texture, this distinction is not represented in a marked fashion at the soil or landscape level. The second criterion concerns the importance of the secondary landforms. In this way, it permits distinction between various types of landscapes :

- plains with regular or slightly undulating slopes.
- undulating plains with slopes varying between 3 and 8%.
- undulating plains presenting a hilly landform with slopes of between 8 and 15/20%.

This distinction, which is based on the form of the secondary landforms, is directly related to the degree of dissection of the general landscape. In this way, plains which are slightly undulating correspond to a slight degree of dissection, while slightly hilly undulating plains are associated with a dense or very dense hydrographic network which gives the landscape a dissected or even very dissected appearance.

With the exception of alluvial valleys subject to regular flooding, this fundamental observation indicates the presence of not insignificant erosion despite a slight overall slope and a low population density. This leads to the logical conclusion that the element "soils" plays the leading role in the formation of these plains, whenever they are stripped of their forest cover. It is all the more important to keep this fact in mind since vast interfluves, virtually free of of all occupation except for non-intensive agriculture, are located in these low, slightly undulating areas, and since, in consequence, decision-makers are tempted to propose them for agricultural settlement.

Hence, it appears necessary to define clearly the characteristics of those soils with which developers and farmers will come into contact and to evaluate, by repeated field observations, the impact of the existing systems of production.

THE SOILS

In this region, there are relatively few types of soils given the nature of the original materials which are always acidic. The soils present in these landscapes are distributed in three groups as follows : Inceptisols (35-75%), Oxisols (25-50%) and Ultisols (10-25%). All are poor chemically and liable to erosion.

Inceptisols :

Derived from the Latin *inceptum* (inception), this term groups together soils not easily differentiated. They are just as present in saturated and reducing environments as in drained environments. The soil surface is composed of an organic layer that is generally quite visible. Depending on the degree of water saturation, the characteristics of this level approach either those of a more or less transformed peat or those of a normal humic layer, a mixture of mineral matter (clays, alluviums, sand) and organic matter (fluvic and humic acids). Mineral and humic matter are closely connected. It is the presence of organic matter that is responsible for the brown colouring of the surface humic layers. When the surface layer is of peaty type, its colouring is much darker, almost black. The thickness of this level varies, generally, between 20 and 60 cm. Under this surface layer exists a layer that is more strictly mineral in colour, granulometry and level of variable saturation. The colouring of this mineral layer is not very bright, being of beige or ochre tint.

Here two principal types of Inceptisols are found :

Tropaquepts (gley, or slightly humic hydromorphic soils), usually located on lower slopes, and rather thin.

Dystropepts (ferrolithic soils, moderately desaturated and regenerated), present on median and upper slopes. They are distinguished from the preceding by their greater thickness and a saturation rate of over 50% [3].

These were formerly categorized as alluvial soils and latosoils.

It should be noted that these two types of soils, which will be found in other landscapes, have a rather low level of chemical fertility resulting from a pH [4] which is generally acid or very acid and from the extremely low content of nutritive elements (exchangeable bases, phosphorus).

Oxisols :

The term oxisol is derived from the French *oxyde*. The soils observed are red or yellow, characterized by the presence of silica, SiO_2 (quartz), clay (kaolinite) and metallic oxides (predominantly iron sesquioxide - hematite, goethite - and aluminium sesquioxides - gibbsite -. These soils have good permeability and are generally well drained. They have inconspicuous humic layers that are poor in organic matter. They are subject to erosion, even on slight slopes. Risk of erosion increases when the surface humic layers disappear as a result of land clearing followed by the burning of debris or careless cultivation. The essential characteristic of this soil is its oxy-layer. This is a layer, at least 30 cm in thickness, of a sandy silt-loam to clayey texture[5], having an effective cationic exchange capacity (ECEC) that is weak or very weak, with very few or no alterable minerals from the mother rock.

Morphologically, layers of oxisols are little differentiated within the same soil. The pedological profiles are relatively homogeneous with regard to colour, texture and structure. Although we have not observed them directly, oxisols often contain continuous hardened layers forming plates or shelfs. When these layers are near the surface, they constitute an important constraint for agricultural development (inability of roots to penetrate, accumulation of water, etc.). We have, however, encountered gravelly layers, being levels of "ferruginous gravel" accumulation. Only an excess of this gravel can pose a limitation to agricultural development (due to the diminishing exchange capacity, the small amount of fine soil, and the almost nonexistent chemical fertility).

In this plains landscape, one type of oxisol clearly dominates : *Hapludox*, (ferrolithic soils, highly to moderately desaturated), present mainly on the highest parts of the inter-river uplands and on the upper part of slopes. These are hydric regime oxisols of the "udic" type[6]. Such oxisols are, in other words, unsaturated, even though evapotranspiration is less than precipitation except for occasional short periods. There is thus no hydric deficiency in these soils. Their colour is red or yellow. They are poor in organic matter and have an acidic or very acidic pH.

As a general rule, leaving aside these two types of constraints which are rare in the regions studied, oxisols are excellent physical supports, and are easy to work due the uniformity of the soil. On the other hand, they are very poor chemically, have a low or very low pH and thus need the addition of enriching agents and fertilizers.

Ultisols :

From the Latin *ultimus* (ultimate), this term groups together soils having undergone a long evolutionary period as manifested by zones of departure and accumulation. The ultisols observed in these landscapes present a certain number of morphological traits close to those of oxisols (kaolinite, metallic oxides). Generally red or yellow, they can also have layers that are lighter in hue. They are composed of the same minerals as are the oxisols. They

are differentiated from them essentially by the presence of leached layers and layers of clay accumulation (agrillaceous and kandic layers). The pedological is thus rather clearly differentiated and the boundaries between the various layers are distinct. The vertical distribution curve of the clay shows what is called a "clayey stomach" which corresponds to the levels of accumulation. In oxisols, this curve presents a uniform profile revealing a clay content which is either practically constant or which increases or decreases progressively with depth.

They also possess morphological characteristics associated with the existence of dry periods (mottled layers, manganese concretions, etc.) which correspond to segregation, departure and accumulation of elements. Water circulates in these soils but, during certain periods of the year, evapotranspiration exceeds the quantity of water present in the soil thus leading to a deposit of clayey particles or other elements such as iron, manganese, etc. These movements bring about an impoverishment of the upper part of the soil and only the humic layers, generally rather thin, contain some nutritive reserves. This very superficial location of nutriments results in shallow rooting of the natural vegetation. This remark, which applies equally to oxisols, in even more important here.

Ultisols are chemically very poor and lack reserves. Their pH is acidic or very acidic. Cultivation on such soils poses the same problems as does agriculture on oxisols. It is absolutely necessary to add enriching agents and fertilizers in large quantities. Due to their greater heterogeneity, they are not, as a general rule, as good physical supports as oxisols.

Two types of ultisols should be mentioned :

- *Hapludults*, (highly desaturated and leached ferralitic soils), present essentially in sedimentary plains landscapes. In earlier documents, hapludults were referred to as "grey-brown podzolic soils", lithosols, regosols or planosols.
- *Kandiudults*, (ferralitic soils rich in kaolinic clays), observed in the plains formed on acid tuffs.

Both are located in the upper part of landforms. On the one hand, hapludults do not have an excessive clay accumulation layer (argillic horizon) and it is rare to find mottled layers at lower levels. The kandiudults, on the other hand have layers of clay accumulation that are more clearly differentiated (kandic horizon). Subject to the same hydric regime as the hapludox, they do not have a noticeable hydric deficit. The content of organic matter is low or very low, the humic layers are rather thin and the pH is acidic. The combination of all these characteristics makes their utilization difficult.

THE CONSEQUENCES OF LAND USE AND CULTI VATION

These morpho-pedological landscapes, relatively extensive in the sector studied, are generally near wide valleys. Along the valleys which were the first lines of settlement, these landscapes have been occupied since ancient times. In these valleys, which are subject to regular flooding, other types of soils and other modes of land use exist which have not been studied here. Overall, this is a sector which is still sparsely populated (density less than 30/km^2 sometimes reaching 50/km^2). The population density tends to increase near the transmigration centres and along the principle lines of communication (Muara Enim-Prabumulih, Prabumulih-Baturaja, etc.).

Plain land use can be broken down into two categories. The first is of the family type, sometimes including plantations covering rather vast areas, while the second is of the large industrial plantation type. In addition to the food crops seen around villages, plantations of fruit trees and pineapples (photo 24) and, usually further away on the interfluves, rubber trees dispersed in small clumps in the forest ("Jungle Rubber") can be observed. The family plantations, whatever their size, are generally located along the roads. Apart from these, vast areas are cleared to establish large rubber and palm oil plantations (photo 25). Large expanses covered with *Imperata* can be found on the edge of the cultivated zones, being regions that were formerly cultivated, some of which quite recently. Salvaging this land, which is chemically very poor, is a major problem. Nevertheless, certain agro-industrial plantations are doing just that.

Despite the slight slopes, field observations confirmed the reality of erosion risk in such landscapes, whatever the type of cultivation, be it familial or industrial. This is due, to a great extent, to the thinness of the humic layer which disappears very rapidly following planting, especially where the burning of vegetational debris is a common practice. The disappearance of humic layers accelerates the appearance of rill or gully erosion, all the more marked if plant cover is limited and broken (photo 24). All the same, even with relatively dense soil cover, rill erosion sets in as soon as the first traces of topsoil loss appear. In the zones of slope breaks, one also observes a few landslips as shown in photo 25. These forms of erosion are particularly marked in pedological covers of the oxisol type and more so the ultisol type, the textural differences in the latter sometimes being quite pronounced.

It is actually at the level of textural differences that the process of erosion preferentially begins. The marks of erosion are perhaps less visible on inceptisols which possess thicker and chemically richer humic levels. However,

they are also very sensitive to erosion if the cultivation techniques used do not attempt to conserve, as much as possible, the superficial organic layer. In zones with marked slopes, lying below somewhat dense village food and tree crop plantations which produce relatively continuous plant cover, erosion that occurs as a result of recent clearing is mainly sheet erosion. This brings about the uncovering of roots and dead vegetable debris present near the surface of the soil, and an appearance of irregular soil roughness. Traces of particle transport (zones of departure and deposit) are also very clearly observable (photo 23). Several small landslides can also be observed on these slopes.

In plains landscapes, where gully erosion dominates the slight or moderate slopes, cultivation can therefore have consequences if a number of precautions are not taken and certain principles not adhered to :

- Retaining a humic layer at the soil surface is imperative. In fact, all the field observations revealed the close relationship which exists between the presence of this humic layer and the degree of gully erosion. Achieving this implies not only clearing without burning, which is contrary to local custom, and without brutal uprooting of trees, but also refraining from burning crop residues before replanting. The burying of organic residues is advised. For ultisols, adherence to this principle is even more important than for other types of soils due to their very thin topsoil layers and their fragility, which are accentuated by the textural differentiation of this type of soil. The compacting of surface layers by the use of heavy agricultural machinery is also to be avoided.

- Classical anti-erosion agricultural techniques should be used (development of terraces, alternating strips, etc.).

- In addition, almost all these soils are very poor chemically. They are characterized by low or very low pH values and by a quite limited capacity for cationic exchange[7]. That implies the addition of enriching agents so as to raise the pH values, and the frequent application of fertilizers due to the very high permeability and the poor water retention capacity of these soils. To this must be added a judicious choice of crops in order to put the low soil potential to best use (this means a choice of varieties resistant to acidity or with not too high a demand for nutriments). This also implies a need for preliminary economic studies in order to determine both the degree of profitability of the projected development and the agricultural techniques to be used.

- In the relationship between environmental conservation and population density, it is evident that such morpho-pedological bodies will not support heavy demographic overload in the traditional production systems.

The situation is different in the large irrigated areas of the Transmigration. Massive investment is required in order to completely modify the landscape and artificially create a new type of soil capable of supporting the higher population densities. Conversely, low cost extensive exploitation of the "Jungle Rubber" type, to the extent that it permits the establishment of significant secondary vegetation, a good cover for the soil surface, does not cause too much deterioration in the landscape, so long as the number, the area, and the location of these plantations are controlled.

As for industrial plantations, it is necessary to recreate, as rapidly as possible, a continuous soil surface cover, in order to limit as much as possible the ever-present risk of erosion (photo 25). Techniques of land clearing are often too brutal to preserve the existing state of surface layers.

Such landscapes, with chemically poor pedological cover, low potential, and moderate or slight slope, are ultimately regions with a high risk of erosion. They do not seem able to tolerate high population densities without assistance from major anti-erosion measures, which naturally rules out any intensive use of the soil, with the exception of irrigation-based systems. The techniques of cultivation as well as the area, the number and the location of the zones to be cleared, must be the subject of precise recommendations and continued study of landscape development.

■ In hills landscape

In the general presentation of morpho-pedological landscapes, in order to follow the geological division of the area, hills strictly derived from recent volcanic deposits have been differentiated from hills formed from varied non-volcanic geological materials. A more precise pedological analysis points out the similarities in the soils present in these two groups, which also have similar landforms. They will therefore be presented together.

In the majority of cases, hills having height differences of less than 300 m are distributed at random between the links of a dendritic hydrographic network. In a few rare places, however, one can observe a tendency towards the alignment of these hilly landforms. In all cases, the gradient of the slopes is never less than 15%. Field observations have shown that they are generally situated around 30%. The forms are of a convex type, particularly at the summit of the inter-river uplands, while many slopes have a more rectilinear form.

These regions are clearly more heavily populated than the plains which, independent of their settlement history,

could suggest the presence of soils with higher agricultural potential, well known as always to predominantly farming populations. But, as the slopes are relatively steep, the theoretical risk of erosion is, in consequence, increased. Here, the combined effect of population density and soil type appears to be the determining factor whereas, in plain areas, the weak overall level of demographic pressure only attributed a secondary role to the population factor.

THE SOILS

This landscape type, being derived from varied geological materials, has a rather greater homogeneity amongst its soils. With reference to the Soil Taxonomy, they are divided reasonably equally among the Inceptisols and Ultisols. But, contrary to the plains landscapes, it should be noted that, in the hills, there is a greater diversity of soils in each of these two groups.

Among the Inceptisols, it is necessary to note the presence of the Dystropepts, the most abundant, the Tropaquepts and the Humitropepts, of moderate abundance, and the Eutropepts, slightly less abundant. Dystropepts and Tropaquepts have already been defined in the study of plains landscapes.

Among the Ultisols are found the Hapludults, rather frequently encountered, the Haplohumults and the Rhodudults, both rather infrequently encountered. The Haplohumults were also described in the plains landscapes.

Only the Humitropepts, Eutropepts (Inceptisols), Haplohumults and Rhodudults (Ultisols) are presented here.

Inceptisols :

The inceptisols of the southern part of Sumatra (Tropepts-inceptisols), are characteristic of the hilly landforms of tropical regions. When amorphous materials (or allophanes [8]) are present in the fine part of the soil, they are never in the majority. Unaltered volcanic matter can also be present, but in reduced quantities.

- *Eutropepts* (brown eutrophic or ferrolithic soils, slightly desaturated and regenerated [9]) are soils, generally of limited thickness, which posses a high saturation of bases due either to a slight modification of the primary minerals or to the leaching of cations coming from higher layers. The colour of these soils is rather dull (beige-brown). They were previously called lithosols or "gray-brown podzolic soils".

- *Humitropepts*, (humic, undeveloped soils of volcanic source, or ferrolithic, desaturated, humic, regenerated soils), formerly called "humic latosols", are characterized by their high organic matter content. They are found either in humid zones or in higher cooler zones. The saturation ratio is often fairly low. The mineral layers are of a reddish-beige or yellowish-beige colour.

Ultisols :

- The first type of ultisols are classified among the Humults, soils rich in humic matter and having a dark colour. Cultivation without precautions often brings about the more or less complete disappearance of the humic layers and brings the clayey accumulation layer closer to the surface, with significant potential consequences for erosion.

Haplohumults, (ferrolithic, desaturated, humic, leached, regenerated soils), are Humults which contain alterable minerals, generally of slight thickness, in the clayey accumulation layer. The organic matter content is high. The non-organic layers are reddish-brown or yellowish-brown. These colours gave them their original name "reddish and yellowish-brown lateritic soils".

- The second type of ultisols, classified among the Udults, are soils which have light-coloured surface layers and which are poor in organic matter. Their characteristics limit cultivation to short periods (where no fertilizer is used), followed by long periods of fallow in order to restore the nutritive stock.

Rhodudults, (ferrolithic, highly desaturated, leached soils), are generally well-drained soils poor in organic matter and characterized by intense coloration of the mineral layers. The clayey accumulation layer is generally deep red. It can contain some alterable minerals. The humic layer is rather thin. Under earlier systems of classification, these were called "reddish-brown lateritic soils".

All these soils, with the exception of the tropaquepts, are found on the summits and slopes of interfluvial areas. Most of them have some potential due to the presence of large quantities of organic matter, to the presence of alterable minerals, or to both. On the other hand, ultisols found in hilly regions do not have very marked textural differentiation. However, their occurrence on steep slopes can pose problems in establishing cultivation.

CONSEQUENCES OF LAND USE AND CULTIVATION

Hilly landscapes have been occupied for quite a long time, either in an intermittent or continuous manner, along the axes of penetration. We are witness to a major territorial colonization, the population density, not yet excessive, ranging from 50 to 100 people per km². Deforestation is a major problem. It affects mainly those zones that have already been transformed into secondary forest.

Family-type land use predominates. The main crop is coffee. In addition, of course, there are food crops (rice, either dry or valley type) and fruit farming (banana, durian and others). Truck farming is also practiced (beans, peppers, and other crops). The soils, as noted, have rather interesting chemical and morphological characteristics, with slope, however, being the limiting factor. Cultivation, without the use of appropriate farming methods, can have important consequences for erosion. Photo 26 illustrates the dangers of gully erosion in old coffee plantations when the humic layers of an ultisol have disappeared (perhaps following inappropriate weeding). This happens despite a significant residual soil cover. As the soil loses fertility, the density of coffee trees decreases producing further erosion. Photos 27 and 28 also show that inceptisols are not free from serious risk of erosion following clearing and planting. These shots reveal the presence of two processes, landslides and gully erosion.

These observations clearly demonstrate that, in hilly landscapes as in the plains, a number of precautions must be taken when slopes are being developed. These precautions concern both the conservation of soil potential and the prevention of erosion. It is therefore necessary :

- to preserve the organic matter layers as much as possible (avoid burning off ground cover and removing topsoil through deep and repeated weeding).

- to implement anti-erosion techniques such as the construction of terraces (photo 38), or the use of residues from weeding in elevated zones on slight slopes (photo 39), the latter being sometimes carried out spontaneously.

- to limit settlement to the present population density and to control the amount of new clearing, its location and area.

The principles and the precautions suggested are thus similar to those proposed for the plains. Here, however, where soils have several characteristics that are favourable to their development, the relationship between population density, and the risk of soil impoverishment and erosion, is especially important. The population density factor is critical and the demographic overload ceiling can quite rapidly be reached as illustrated in Photos 26, 27 and 28.

■ Volcanic landscape

This is a complex landscape, covering quite a large portion of the area under study (40% of the total). It includes recent volcanic cones as well as older "plateaus" and volcanic cones, two landforms which are very different but often related. The old or new volcanic edifices are characterized by steep slopes ranging from 15/20% at the foot of the volcanoes, to from 20% to 60/70% on the slopes. Approaching the summits, slopes always have a gradient greater than 30/40%. On the plateaus, on the other hand, the overall slope is much less, from a few percent to 15/25%. The connection between the rim of the plateaus and the valleys is made by rectilinear or slightly convex and concave slopes that are rather irregular and have steep or very steep slopes. While plateau soils are sometimes similar to those found on young volcanic cones, the soils of old volcanic cones are, on the other hand, noticeably different from those of younger volcanic cones, despite the similarity in form.

Logically, the combined effect of the slopes and population density, which exceeds 100/km² in some places, should lead to very heavy erosion, put an end to human activity and a place a prohibition on felling and clearing in areas with such significant limitations. Usually considered fragile, it appears justified to withdraw them from agricultural development despite a high level of fertility due to the volcanic nature of the region.

In fact, it is in these areas that the Ministry of Forests applies a rigourous policy of general protection of the forest catchment areas. As prohibitions are more or less respected in the areas concerned, instructive comparisons can be made. Observations of cultivated ground in the protected areas show that it is possible to moderate both the strict landscape management rules and, in a more general way, the need to avoid drawing too obvious conclusions. It is here that the phenomena of erosion are best counterbalanced by the intrinsic nature of the soils.

SOILS

A wide variety of soils is associated with landscapes of volcanic origin. Many of them have already been observed in the preceding landscapes, but a specific group of soils should be given special attention here. This is a particular

subgroup of inceptisols, the Andepts. Another group is also encountered here for the first time, the Orthents. Among the oxisols, the presence of Kandiudox should be noted.

Inceptisols :

All the groups of inceptisols observed in the preceding landscapes are present here (humitropepts, eutropepts, dystropepts, tropaquepts). The Andepts group and especially the dystrandepts subgroup are new. These soils used to be called andosols. They are now classified among the Andisols (dystric haplustands). However, for reasons of uniformity it seems logical to keep to the terminology used by the LREP in its various documents.

Dystrandepts (humic, desaturated andosols) and all the andepts are characteristic soils of young volcanic regions subject to warm climatic conditions, constant humidity and limited sunshine. Under these conditions, volcanic products, especially volcanic glass, are rapidly altered and transformed into allophanes. Allophanes have special qualities including very high water, phosphorus and nutriment retention properties. However, these properties [10] disappear if the pedoclimatic conditions change, especially in the direction of higher temperatures and lower humidity. When these changes occur, they are irreversible. This is therefore an important factor to be taken into consideration in development planning.

The soils observed are of noticeably low density (<0.85) and contain high quantities allophanes. The very thick (about one meter or more) organic matter layers are also very rich in organic matter. Their colour is almost black. The mineral layers are of a brown or reddish-brown colour. Exchange capacity [11] is particularly high. The pH is, however, acid or very acid which sometimes presents a danger of aluminium toxicity for soils having the lowest pH values. Rich in carbon, dystrandepts are often poor in bases but possess a very high fixation rate, especially for phosphorus. Their high permeability limits the risks of runoff.

Andisols are generally reknown for their fertility. A certain number of limitations are observed, however, in dystrandepts (acidic or very acidic pH with a risk of aluminium toxicity, and poor nutriment reserves). Other characteristics, nevertheless, compensate for these limitations (very thick humic layers, very rich in organic matter, very high permeability, strong retention capacity for water, phosphorus and other nutriments, and very high exchange capacity). To this must be added their very high resistance to erosion.

Entisols :

The term comes from the English word "recent" and denotes soils which are characterized by weak differentiation between pedological layers. These are often "young" soils in which the structures of the original geological material are still recognizable. They are represented here by the *Troporthents*, (very thin tropical soils, with few differenciations and on volcanic materials), frequently encountered in recent and accentuated erosion zones. They are found on material that is more or less acid and always recent. They are very similar to lithosols or regosols (very thin soils in which rock is predominant). Their use and cultivation is limited due to the thin or very thin layers in which they occur, and their high vulnerability to erosion.

Oxisols :

Besides the hapludox, already described above, there is a new type of oxisol, the *Kandiudox*. These are oxisols with a high clay content (more than 40%) from the surface down. The effective exchange capacity is very weak. Clay content increases progressively with depth, but there is no visible clay accumulation horizon. These are soils which have low chemical potential and need fertilizer application. The high clay content can also pose some problems when the land is cultivated (increased risk of packing down and reduced permeability, which can be the root cause of runoff and gully erosion), especially if the top humic layer has disappeared.

THE CONSEQUENCES OF LAND USE AND CULTIVATION

Volcanic landscapes already have a long history of settlement, but it is only now that it is intensifying in these areas of steep landforms. The population density varies between 50 and 100/km^2 (near Danau Ranau), and could still rise, as has been observed in the Lampung region. This sharp increase in population has, of course, been accompanied by major deforestation, raising legitimate fears as to the worth of the hills that have been cultivated. All the same, these fears can be largely tempered by taking into account the nature of the soils.

Deforestation is mainly caused by indigenous people and spontaneous migrants. Familial farming predominates. The key crop is still coffee. In many cases, however, coffee plantations are not "pure", but include fruit trees (mainly durian) and, of course, shade trees, which contribute to providing good protection for the soil surface. In addition to coffee, clove, cinnamon, and banana trees and many food crops (dry rice, vegetables, and high altitude irrigated rice, as in photos 33-36, 39-40) are also cultivated.

Before analyzing the effects of land use in this zone, it appears necessary to distinguish between two types of landscape, that directly linked to recent volcanism and that related to older volcanism (Fig.39 and 40). It should be noted, however, that in all these volcanic landscapes, field observations have shown that landslide is the dominant form of erosion. Gully erosion is very limited and only found on land laid bare by landslides.

On old volcanic landforms :

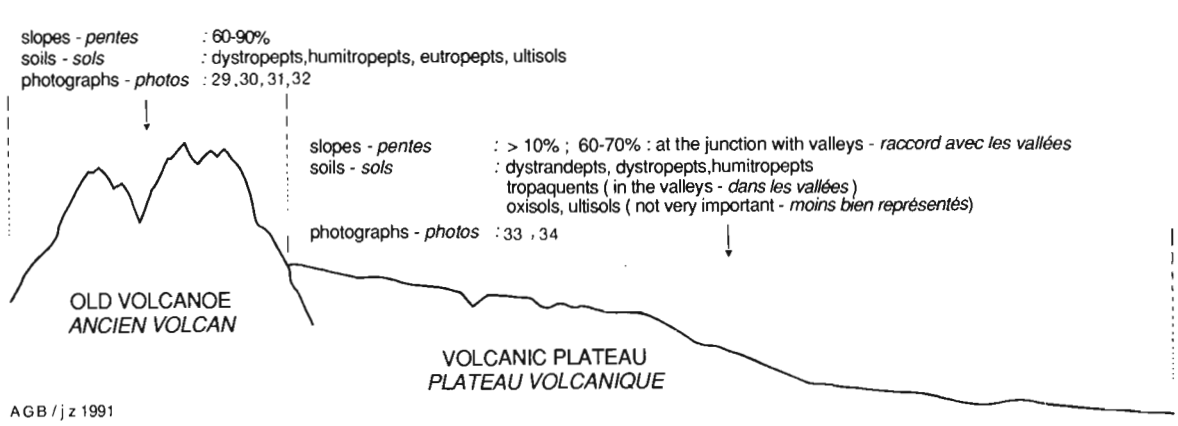
On old volcanic landforms, very steep slopes are cleared and cultivated (photos 29 to 32). Depending on the type of soil, the history of cultivation on the site, and the techniques used, consequences can be quite different.

Photo 29 shows an important landslide on a steep slope (50-60%), under an old coffee plantation. The plantation was quite varied, associating coffee, shade trees, durian and some other fruit trees. The degree of soil cover is high but, based on estimates it is possible to make from photographs, does not exceed 60%. The soils are dystropepts and ultisols. The humic layer is thin. Besides the landslide there is clear gully erosion. As in the hilly landscapes, with similar soils and slopes, the risks of erosion are high, despite a rather dense plant cover. The basic cause of this is the thin humic layer, which may even be non-existent in places, perhaps a result of careless farming practices or over-extended cultivation.

Photo 30 shows recent land clearing in a zone of secondary forest on a very steep slope (70-90%). The cleared space is limited. The soils are inceptisols (eutropepts, humitropepts) associated with rocky outcrops, but there are no andosols. The humic layers are relatively thick. Following clearing, a first rice crop was grown. The remaining stalks cover the soil and provide good protection against erosion during the rainy season. Young coffee trees are already in the ground. Below the young plants, several rocks have been placed in a semicircle in order to artificially create a flatter area where vegetable debris and transported particles can accumulate, thus preventing root exposure at the base of the plants. Apparently, although the slope is very steep, erosion is not very active. Nevertheless, a more detailed analysis (photo 31) reveals the existence of rill erosion and an increased irregularity in the soil surface, despite the protection offered and the recent nature of the clearing (one year ago). From this example, above all, the relatively mild nature of the erosion should be kept in mind. This is principally due to the presence of thick humic layers and certain very simple farming practices for protecting the soil surface, at least during the rainy season.

On the other hand, in a case where soil and slope were identical to the above, but where the humic layer had completely disappeared, either because it was thin to start with due to a too short fallow period, or because it had been carried away by runoff on sub-vertical slopes, the marks of erosion are significant, with ravines and root exposure of

Fig. 39 LANDSCAPE CROSS SECTION OF VOLCANIC PLATEAUS AND OLD VOLCANOES
COUPE SCHEMATIQUE DU PAYSAGE DE PLATEAUX VOLCANIQUES ET D'ANCIENS VOLCANS



three-year-old coffee trees (photo 32).

This series of photos illustrates clearly enough the risks of erosion in old volcanic landforms and the need to put into practice certain anti-erosive techniques. However, it is equally evident that, on slopes as steep as these, the labour and monetary investment needed would be extremely high. The cost is clearly more than the financial means of the indigenous people or the spontaneous migrants. It would appear essential to avoid land clearing on the steepest slopes where inceptisols of the eutropepts and humitropepts types occur. We have already underlined the danger that undertaking cultivation without due care presents to these soils in hilly regions (photos 27 and 28). If cultivation is unavoidable, its frequency and area must be limited as much as possible.

The inhabitants of this region are currently practicing forms of agriculture that demand the least effort and the least expense. Following clearing, rice is cultivated for two years (with a spectacular drop in yield after the first year), without any application of fertilizer. Coffee is planted simultaneously in association with a variety of trees whose growth is very irregular and rarely supervised (durian, jackfruit, pete, rubber and others). The coffee trees produce from the third year on with a maximum level of production during the 4th and 5th years. As early as the 6th year, the plantation is abandoned as coffee yield becomes insufficient. The fruit trees then become the most profitable. In fact, this is a sort of gamble. If the slope is not carried away by landslide, if the coffee plants can take root before being exposed and uprooted, one can, after three years, earn enough to compensate the years of waiting. Otherwise, there is nothing else to do except look for another plot of land.

If we refer to photo 32, it is clearly seen that this system of production inflicts almost irremediable damage on the soils. The period necessary for reconstituting the top humic layers is extremely long. This blow to the environment will be all the more catastrophic as population density increases, as this means the shortening of waiting periods. In such regions, despite the satisfactory soil potential, land use must be controlled absolutely, or even prohibited, especially when practices are so expeditious.

On very steep slopes that link volcanic plateaus to valleys :

On very steep slopes that link volcanic plateaus to valleys, landslides are quite frequent (photos 33 and 34). They occur almost exclusively at the slope break. Because of this, their impact is limited but should not be discounted. These plateaus are generally covered by inceptisols (dystropepts, dystrandepts, humitropepts), soils offering good agricultural potential and little susceptibility to erosion, except at the slope break. Susceptibility to erosion declines as the humic layer increases in thickness and the andic characteristics are more marked. These inceptisols are associated with oxisols and ultisols which have a much lower resistance to erosion (little or no humic layer, wide textural differentiation, slight water retention capacity).

For this entire landscape, which presents many similarities to the volcanic hill landscape, the earlier remarks apply here without restriction.

In young volcanic landscapes :

The slopes of recent volcanic structures are intensively cultivated (Gunung Raya, 1643 m; G. Pesagi, 2232 m; G. Sigugut, 1779 m; G. Nanti, 1618 m; G. Seminung, 1881 m). The cones are characterized by steep and even very steep slopes (30-70%), and soils with very andic characteristics, the dystrandepts (andosols). Photos 35 and 36 reveal the almost total absence of erosion on these slopes, even when they are virtually completely cleared and planted. Smallholder coffee and food crop plantation are the main forms of agriculture present. It is necessary to establish the correlation between the nature of the soil and the absence of erosion. These andisols, which possess very thick organic layers (one meter or more), good permeability and strong water retention capacity, seem practically immune to erosion despite the steepness of the slope and the absence of any anti-erosion practices, apart from the use of tree trunks cut down during clearing (photo 39).

It is frequently observed that food crops are planted along the slope (photo 36). This practice, according to Dr. Sukardi (PTT, Bogor, personal communication), is a way of fighting against diseases which appear during the rainy season when the soils are drenched with water. Planting along the slope facilitates surface drainage and permits rapid evacuation of surplus water. It is interesting to note that this practice does not cause any gully erosion. This procedure also prevents rapid saturation of humic and lower layers thus avoiding heavy percolation that could lead to massive landslide (Fig. 40).

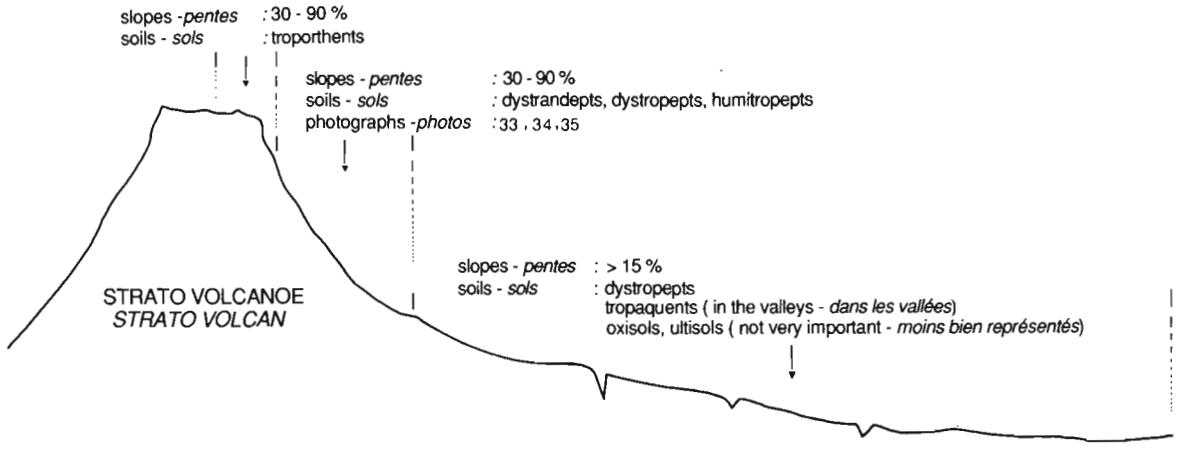
The characteristics of soils in the strato-volcanic landscapes are therefore extremely interesting from the point of view of agricultural development. In fact, in regions where the soils' range of agronomic possibilities render onerous anti-erosive systems unnecessary, it is quite logical to contemplate agricultural use, despite the steep slopes. Also, as field observations have shown, dense settlement of the area appears possible.

It should be remembered, however, that these soils must remain in pedoclimatic conditions that correspond closely with their natural balance; if not, irreversible transformations can effect their agronomic potential and their resistance to erosion (disappearance of allophanes, loss of water retention capability, decrease in organic

content, for example). Consequently, any excessive clearing which risks modifying the present local pedoclimatic framework (a rise in temperature and a drop in soil humidity) is to be avoided as long as the environmental effects of total deforestation are still poorly understood.

In spite of this uncertainty, field observations suggest that development should be undertaken, but subject to certain limitations that could only really be defined from a specific and more detailed study. This study would involve the continuous observation of representative slopes and the systematic measurement of erosion as a function of various cultural systems which could be set up experimentally.

Fig. 40 LANDSCAPE CROSS SECTION OF STRATO VOLCANOES
COUPE SCHEMATIQUE DES PAYSAGES DE VOLCANS RECENTS (STRATO VOLCAN)



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Notes to chapter 2

(1) Explanatory soil map of the Baturaja sheet, Lahat and Bengkulu sheets, Sumatera, printing under process. LREP (Land Resource Evaluation and Planning Project), *Soil data base management. Center for Soil Research, Agency for Agricultural Research and Development, Bogor.*

(2) - Soil Taxonomy - *1975 - A basic system of soil classification for making and interpreting soil surveys. Soil conservation service, USDA, Agriculture handbook No. 436, 754 pp.*
- Keys to Soil Taxonomy - *1990 - SMSS Technical Monograph No. 19, Fourth Edition, 420 pp.*

(3) Saturation Ratio (S/T) *: This ration shows the chemical fertility of the soil. This fertility determines the biological activity, the quality of the structure, the reserves of fertilizing elements etc.).*

(4) pH *: shows the H+ concentration of a solution. The soil solution is obtained by shaking soil and distilled water. The pH values are between 0 and 14. Values <7 indicate acidity, values >7 basicity.*

(5) Texture *: This concept is directly connected with the idea of granulometric composition and granulometric classes. The texture shows the value of different classes of particle size existing in the soil. Five classes exist : clay (0-2 µm), fine loam (2-20 µm), coarse loam (20-50 µm), fine sand (50-200 µm) and coarse sand (200-2000 µm). This concept is essential, especially the clay ratio. The clays are associated with organic matter and/or iron, and are responsible for aggregates cohesion, holding water, cations and anions. Generally, the results are expressed by way of a textural triangle.*

(6) Soil moisture regime *: refers to the presence or absence either of ground water or of water held at a tension of less than 1500 kPa (15 bars). Water held at a tension of 1500 kPa or more is not available to keep most plants alive. We consider a horizon (layer) to be dry when the moisture tension is 1500 kPa or more, if the water is held at a tension less than 1500 kPa nut more than 0, we consider the layer to be moist. Three main types exist in this area :*
- Aquic moisture regime. *Implies a reducing regime and the soil is continuously water saturated.*
- *Udic moisture regime. Soils with an udic moisture regime are moist during the most important part of the year; The water moves through the soil in all months and induces the leaching of cations such as Ca, K, Mg, Na and others.*
- Ustic moisture regime. *Soils with this moisture regime are not leached. The water moves through the soil during the wet season. During the dry season, the evapotranspiration is higher than the water quantity in the soil and some parts of the soil are dry. Some elements are settled.*

(7) - Exchangeable cations or Exchangeable bases: *These are the cations Ca, Mg, K and Na existing in the soil and absorbed on the surface of clay and easily available to the plants.*
- Sum of bases (S) *: This is the sum of the exchangeable bases.*

(8) Allophanes *: These result from the weathering in a humid climate of volcanic material (volcanic glass, vitric volcanic ashes and other pyroclastic materials). Allophanes are sometimes included in the term "amorphous material". These allophanes have high or very high exchange capacity. The values are clearly pH-induced. They also have high anio-exchange capacity. They have enormous surface area and certain much water against 1500 kPa, commonly 50 or 100% or more. Soils with allophanes have very low bulk density (<0.85).*

(9) Classification des sols. *CPCS - 1967 - ENSA Grignon, 87 p. multigr.*

(10) Absorbing complex (base exchange complex) *: Phyllite (clays, allophanes, silt loam) and organic matter, negatively charged on the surface, fix temporarily the cations existing in the soil solution. These cations can become free again in the soil solution; they are called "exchangeable"*

(11) - Exchangeable acidity *: determination of the quantities of exchangeable aluminium and of exchangeable hydrogen. This value is used for the identification of the effective cations exchange capacity (ECEC) of a soil, a horizon (layer).*
- Effective cations exchange capacity (ECEC), *or Permanent charge (PC): measure of the total quantity of cations (CA++, MG++, K+, NA+, Al+++, H+) or S + Al+++ + H) of a soil, a layer.*
- Cations exchange capacity (CEC, or T) *: This is the total quantity of cations that the soil can retain on its base exchange complex at a defined pH.*

A.G. BEAUDOU - M. PAIN

North of the Ogan River - *Nord de la rivière Ogan*, Kecamatan Pengandonan

23. Hillside suffering : following clearing to plant, sheet erosion under tree and crop , evidence of erosion around roots and of topsoil, transport of fine particles and deposit. Inceptisols, slight slopes (10-15%) -*Erosion superficielle en nappe sous plantation arbustive et vivrière hétérogène après défrichement récent, déchaussement des racines et des matériaux de surface,transport de particules fines et dépôt.Inceptisols, faibles pentes (10-15 %).*

A.G. BEAUDOU - M. PAIN

North of the Ogan River - *Nord de la rivière Ogan*, Kecamatan Pengandonan

24. Gully erosion in plantation partially covered with pineapple. Oxisols, gently slopes (10-15 %). - *Erosion ravinante dans plantation clairsemée d'ananas. Oxisols, faibles pentes (10-15%)*

25. Ravine and beginning of landslide process at the slope break in a young oil-palm plantation despite dense cover vegetation. Oxisols of a gently sloping plain, slope <10%. - *Ravine et début d'éboulement au niveau d'une rupture de pente dans une jeune plantation de palmiers à huile malgré un couvert végétal assez dense. Oxisols, région de plaine, pentes <10%.*

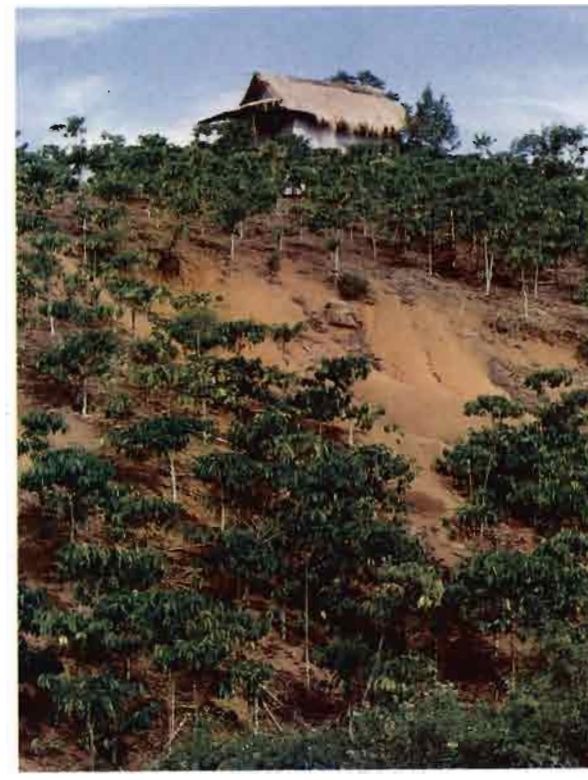
A.G. BEAUDOU - M. PAIN

Road from Prabumulih to Baturaja - *Route de Prabumulih à Baturaja*, Kecamatan Rambang / Lubai-Peninjauan

A.G. BEAUDOU - M. PAIN

West Pengandonan - ouest de Pengandonan, Kecamatan Tanjungagung

26. Ravine caused by erosion of oxisols without apparent humic layer : old coffee plantation, broken soil cover, plane convex landform, gentle slopes (10-15%) - *Erosion ravinante sur oxisols sans horizon humifère apparent ; vieille caféière, recouvrement du sol discontinu, modelé plan convexe, faibles pentes (10-15%).*



A.G. BEAUDOU - M. PAIN

Sukorejo Kecamatan Pengandonan

27. Gully erosion following the disappearance of topsoil ; inceptisols-oxisols, average slopes (20-25%) - *Installation d'une érosion ravinante après disparition des horizons de surface ; inceptisols-oxisols, pentes moyennes (20-25%)*

28. Landslide and ravine formation ; young coffee plantation, recent clearing, average slope (25-35%) - *Loupes de glissement et ravinement; jeune plantation de café, défrichement récent , pentes moyennes (25-35%)*

RASJID HANAFIAH

East Kedaton - *Est Kedaton*, Kecamatan Pulau Pinang

Gunung Meraksa Kecamatan Pengandonan

29. Ravine formation and landslide which has carried away coffee and shade trees despite dense soil cover ; ultisols derived from volcanic rocks, steep slopes (40-50%) - *Ravinement et glissement de terrain ayant emporté caféiers et arbres d'ombre malgré une couverture du sol importante ; ultisols dérivés de roches volcaniques, pentes fortes (40-50%)*

30. An example of a recent clearing in very steep volcanic regions (80-90%) ; absence of marked erosion, inceptisols with thick humic layer associated with rocky outcrops. Note the fence protecting against wild animals - *Un exemple de défrichement récent dans des régions volcaniques à très fortes pentes (80-90%) ; absence d'érosion marquée, inceptisols à horizon humifère épais, associés à des affleurements rocheux. Noter la clôture de protection pour les animaux sauvages.*

West bank of the Ogan River - *rive droite de la riv. Ogan* , Pedataran, Kecamatan Pengandonan

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West bank of the Ogan River - *rive droite de la riv. Ogan*, Pedataran, Kecamatan Pengandonan

31. Detail of Photo 30 showing the ever-present risk of erosion ; slight rill erosion and irregular soil roughness following a year of cultivation - *Détail photo 30 montrant que les risques d'érosion existent : léger ravinement et micro-modelé irrégulier aprés une année de mise en culture.*

32. Similar situation to that found in Photos 30 and 31 : erosion around roots of a young coffee tree two years after planting ; more serious erosion of inceptisols without thick humic layer - *Dans une situation similaire aux clichés 30 et 31, déchaussement d'un jeune plan de caféier après deux ans de mise en culture ; accentuation de l'érosion sur inceptisols sans horizon humifère épais.*

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West bank of the Ogan River - *rive droite de la riv. Ogan*, Pedataran, Kecamatan Pengandonan

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Region of Danau Ranau - *Région du Danau Ranau*, Kecamatan Banding Agung/Simpang

33 § 34. Deeply dissected plateau landscape of volcanic origin, valley floor occupied by rice fields and settlements, steep valley slopes (60-70%) are cultivated ; landslide on plateau edge is the predominant form of erosion of the andic soils which have a thin humic layer - *Paysage de plateau d'origine volcanique profondément entaillé, fond de vallée occupé par les rizières et les habitations, versant à très fortes pentes (60-70%) portant cultures et plantations ; au niveau des rebords de plateaux, glissement de terrain : forme d'érosion prédominante dans des sols à caractère andique et à couche humifère limitée.*

A.G. BEAUDOU - M. PAIN

In the Danau Ranau region, the slopes of the Gunung Raya (1643 m) - *Région du Danau Ranau, pentes du Gunung Raya (1643m)*, Kec.Banding Agung

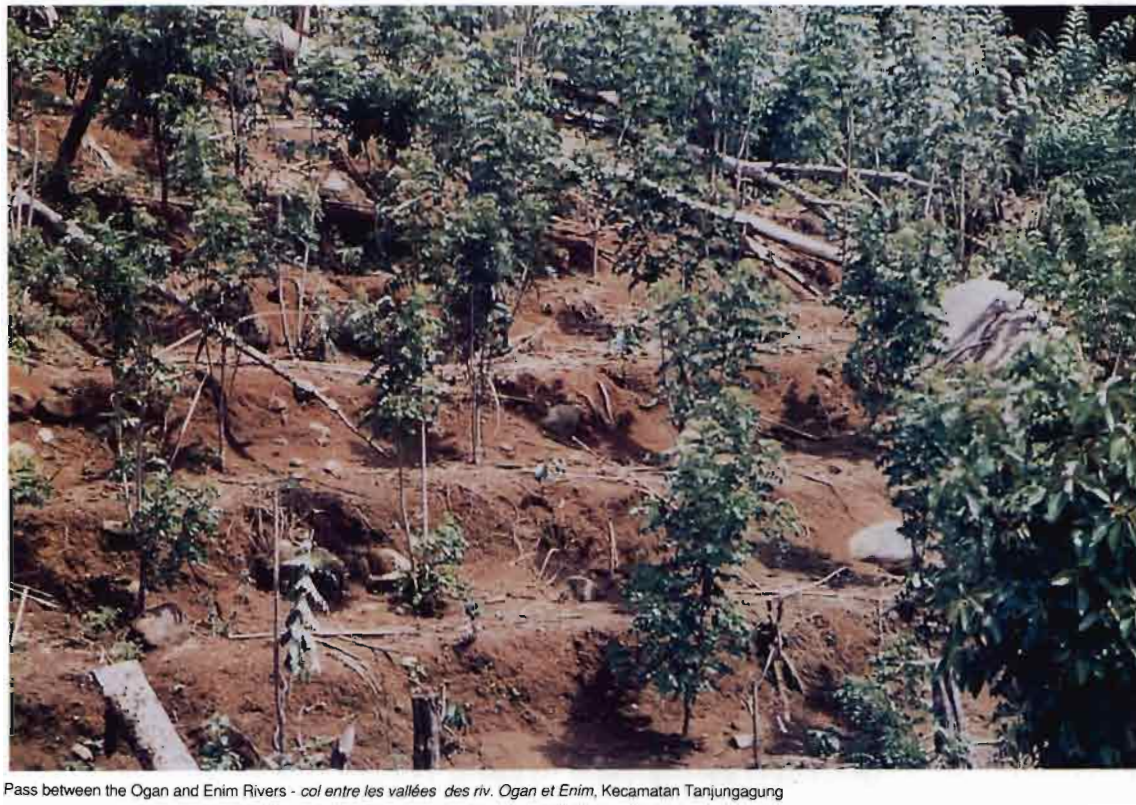
35. Large clearings at high altitude in a young volcanic landscape near the Barisan Range: young coffee plants, burned out trees trunks, remain of a former forest, a small hut in the middle of a plantation. These steep slopes rich in andosols show no evidence of erosion - *Défrichements importants en altitude dans un paysage volcanique récent de la chaine des Barisan; jeunes caféiers, restes de troncs d'arbres brulés de la forêt pré-existante, construction légère du planteur au milieu de son champ. Sur ces pentes fortes à andosols, absence de traces d'érosion visibles.*

36. In a similar landscape of the Barisan Range, these very steep slopes (30-60%) rich in andosols with a thick humic layer, show few traces of erosion despite intense agricultural cultivation : intersperced with rows of vegetables, lines of coffee plants are grown at right angles to the slope of the hill (as seen in the left corner of the photo). Bananas trees, shade trees and a few fruit trees can also be seen. - *Dans un paysage semblable (chaîne des Barisan), sur des pentes très fortes (30-60%) portant des andosols aux horizons humifères épais, les traces d'érosion sont pratiquement absentes malgré l'intensité de la mise en valeur agricole: caféiers plantés en ligne en association avec des légumes cultivés sur des banquettes placées à intervalles réguliers dans le sens contraire de la pente (à gauche de la photo), bananiers, arbres d'ombre et quelques arbres fruitiers.*

Sukorejo Kecamatan Pengandonan

37. Weeding a young coffee plantation and placing the organic debris across the slope to limit runoff. Gently sloping landscape in a hilly volcanic region - *Sarclage d'une jeune plantation de caféiers avec disposition des débris végétaux selon les courbes de niveaux pour limiter les effets du ruissellement. Paysage collinaire en région volcanique, pentes faibles.*

38. Terracing of a convex moderatly sloping valley slope in a landscape with a high risk of erosion (see Photo 26) : coffee planted under shade trees, the latter supporting pepper vines - *Façonnement en terrasses d'un versant convexe à pente modérée dans un paysage à risque d'érosion élevée (cf.cliché 26) ; plantation de caféiers sous ombrière, les arbres d'ombre servant de support à des poivriers.*



Pass between the Ogan and Enim Rivers - *col entre les vallées des riv. Ogan et Enim*, Kecamatan Tanjungagung

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Region of Danau Ranau - *Région du Danau Ranau,* Kecamatan Banding Agung

39. Use of felled trunks as rudimentary protection against erosion on steep slopes ; andosols (see Photos 35 and 36) - *Utilisation des troncs abattus comme protection élémentaire contre l'érosion sur de fortes pentes ; andosols (cf. clichés 35 et 36).*

40. Hillside of terraced rice fields developed by Javanese under the supervision of the Department of Public Works, near Danau Ranau in a region where this technique is uncommon. Steep slopes, andosols (see Photos 35 and 36) - *Découpage d'un versant en rizières étagées, le découpage réalisé par des javanais sous le contrôle des Travaux Publics, à proximité du Danau Ranau dans une région où cette technique est inhabituelle. Fortes pentes, andosols (cf. clichés 35 et 36).*

A.G. BEAUDOU - M. PAIN

Region of Danau Ranau - *Région du Danau Ranau,* Kecamatan Banding Agung

Chapter 3

Regional Policies and Management of the Environment

Frédéric Durand & Marc Pain

Field work, on a large scale, allows the risks associated with agricultural development to be better defined, and a more subtle evaluation of the landscape potential to be carried out.

It is nevertheless necessary to come back to a smaller scale in order to define an overall policy and to take up the questions raised by a speeding up of regional development.

Going from the particular to the general, and vice versa, permits geographic bodies, which cannot be understood except through analyses carried out at overlapping scales, to be brought more sharply into view.

In the southern part of Sumatra, it appears that environmental and regional management is confronted, in the first instance, by the individual needs of those whose roles are directly linked to the rural scene. Natural factors seem to be less critical than human action even though settlement, despite its established nature, had been limited, up until recently, to quite a restricted area in total.

Only those natural factors which appear crucial, and which cannot be overlooked, will be presented here. More stress will be placed on those elements which, either by the constraints they impose or by their action, have a direct influence on the environment and produce the changes that are taking place.

It will be essential to determine the respective influence of each of them and to see whether the disparate interests or the contradictions which are observed at the present time could not be better controlled. The major difficulty, gambling on the future, is to recognise and integrate all the opposing forces.

Chapter translated from French by F. Vaissières & K. Luckcuck

1. The critical natural factors

If, in certain cases, natural factors can play a determining part, the diversity of tropical setting in the southern segment of Sumatra admits a relatively open selection of production methods and a wide variety of crops including the traditional food-producing varieties, high altitude open-field market gardening, very extensive irrigated rice growing on the plains, the large mechanised production of sugar cane, cassava or pineapples, commercial rubber plantations or, at the other end of the scale, small family holdings of coffee plants or clove trees. So it is more from the point of view of the limitations, the juxtaposition or the opposition of the key natural factors, that the question of the significance of the natural data should be tackled.

■ The risks of drought make a second rice harvest doubtful

The risk of drought represents a not unimportant limitation, the significance of which may be surprising in a tropical region known for its humidity. In fact, the overall picture is one of a humid tropical climate, with rainfall spread throughout the whole year. Monthly precipitation charts for all stations show a very pronounced maximum between November and April, with rainfall reaching or exceeding 200 to 300 mm, and a clear-cut trough from June to September, a period of the year when monthly totals can drop below 100 mm. The rainfall pattern is slightly more complex to the north of the region studied, with the appearance of a second minimum in February and a second maximum in March-April (see the meteorological stations

of Palembang, Sukayu and Surulangin, situated on about latitude 3°S, separate sheet No 1).

In almost all parts, the annual rainfall exceeds 2,000 mm. A fairly simple rainfall distribution chart divides the region into bands of increasing level going from east to west. The coastal areas of the Java Sea receive less than 2,000 mm spread over 110/120 days of rainfall, the central plains 2,500 to 3,000 mm over 120/140 days, and the mountain chain and the west coast more than 3,000 mm as a result of 150 to 170 days of precipitation per year.

The uniformity of the isohyetal curve is modified in two cases. First, by the presence of a broad gulf of heavy rainfall in the central plains, extending from the border of Lampung in the south to the boundary of the province of Jambi, which it partly covers. The rainfall levels in excess of 3,000 mm observed here correspond fairly closely to the 50 m contour separating the upper and lower portions of the plains. Second, it is modified by the relatively poor rainfall which is typical of the inter-mountain basins or certain low-lying piedmont regions. Rainfall drops to 2,000 mm in the upper Musi basin and in the *kecamatan* of Ulu Musi and Pendopo, whereas the surrounding ranges and the adjacent plains receive more than 3,000 mm. The region of Pringsewu in Lampung forms a depression less than 100 m in depth in the centre of a piedmont plain which is mainly slightly higher. The decrease in rainfall is just as appreciable. It is part of a much greater entity, highly distinctive in the southern part of Sumatra, and unique by virtue of the risks of drought which influence it.

Well known and documented, emphasised by statistics and all maps, confirmed by botanists in their accounts of plant cover [1], this anomaly is nevertheless not easy to define. A large number of stations are available in this region, often associated with the presence of plantations, as are long lists of statistics, some of which go back to the beginning of the century. The compiled data, be it the result of traditional methods and interpretation or more recently of computer processing (soil data base management), produce results that are admittedly comparable but all different (Laumonier, RePPProT, Levang, Hidayat)[2]. Is the boundary of the regions at risk through inadequate rainfall, as presented in sheet 5, thus approximate? It is an "average" position drawn from all the sources investigated.

Despite the difficulties encountered in defining this basic risk, it turns out that a large part of the province of Lampung, undoubtedly two-thirds, experiences a dry season (P < 100 mm/month) in excess of two months. Using data from tens of stations, several of which have been recording since 1916, a drought risk map was drawn for the Lampung atlas (separate sheet No. 2, Levang) which shows, for the central-southern part of the province, in a quadrilateral going from Bandarlampung/ Talang Padang in the south to Metro/Kotabumi in the north, a region where the risk of 4 to 5 dry months during a year is greater than 50%.

This limitation dictates the use of irrigation in order to guarantee a second rice harvest. For the whole region, this is never assured and, according to U. Scholz, "even in irrigated areas, there is not always enough water available for this purpose" [3].

Nor is the region protected from climatic set-backs which can intensify the absence of rainfall observed in the southern part of Sumatra. The year 1991 was distinguished by an exceptional drought which affected a large portion of the archipelago and more especially the provinces of East Kalimantan and South Sumatra. As already described [4], these provinces were the centre of devastating fires which, as a result of the clouds of smoke given off, caused a significant drop in visibility, the closure of airports, disruption of air traffic as far away a Singapore, and a whole series of accidents which affected river navigation in Palembang, which was plunged into darkness for several weeks. There was almost a total absence of rainfall from June to October (Fig. 41).

The wet season, on the other hand, arrived late and was marked by very violent rain storms which, during December and January, in the Padang and Lampung regions, caused landslides in the mountain regions and severe flooding on the plains, upsetting commercial life and agricultural activity.

LEGEND Fig. 41 - *LEGENDE DE LA Fig. 41*

drought - *sécheresse* :

according to F. Gaussen's formula, deficit in water for plants appears when :
P (rainfall) **< 2 T** (temperature)
Selon la formule de F. Gaussen, le déficit en eau pour les plantes apparaît lorsque:
***P** (précipitations) **< 2 T** (températures)*

mean monthly temperature
température moyenne annuelle

mean monthly rainfall 1961 – 1990
précipitations moyennes mensuelles

mean monthly rainfall for the year 1991
précipitations mensuelles pour l'année 1991

sources - *sources* : Badan Meteorologi dan Geofisika, Jakarta MP/ jz 1992

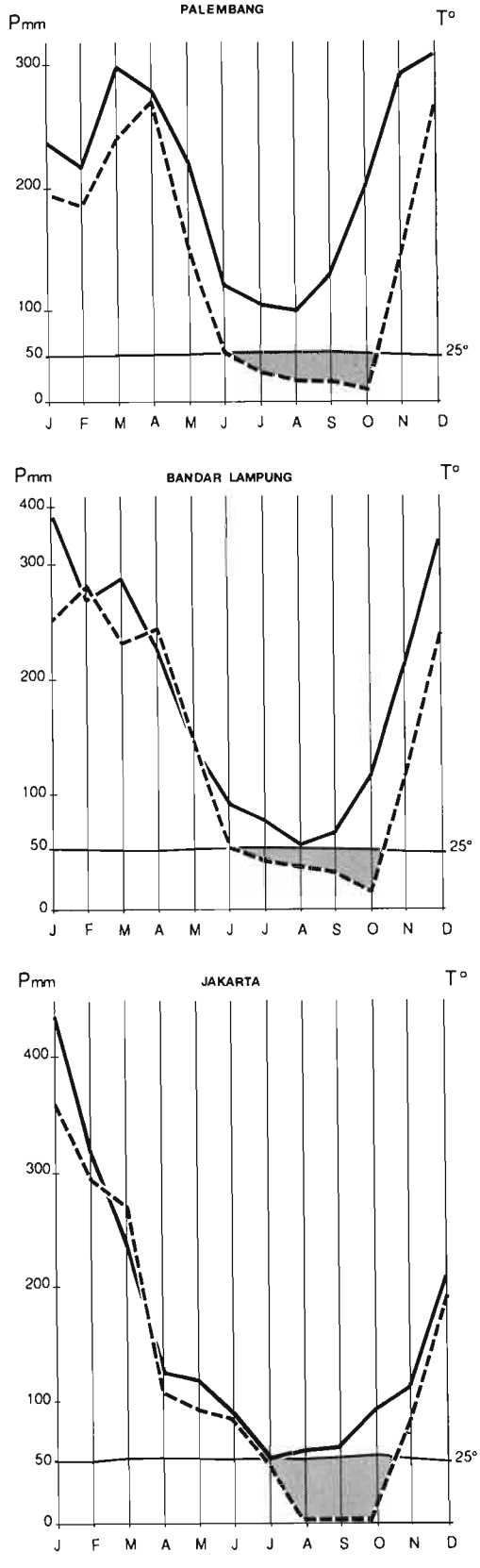


Fig. 41
CLIMATIC CONSTRAINTS - THE RISK OF DROUGHT
CONTRAINTES CLIMATIQUES - LE RISQUE DE SECHERESSE

■ 30,000 km² of swamp and land liable to flooding

Flooding represents a constraint which is regularly in the news in the southern provinces of Sumatra. Water swept through part of the town of Jambi in January 1992, making it necessary to get around by boat. During the same month, Menggala experienced a similar ordeal, with more than 1.50 m of water in the low lying streets near the Tulang Bawang River. The newspapers deplored the death of six people, carried away in the torrents of the flooded rivers (Jakarta Post, January 1992).

Apart from stories that appear in the press, relatively little information is available on the frequency and scope of flooding. A recent report, "The Musi River Basin Study", gave some significant details of its extent. Thus it was found that, in a river basin of 79,000 km² covering an important part of Sumatera Selatan, the floods "covered about 60,000 ha for several months in 1987-88. About 490,000 people live in the flooded areas and damage to property is frequently high" [5]. The entire hinterland of Palembang is regularly subjected to flooding, from Sekayu on the Musi to Kayuagung on the Komering. It is frequent along the major water courses up to the foot of the mountain range (See separate sheet No. 5, map 2). The study lists 34 places where urgent strengthening works are needed in order to limit the risk of rivers bursting their banks. Eleven of these are situated on the edge of the Trans-Sumatra road [6].

Marshy regions extend along the whole of the western coast of Sumatra, but it is in the provinces Riau, Jambi and Sumatera Selatan that they are the most widespread. If the low-lying territory to the east, for the most part marshy, is estimated to be 18% of the total surface area of Sumatra, according to the regional divisions established by U. Scholz, the coastal swamps of Sumatera Selatan account for more than 25% of its area.

With the exception of the areas liable to flooding which lie along the major inland water courses of the provinces, swamps represent a serious constraint on development over a vast territory of 350 km as the crow flies, extending from the Tulang Bawang estuary in Lampung to Sekanak Bay within the province boundaries of Jambi, and over 150 km from Bangka Strait (Cape Selokan) to the Palembang hinterland. This amphibious region of virtually 25,000 uninterrupted hectares, is the southern equivalent of the huge delta of the Inderagiri and Batanghari Rivers further to the north.

These regions are isolated, almost impenetrable except by water, and disadvantaged by peaty soils several metres thick. These problems of access and agricultural development are compensated to some extent by the benefits provided by a significant rise and fall of the tide and a powerful bore which travels a long way inland. The

influence of the tide is felt to a point upstream from Palembang. The examples of the Bugis and the Banjar, who are numerous here and who know how to turn such situations to their advantage, have resulted in this alienating environment being converted into a site for agricultural settlement. Spontaneously, natives and migrants alike have arrived to copy and proliferate the production methods of the first settlers. The State, by launching a reclamation movement on a large scale, has set about putting the finishing touches to a process that barely goes back to the beginning of the century.

It is nevertheless a fact that conditions of transport here are still difficult and still expensive as a result of the transhipping made necessary by the carriage of goods by both water and land.

■ Constraints and advantages in the mountain range

A major portion of the mountain range combines, in a single area, both soils suitable for cash crops and slopes with very steep gradients, favourable conditions for the development of the phenomena of erosion. It was shown in chapter 2 that the factors of slope and soil type could be offset, and that a large-scale analysis of the lifestyles of the majority of the population revealed a wide variety of circumstances, the least favourable not necessarily being in places where the slopes were sheer. This statement should not lead to a lack of development safeguards in an environment where the relationship between high potential land and steep slopes represents a structural limitation which becomes even more severe when subjected to significant demographic pressure.

From the settlers' point of view, the Barisan Range offers considerable advantages: numerous valleys still wooded and and lightly populated and thus able to be cleared, soils renowned for their fertility and suitable for coffee growing, and the possibility to extend the variety of crops. The 20°C isothermal line (separate sheet No. 1), for example around Lake Ranau, corresponds fairly closely to regions of Lampung and of Sumatera Selatan where open-field vegetable growing was developed (potatoes, cabbages, onions) for despatch directly to the large urban centres of Bandarlampung, Palembang and Jakarta.

From a regional point of view, it is actually in the upper parts of the catchment areas that the most spectacular risks of erosion are located. The very heavy rains of the month of January 1992 affected the majority of the mountain range. Rock-falls and landslides carried away roads and made traffic impracticable or difficult in the entire southern part of the Barisan Mountains.

The technical report devoted to the Musi Basin, which as previously mentioned extends over the whole of the province selected for the study of spontaneous migrants, points out that "the total critical area was estimated at about 1,200,000 ha and about 377,000 ha are considered as urgently requiring soil conversation works" [7]. The main part of the land considered to be in a critical situation is located in the coffee producing zone of the mountain and piedmont areas.

Clearing that is carried out carelessly can only magnify the natural erosion phenomena observed in the Barisan Range. The violent and uncontrolled strength of this human action brought about a disruption to a situation which was evolving slowly and without real risk. Today, divergent interests often oppose each other in the mountain area. While the whole region is not subjected to the same pressures, it would seem essential to look closely at the players involved and to determine their respective influence in the building of a regional environment.

2. Influence of the major contributors

■ The administration and the governmental structure

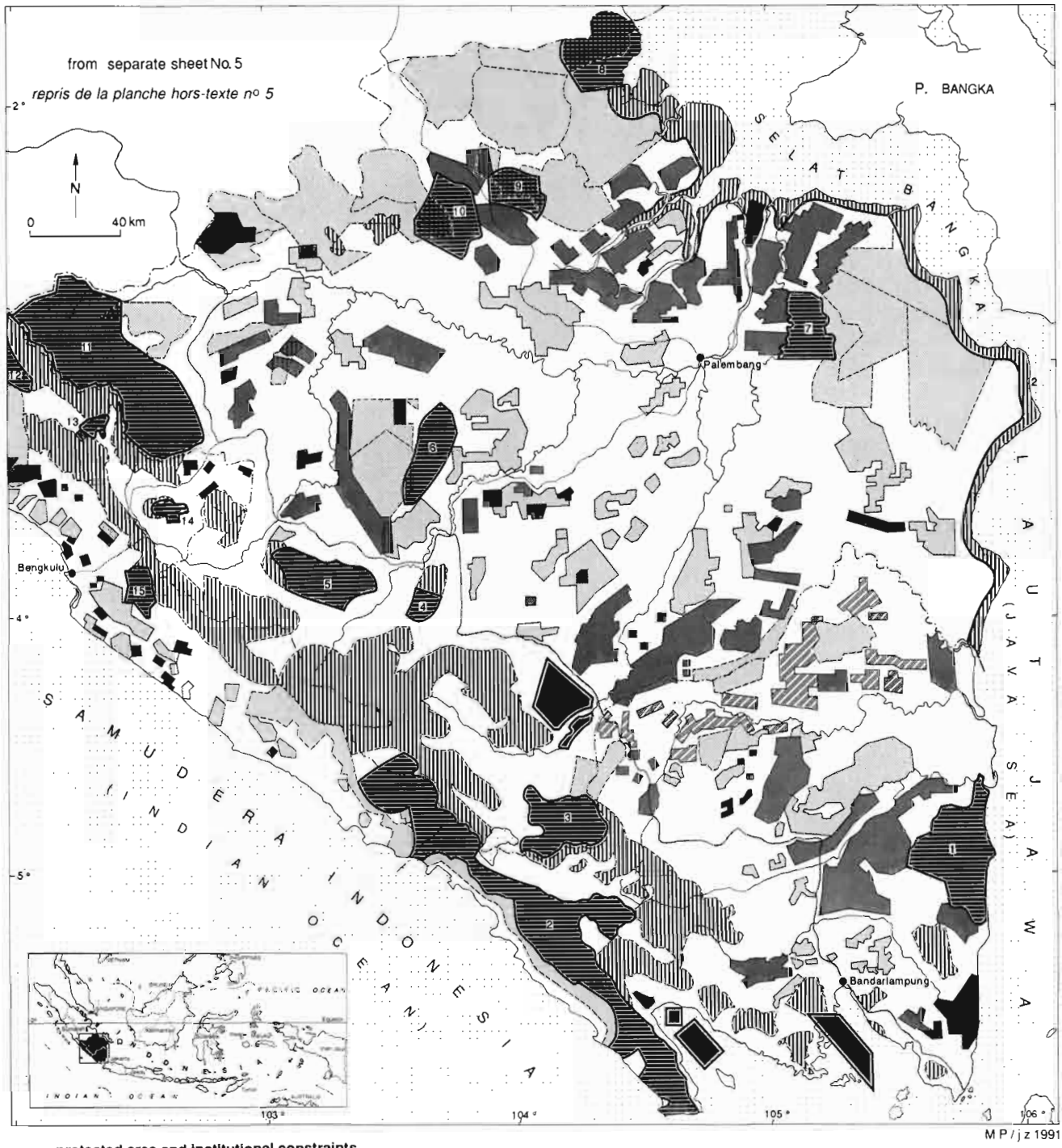
The government intervenes directly in three spheres, exemplified in the field by property bearing a special status, namely, land classified in the register of forests, the Transmigration's centres, and military reserves. There is also government intervention in the granting of forestry permits or land for large plantations, but in these cases the concessions are only of a temporary nature. They will be treated separately.

The territorial constraints of an institutional character, which are of an inherently very stable nature, already cover very significant portions of the region in their own right (Fig. 42).

PROTECTED AREAS AND LAND CLASSIFIED UNDER THE TITLE "FOREST"

Since 1980, forests have been divided into three major categories, natural parks and reserves, protected forests and forests for the production of timber, this last category

Fig. 42 INSTITUTIONAL CONSTRAINTS AND LAND STATUS
CONTRAINTES INSTITUTIONNELLES ET ESPACES AFFECTES



M P / j z 1991

protected area and institutional constraints
espaces protégés et contraintes institutionnelles

protected area - *espace protégé* :
- national park, reserve - *parc national, réserve naturelle*
- protected forest - *foret protégée*

agricultural official settlement - *colonisation agricole officielle* :
- Transmigration settlement, all types - *Transmigration, tous types confondus*
- Local Transmigration - *Transmigration Locale*

military area - *domaine militaire* :
- military practise area, on land or on sea - *champ de manoeuvres, terrestres ou maritimes*

concession - *espace concédé*
- agro-industrial estate, forest claim - *agro-industrie, concession forestière*

overlaping claims on land with unclear legal status
espaces litigieux, recouvrement de terrain de nature juridique différente

NATIONAL PARK, RESERVE
PARC, RESERVE NATURELLE

1) Suaka Marga Satwa Way Kambas
2) T.N. Bukit Barisan Selatan
3) Gunung Raya
4) Gasmai Pasma
5) Isan Isan Pasemah
6) Taman Buru Benakat
7) Padang Sugihan
8) Terusan Dalam
9) Dangku
10) Bentawan
11) Ulu Latikan
12) Kerinci Seblat
13) Suaka Alam Danau Tees
14) T.W. Bukit Kaba
15) T B. Semindang Bukit Kabu

being itself divided into the three sub-categories of unlimited production, limited production, and production prior to conversion to agriculture.

The estates under the jurisdiction of the Ministry of Forests are significant, and cover 40.7% of the area of the province of Lampung, 39.1% of Sumatera Selatan and 49.4% of Bengkulu. Parks and protected forests alone represent 20% of the area of the three provinces (Table 34).

Generally speaking, it is on the periphery of the region that land classified under the heading "forest" or under control of the Ministry of Forests is located. To the west, a broad band covers the Barisan Range from the south of Lampung to the north of Bengkulu. From the coast of the Java Sea to the Bangka Strait in the east, there are narrow reserves which extend out of sight inland in the form of marshy forests in the immense swamps on both sides of the Musi delta.

Up until the second half of the 20th century, the fringes had been neglected and had remained part of the forest. With the exception of the development of the vast Musi delta, the areas set aside for settlement programmes and for agro-industrial projects have been chosen in the centre of the provinces between the marshes and the mountains.

THE CENTRES OF THE TRANSMIGRATION

As already noted, the Transmigration's centres are spread throughout the whole of the southern part of Sumatra (Fig. 2). Henceforth, they will be an integral part of the landscape. Not only have the basic systems of production diversified, but the area they cover has considerably increased to the point that it is no longer possible today to envision regional development in the southern part of Sumatra without taking into account the limitations that they imply.

It is recalled that they cover some 700,000 ha in Sumatera Selatan, being about 7% of the area of the province. The dry land programmes take up about 359,000 ha, whereas about 318,000 ha of marsh have been improved. In Lampung, 337,000 ha are employed in the combined programmes of the colonial period and the Transmigration, 100,000 ha are utilised by those of the Local Transmigration, and 42,000 ha by those in the swamps, making up a total of 479,000 ha and 15% of the area of the province. In the southern part of Bengkulu, the Transmigration's centres cover 43,000 ha, which represents 3,5 % of the area under study. Notwithstanding the vast nature of these areas, it is the demographic and economic forces that are even more significant.

In 1986, Transmigrants and their descendants accounted for a quarter of the population of the province of Lampung and about 15 % of that of the province of South-Sumatra [8].

Table 34. LAND AREA UNDER THE JURIDICTION OF THE MINISTRY OF FORESTS (ha)
SUPERFICIE DES TERRES SOUS LA JURIDICTION DU MINISTERE DES FORETS (ha)

province area	parks	protected forests	forests for timber production (1)	(2)	total area % of province
Lampung 3,200,000 ha	323,358	422,500	-	557,976	1,303,834 40.7%
Sumatera Selatan 10,277,500 ha	774,700	796,500	330,000	2, 124,000	4,028,200 39,1 %
Bengkulu 1,978,870 ha	441,090	296,038	213,916	26,913	977,957 49,4 %

(1) limited production (2) unlimited production
Sources: Badan Inventarisasi dan Tata Guna Hutan (Ref. DTGH 0688, W 120787), Jakarta, 1988.

THE MILITARY RESERVES

One military reserve takes up a sizable quadrilateral to the south of Baturaja in the centre of the region. Split into two portions, it covers about 50,000 ha. The extension planned recently (1984) to the OMIBA camp, built in 1957, will the possibility for large-scale military manoeuvres *(Pusat Pendidikan Latihan)*, but will eventually bring about the disappearance of the villages located along the upstream part of the Komering River. Expropriation of the land is under way. At the present time, only a 500 m wide strip to the north of the road, between Martapura and Simpang, is still available to the villagers. They also have access to 1,700 ha on the southern side of the road, at the level of the villages of Prack and Sabalioh.

In the province of Lampung, the constraints of a military nature stem from the navy which occupies considerable areas of seaboard land in Semangka Bay and Telukbetung Bay. The shores opposite these areas are subject to special regulations and cannot, as is the case in the *kecamatan* of Padang Cermin, be occupied. The villages that previously existed there were shifted in 1986.

THE SIGNIFICANCE OF THE CONSTRAINTS

The constraints imposed by the government do not by any means all have the same effect. The bounds constituted by military properties, which no-one would venture to infringe, are the most consequential. It is only necessary to observe with what care drivers respect the speed limits imposed around the entries to camps in order to be convinced. It is just as important to note that, in the area of the military reserve at Baturaja, fallow areas of *Imperata cylindrica*, typical of spent soil or abandoned fields, play a fairly significant role. In spite of the lack of fencing, no farmer today would take the risk of cultivating this ostensibly unoccupied land.

The administrative limits imposed by the Ministry of Forests are more or less in effect. It turns out that the protection of national parks, as it is for the crack-down on illegal settlements, is carried out very rigourously. A warning notice placed around the boundaries of natural reserves advises that any illicit settlement may be punished by ten years imprisonment or a fine of 100 million Rupees. The limits are sometimes indicated by concrete boundary posts. Government authorities are not averse to shifting entire villages whenever it concerns straightening out a situation. This is what happened to Karangsari, Sidodadi, Lapangang Kijang, Sidomulyo and Botol, five villages of the *kecamatan* of Way Jepara, which were located on the left bank of the Penet River in the Way Kambas Reserve.

In a considerable number of cases, there is widespread infringement of these limits. This can easily be observed on the separate sheet entitled "Dynamics of Land Settlement" in section 4. To the west, the boundaries of the Bukit Barisan Selatan national park correspond more or less to the high altitude forests of the mountain range, except for the break cleared along the Liwa-Krui road. On the other hand, to the east of Lake Ranau, the reserves of Gunung Raya and the Sigigut volcano are in the main hemmed in by family plantations. The 1986 SPOT image which was used to produce this map, is undeniable proof of this fact.

This presentation of the protected forests, when compared with the present land usage map, produces totally artificial boundaries, overlaid on a reality which had justified their creation in the past but which no longer exists today. It could practically be said that they are "disconnected" from the environment over which they fit as they represent nothing but a line on an administrative document that has become obsolete.

In the same region, slightly further to the north, the case of the protected forests of Mount Nanti, partly felled and with settlers at the peak of the occupation process, is a clear example of a situation which can be found almost everywhere in the three southern provinces of Sumatra.

This "step" character, being the opposition of two realities, that of the government and that of the settlers or natives, does not persist for very long in the Transmigration's centres. Even independent of whether this is done with greater or lesser rigour, the transmigrants' villages are always demarcated, whereas the traditional lands have less rigid boundaries or, at least, offer the possibility of moving inland into a vast workable space. The limitations of the soil are fairly well respected to the extent that the land allocated is usually surveyed and registered in the name of a family. The dimensions of the allotment cannot be altered as one pleases, nor can uncontrolled extensions be carried out.

Having said this, there is totally unrestricted entry to the villages. Depending on the conflicts or failures of the transmigrants, the lots are sold or exchanged, often by going around the prohibition on land transfer before the ten year time limit, short of which any real estate transaction is forbidden. These transactions, however, illegal in some cases but accepted in others if it results in a lessening of the effects of a too high percentage of withdrawals, are carried out in a very well defined area.

Ideally placed and densely populated from their inception, whereas elsewhere settlement is rather lax, the Transmigration's centres symbolise right away organised nuclei which have a significant impact on the changes to the regional environment. Imbued with a certain concept of progress, they constitute amenity centres and places where, due to the combination of an administrative infrastructure and the grouping of a large population in a small area, the

programmes of agricultural promotion and family planning have been really successful. This has only served to strengthen the centres' influence.

The constraints imposed by the administration should thus be approached warily, but without making this a general rule. The extent of uncontrolled clearing would tend to cast some doubt on the efficiency of the measures enacted by the regional and national governments. It is nevertheless true that government decisions, taken up and applied at the provincial level, remain essential for at least two reasons. The first is linked to the size of land holdings under direct state control. The second simply relates to the fact that these decisions concern the legislation in force. In resolving conflicts or making rulings, the administrative boundaries regain their full power. The government, in a strong legal position, is able to undertake eviction procedures against the offenders, with no possibility of legal appeal or compensation. In spite of the significant resources demanded, imposed transfers of population, resulting in the relocation of 250,000 people in ten years, have been implemented within the framework of the Local Transmigration. These have drastically changed the geography of northern Lampung and have stimulated further migration, of a spontaneous nature, towards the interior of the province and even to the surrounding provinces. In 1990, regional authorities acted with the same rigour in the *kabupaten* of Ogan Komering Ulu where they set about evicting planters who had settled on the slopes of the volcanic cones in the *kecamatan* of Simpang, in the vicinity of Lake Ranau.

■ The agro-industrial and forestry lobbies

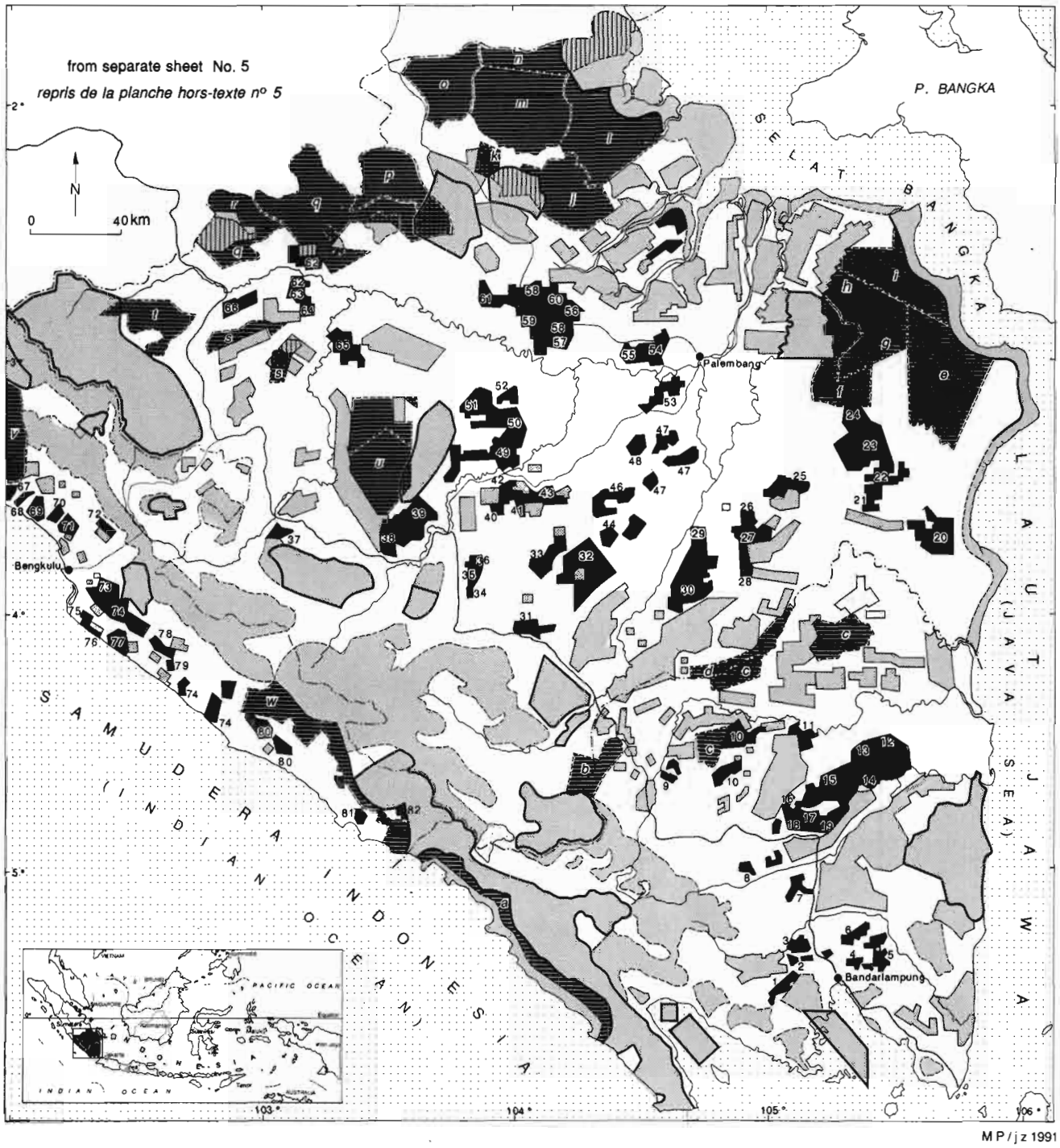
The farm-produce industry has been developing vigorously for twenty years, as a result of the action either of powerful financial groups, who are the only bodies able to put the necessary funds together to launch this kind of activity, or of diversified companies in collaboration with the government. Although the farm-produce industry is subjected to a system of prerequisite authorisations and constrained by administrative rules, it is of such economic importance that it can have a direct influence on the conditions of regional development. Forestry concessions and commercial plantations are discussed separately below (Fig. 43).

ESTATES - *PLANTATIONS*

		hectares
LAMPUNG		
1	WAY LIMA	2 822
2	WAY BERULU	2 227
3	REJOSARI	4 823
4	KEDATON	3 179
5	BERGEN	3 427
6	TRICORA	2 140
7	BEKRI	4 405
8	PADANG RATU	2 370
9	TULUNG BUYUT	4 916
10	PTP XXI XXII	18 050
11	PT HUMAS INDAH MEKAR	5 000
12	PT GPM	20 000
13	PT MULTI AGRO CORP.	1 0 000
14	PT GUNUNG MADU PLANTATIONS	24 000
15	PT BUMI LAMPUNG PERMA	17 000
16	PT RATU MUSTIKA SARI	
17	PT GREAT GIANT PINEAPPLE	5 763
18	PT BUMI WARAS	5 400
19	PT UMAS JAYA FARM	7 000
SUMATRA SELATAN		
20	PT INDAH EKA YASA	27 000
21	PT MULTRADA MULTI MAJ	10 000
22	PT OKINDO AMALIA	10 000
23	PT PRIMA SEHATI	41 000
24	PT ADI TARWAN	2 500
25	PT AGRO NUSA INDAH	9 000
26	PT AGRO NUAA INDAH	10 000
27	PT TANIA SELATAN	8 700
28	PT AEK TARUM	10 000
29	PT TANIA SELATAN	9 000
30	PT PERKEBUNAN XV	30 000
31	PT MINANGGA ESTATE	8 000
32	PT PERKEBUNAN III	49 000
33	PT PERKEBUNAN X PIRSUS 1 b	10 000
34	PT SAWINDO PERMAI	1 555
35	PT BUMI SAWIT SEJAHTERA	9 000
36	PT MANDALAWANGI UTAMA	3 000
37	PT PERKEBUNAN XI	5 000
38	PT PERKEBUNAN XI	30 000
39	PT PERKEBUNAN X	12 100
40	PT PERKEBUNAN X PIR SUS II b	6 000
41	PT PERKEBUNAN X	6 000
42	PT PERKEBUNAN X	9 700
43	PT PERKEBUNAN X	8 800
44	PT NAMATAMA SRIWIJAYA	3 100
45	PT HIMALAYA SAKTI INTERNATIONAL	6 950
46	PT BUMI SAWIT PERMAI	10 000
47	PT PERKEBUNAN XXI-XXII a. 7 289, b. 9500,c.	3 500
48	PT PERKEBUNAN XXI-XXII	4 500
49	PT PERKEBUNAN X	24 670
50	PT SAYANG HEULANG	20 000
51	PT NUGRA SANTANA	10 000
52	PT KALI MADU SARI	2 000
53	PT PATRA TANI	10 376
54	PT MELANIA ALINIA	
55	BP SEMBAWA	4 850
56	PT PALMA PANCA UTAMA	5 400
57	PT PERKEBUNAN NES IV	13 800
58	PT SEPAKAT SIANTAR	8 000
59	PT PERKEBUNAN X PIR IV	30 000
60	PT PERKEBUNAN X	2 000
61	PT MUSI BANYU ASIN INDA	10 000
62	PT MUSI RAWAS CITRA HARPINDO	17 000
63	PT SUMBER UNIEK BUANA CORP.	5 000
64	PT MUARA LIAM	6 000
65	PT BINA SAINS CORP.	24 000
66	PT SADITO JAYA	16 000
BENGKULU		
67	PT PIRNAWIRA DHARMA UPAYA	4 000
68	PT RIAK PERDANA SAKTI	1 000
69	PT VARITAS INDAH	3 000
70	PT KULTINDO REJAKI	2 500
71	PT BIO NUSANTAR	6 000
72	PT SAD MITRA UDAYANA	3 700
73	PT AIR SEBAKUL	1 000
74	NES V-VII	93 000
75	PT HARAMAY AGRO KENCANA	1 000
76	PT AGRI ANDALAS	4 000
77	PT PERKEBUNAN WAY SEBAYUR	2 812
78	PT MULTI SARANA RASA AGUNG	2 000
79	PT RAYA MANNA PUTRA	1 513
80	PT WINAHYU JATI MANDIRI	13 500
81	PT TALANG DUAYU	1 500
82	PT GUNUNG BUNGKUK PERKASA	2 500

sources - *sources*
- Departemen Kehutanan (Jakarta), Kantor Wilayah Kehutanan (Bandarlampung, Palembang, Bengkulu)
- Pemerintah Daerah Tingkat 1, Bengkulu, Lampung, Sumatera Selatan, Peta Proyek Perkebunan D.I.

Fig. 43 AGRO-ECONOMIC CONSTRAINTS - *CONTRAINTES AGRO-ECONOMIQUES*



M P / j z 1991

LEGEND - *LEGENDE*

main agro-industrial estates
principales plantations agro-industrielles

forest claims
concessions forestières

other land constraints
autres contraintes

natural park
dont parc naturel

FOREST CLAIMS - *CONCESSIONS FORESTIERES*

		hectares
LAMPUNG		
a	PT BINA LESTARI	52 000
b	PT GREAT ANDALAS TIMBER	40 000
c 1,2,3	PT BANGUN GAYA / PT BG DASAAD	85 000
SUMATRA SELATAN		
d	PT WAY HITAM	186 000
e	PT INWIHHCO	146 000
f	PT FAMILY JAYA	57 000
g	PT DAYA PENCA	87 000
h	PT SRIBUNIAN TRADE CDY	75 000
i	PT SINAR BELANTI JAYA	158 000
j	PT NINDITA BAGASKARI	52 000
k	PT SYLVA	130 000
l	PT SUKSES SUM. TIMBER	237 000
m	PT BUMI RAYA UTAMA	130 000
n	PT RIWAYAT MUSI TIMBER	85 000
o	SYLVA	-
p	PT INTI REMADJA CONCERN	45 000
q	PT INHUTANI I/II	-
r	PT TUAH MEGOW	40 000
s	PT AMSCO	45 000
t	KURNIA MUSI TIMBER	130 000
u	PT ANECA MERCU SUAR/ PT SWOODY/PT INTANI II	66 500
BENGKULU		
v	PT DIRGAHAYU RIMBA	80 000
w	PT BENGKULU RAYA TIMBER	84 000

FORESTRY CONCESSIONS

The timber industry is long-established in Indonesia. Ironwood [9], has been used since ancient times for boat building and for the manufacture of piers for waterside dwellings, which are usually constructed on piles. As early as the 19th century, the forests of Southern Sumatra began to be worked in a more intensive manner by the Dutch. Resin from the Melabuai *(Dyera costulata)* was harvested at Muara Dua in 1865 [10], and wood from the mangroves of the Musi delta were exported to Singapore at the beginning of the 20th century [11]. During the second and third decades of this century, several tens of thousands of cubic metres of wood arrived each year in Palembang from inland regions.

These operations were, nevertheless, carried out in the main by the local people who, from 1916 onwards, were required to obtain a permit for the cutting or collecting of timber. In 1939, nine large forestry companies were incorporated outside Java, but not one in the Palembang Residence. The only timber concession granted in the whole of the southern half of Sumatra, was a small one (7100 ha) near Telukbetung in Lampung.

The first concessions were granted in the province of Sumatera Selatan in 1969, and were for a period of 20 years with the possibility of extension. By 1990, 24 forestry concessions covered 2,274,300 ha of South Sumatra(22% of the province) and produced between 860,000 and 1,760,000 m^3 of timber annually. There were three in the province of Lampung which worked 170,000 ha (5% of the area of the province). The concessions of the southern part of Bengkulu spread over 164,000 ha (13% of the part of the province studied).

These figures, moreover, give an insight into the level of settlement in the different provinces. The province of Lampung, which had the lowest percentage of forest area under concession, would yet appear to be, from this angle, the most cleared province in the south of Sumatra (Fig. 35).

AGRO-INDUSTRIAL PLANTATIONS

As in the case of the forestry concessions, this phenomenon, in its present form and size, is relatively new to the region, even though mention is made of several large plantations in writings from the beginning of the century.

In the Lampung districts, the colonial plantations were developed adjacent to the first agricultural settlement villages, established at Gedongtataan in the far south of the island of Sumatra. They date from the very beginning of the century and, beginning in the 1920s, followed the expansion of the railway towards the north. Before the second world war, they spread over almost 30,000 hectares. But it was especially from the middle of the 1970s that a new generation of plantations began to appear as the result of significant private investment. Of a much greater size than in the past (10-20,000 ha) and linked to modern large-capacity processing plants, they no longer concentrated their activities on rubber or palm oil, but also on cassava, sugar cane and pineapples [12]. These recent plantations, which were granted for 35 years, covered about 100,000 ha in 1987.

One description from the 1920s by F.H.Endert [13] speaks of a 20,000 ha rubber and coconut tree plantation in the Palembang *residentie* near the Banteng River. There are 96 private agro-industrial plantations at the present time. Officially, they spread over more than 870,000 ha, which represents 8.5% of the area of the province. They are mainly involved in the production of palm-oil , rubber and coconut trees.

In the southern part of Bengkulu, about fifteen plantations covering approximately 145,000 ha have been listed. They are located in tracts on the lower part of the western slopes of the Barisan Range, and are often linked through the P.I.R. system to the Transmigration's villages. The combined "*Nucleous Estate V.VII*" covers 93,000 ha in its own right [14].

ECONOMIC POWER

The influence of the agro-industrial and forestry lobbies are is demonstrated not only by the area covered by plantations or concessions, but equally by the amount of capital involved. In 1989, the 561 domestic and foreign forestry concession holders, who had permission to work more than 60 million hectares of forest throughout the whole of Indonesia, had invested more than 2.4 billion dollars in timber production [15]. In the province of Sumatera Selatan, the sum invested in 1990 reached 52 million dollars. The finance for the Gunung Madu Plantation (GMP), launched in 1975 and planned as a development over 24,000 ha, could only be implemented through a 60 million dollar loan which was in addition to 20 million dollars of equity [16].

Admittedly, the development rights or the felling permit can be called into question or withdrawn. It is understandable, however, that such administrative measures are only taken in the most serious cases, due to the financial stakes involved. According to one study carried out by the Ministry of Forests, out of more then 500 forestry concessions examined throughout the country in 1990, only 4% respected the legislation in force, and more than half openly infringed the regulations [17]. In the northern part of Sumatera Selatan, several concessions have recently been suspended or even cancelled for not having made a

serious effort or for non-respect of the operating programme, and handed over to PT. INHUTANI II, the government corporation. The amounts committed, however, which often reach several million dollars, are usually too significant for the rules to be applied systematically.

From the point of view of regional development, the most extensive plantations represent enclaves in the midst of a rural environment. They are fenced, and have access gates controlled by uniformed guards. Except for the permanent and daily employees, access is only granted to those carrying a pass or an official letter. Several examples culled from the field surveys or the local press, demonstrate their power and, indeed, their impunity.

It is because of this, according to evidence collected directly at Lampung Tengah in 1987, that the grievances of the natives, complaining about the pollution of rivers by factory waste, remain unheard.

In the region of Muara Enim, The PT Bumi Sawindo Permai corporation happened to be granted 125 ha of established rubber trees which were situated in a parcel of land set aside for the cultivation of palm-oil trees. These 125 ha, belonging to small holders, had been seized in return for an indemnity ten to twenty times less then that anticipated under the legislation. The *camat* of Tanjung Agung set the compensation at 250,000 Rp per hectare of plantation in production, and at 125,000 Rp per hectare where the trees had not as yet reached maturity, whereas a law enacted by the governor of the province of South Sumatra(No. 909/IV/1986) fixes the level of indemnity at 700,000 Rp per hectare of bare land, to which sum must be added the value of the plantation (Pelita, 28 September 1990).

Forestry concession holders, who are in conflict with migrants coming to settle in the forests being worked, have no hesitation in destroying the means of access, in particular some bridges near villages (*kecamatan* Mesuji, 1990).

Because of the extent of the forests, concession holders cannot keep an eye on all clearing that is carried out without their knowledge. They side with the government in order to fight against this third outside participant, a group commonly called the "*spontans*", who succeed, in a certain way, in either counterbalancing the power of the agro-industrial groups or in de-stabilising the officials deployed by the government.

■ The "spontans" : a movement outside government control

If the "spontans" have neither money nor, quite often, the law on their side, they are, on the other hand, assisted by the sheer weight of their numbers. The movement in itself represents a constraint as, by its nature, the flow of spontaneous migrants passes outside government control.

It is a widespread but free-flowing movement stretching across the region, not only in rural areas but also along the roads and in the towns, over which it is difficult to have direct control. Even when there is a strong concentration of migrant families, they spread their dwellings out thus producing a dispersion of the males. Migrants are also very mobile, looking for opportunities, and capable of adapting themselves to the different circumstances they encounter.

The analysis of migratory patterns demonstrated that it was not possible to define a typical profile. Behavioural patterns become quite individualised and are no longer those of an established group, as is the case of a village society or a body of settlers displaced collectively. In daily life, it is the important difference between the social customs of the Javanese and Balinese societies which makes the constraints of a group the determining factor, whereas here, the interests of the family unit take precedence over the collective interest.

The number of settlers is such that, from now on, the damage inflicted on the environment cannot be underestimated. It is at the Ministry of Forests that these clashes are crystallized. This is not something new. As early as the 1920s, a statute was issued by the Forestry Service prohibiting non-irrigated agriculture in forests reserved by the government for hydrological reasons or for development purposes [18]. In 1950, de Haan (in *Indonesian Forestry abstracts*) had already noted large-scale forest destruction by small coffee and rubber planters in the catchment areas of the Musi River.

But clearing has sped up even more during the last few decades. If the forestry service of Sumatera Selatan is to be believed [19], there are about 70,000 families in the province involved in clearing (*petani perambah*), at least 51,000 of which have settled in forests. As a result of these families, more than half of the protected forests (*hutan lindung*) have been cut down, while 40% of the forest reserves (*hutan suaka alam / marga satwa*) and forests allocated for timber production have been destroyed, making more than 700,000 ha in total. The most affected *kabupaten*, for the moment, are Lahat, Muara Enim and Ogan Komering Ulu. The separate sheet "Agricultural settlement and forest retreat", devoted to these same regions, points out clearly the increase in clearing carried out

in forest zones during the period of reduced rainfall in 1986.

The figures proposed, however, raise a problem of consistency. If the data put forward are accepted, namely 51,000 families and 700,000 ha of forest destroyed, this would mean that each family would have cleared an average of 14 ha even though observations show that migrants' land holdings rarely exceed 1 to 2 ha. This could quite easily lead to the belief that the figure for spontaneous migrants in Sumatera Selatan used here is considerably underestimated. The figure of 51,000 would need to be multiplied by 10 or 15 times in order to arrive at a more acceptable approximation.

The forestry service of the province of Lampung recorded 91,884 illegal settlements in 1986-87, in the protected forests alone. On land totally prohibited for all agricultural purposes, 36,401 ha had been cultivated, which seems low in comparison to the number of settlers [20]. During the same period, press sources indicated that 40% of a total of more than one million hectares of territory classified as forest had been illegally settled. Of these 400,000 ha, 289,000 ha were located in forest zones and in strictly protected catchment zones [21].

Making further use of these figures is tricky, but their overall significance and the magnitude of the task presented by the systematic pursuit of eviction proceedings should be kept in mind. Is another "Local Transmigration" possible in Sumatera Selatan when both the problems raised in Lampung and the limited success of the operation are known? Would this cause a movement , nourished by the demographic waxing of 100 million Javanese, to just dry up, when a bus journey of less than three days was all that was needed to reach the uncleared lands of Sumatra?

The question is to known whether it is still possible to rely on laws that have been outstripped by events and to imagine, whatever the cost, a step backwards. Adapting the legislation, a certain pragmatism, and greater rigour and dialogue in government practices, would no doubt allow some hints of a solution to be proposed which, in order to be efficient, should be based on feasible tools that are appropriate for regional planning.

3. Required changes to government rules and practices

■ Forest regulations divorced from reality

PAPER FORESTS NOT REAL FORESTS

Today, the Ministry of Forests still exercises authority over more than 143 million hectares, accounting for almost 3/4 of the area of the country, whereas numerous specialists are in agreement in recognising that the true area covered by forest is significantly less. In 1984, according to a report by the FAO [22], the forest cover in Indonesia was estimated to be 113.6 million hectares of which only 38.9 million were primary forest. The last evaluation of FAO in 1990 indicates a reduction of forest cover to 108,6 million hectares with a rate of deforestation of 1,2 % per year

It is extremely difficult to find sources which are in agreement in their evaluation of the true area covered by forest. For the province of Sumatera Selatan, the local authorities of the forestry service admit that more than 40% of the land over which they have management responsibility is no longer forest. According to the Ministry of Forests, there are more than 5,100,000 hectares of forest in the province, but, according to the RePPProT maps, only 3,562,100 ha of primary forest were left in the middle of the 1980s (including worked primary forest).

Also according to RePPProT, out of 714,000 ha of forest reserve (*hutan suaka alam*) in Sumatera Selatan, only 64% is still undisturbed forest whereas, out of the 927,600 ha of protected forest (*hutan lindung*), only 50% gives cover to a climax vegetation.

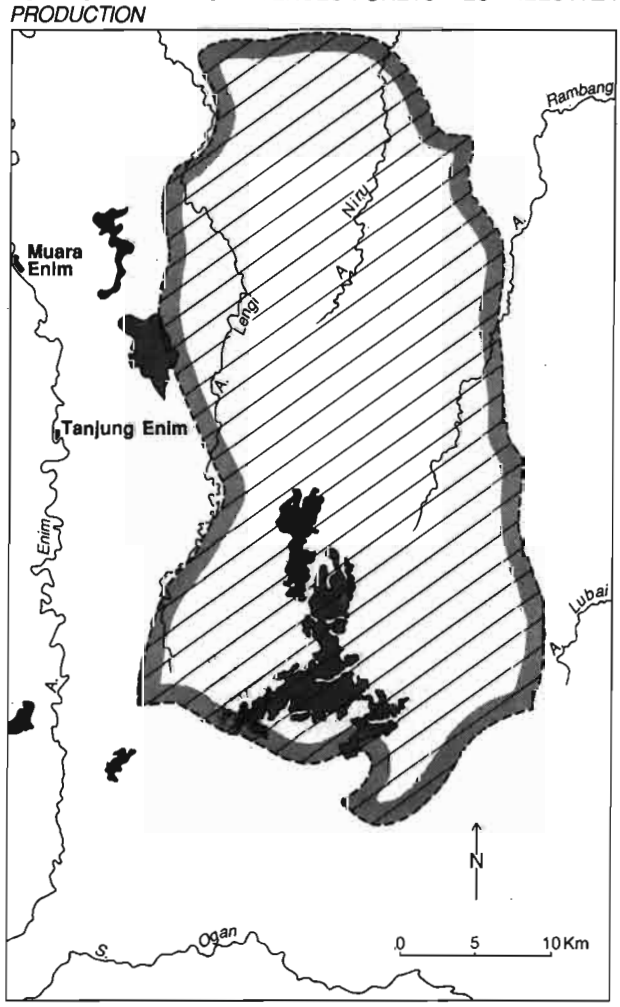
Conversely, not insignificant areas of forest are sometimes found beyond the protected zones. For example, in the case of the Gunung Raya reserve (Fig. 36), the majority of the protected region no longer provides shelter for any primary forest, whereas certain sections of the relict forests of the Raya, Pesagi and Sigiguk mountains are not enclosed in the reserve. The Subanjeruji reserve close to Muara Enim, reckoned to be 65,000 ha in 1990 (but which is shown extending over more than 100,00 ha on the maps included in the Ministry of Forests documents), only corresponded to a few fragments of residual forest in 1986 (Fig. 44). Ten years after having been established, however, it has just been totally transformed into forest for timber production.

In the province of Lampung, the territory managed by the forestry service covered 1,157,011 ha in 1987, but it

was estimated that only 675,467 ha were truly wooded [23]. In 1988, the figures changed and 1,303,834 ha were accorded the status of "forest" [24]. For the same year, an estimate made from Landsat images (BAKOSURTANAL) arrived at a figure of 703,792 ha [25] for the area of forest actually in existence. This total provided confirmation of an earlier estimate that was also made from satellite imagery taken in May 1985 covering 2,682,300 ha, that is to say, 4/5 of the province. The value of 780,600 ha obtained was totally comparable to that obtained in 1988 [26].

These same sources (LANDSAT) remain of little importance for the province of Sumatera Selatan, only one-third of whose territory was able to be analysed. Amongst the areas not covered by the images are the very extensive marshy forests along the Bangka Strait.

Fig. 44 CHANGING STATUS: FROM PRIMARY FOREST TO PRODUCTION FOREST / *CHANGEMENT DE STATUT : FORETS PRIMAIRES DEVENUES FORETS DESTINEES A LA PRODUCTION*



former reserve of SUBANJERUJI now classified as production forest / *ex- réserve de SUBANJERUJI devenue forêt destinée à la production*

primary forest remaining according to SPOT 1986-1987 / *forêt primaire restante d'après SPOT 1986-1987*

sources / *Sources :*
RePPProT1988, SPOT 1986 FDJyw-1991

The disparity between the figures and reality would appear to be significant. This results to a large extent from the fact that the boundaries of the forest reserve zones were inherited from a period when they were much more extensive than they are today. Taking the example of Lampung again, the majority of entries in the register of forests in use in 1986-87 date from the colonial period. The administrative orders range from 1911 to 1941, 7 being from the period 1911 to 1929, 27 from 1930 to 1939, and 17 from 1940 to 1944 [27].

Changes are under way, as were observed in the province of Sumatera Selatan. Here, they are relying on the old 1:100,000 topographical maps, onto which both the former and the new boundaries are being drawn. The results are not as yet available, but a realistic attitude should ensure significant changes. Updating these facts, on the other hand, will not enable conflicts and litigation over land to be resolved. This could raise the issue of the Ministry of Forests' management, even though these areas have often been inhabited and turned over to agriculture for many years.

Added to this legacy are the distortions brought about by forestry legislation which is partially inadequate.

PARTLY INADEQUATE FORESTRY LEGISLATION

The method of forest classification :

The three fundamental criteria used for establishing the categories of forest, reserve forest, protected forest and forest for lumbering, are the slopes, the soils, and the rainfall intensity. A value of 1 to 5, as a function of a predetermined classification, is attributed to each of these criteria :

SOIL CLASSIFICATION

soil category	soil type
1	alluvial, tanah glei planosol, hidroworfkelabu, laterita air tanah
2	latosol
3	brown forest soil, non-calcis brown, mediteran
4	andosol, laterits, grumusol, podsol, padsolik
5	regosol, litosol, organozol, renzina

(source: Departemen Kehutanan, 1982)

SLOPE CLASSIFICATION

slope category	slope gradient
1	- 8%
2	- 15%
3	- 25%
4	- 45%
5	> 45%

RAINFALL INTENSITY

rainfall category	rainfall intensity (mm per number of days of precipitation per year)
1	up to 13.6
2	- 20,7
3	- 27,7
4	- 34,8
5	greater than 34.8

(source: Departemen Kehutanan, 1982)

For a given region, the figure 1 to 5, corresponding to each criterion, is then multiplied by a constant factor being 20 for slopes, 15 for soils, and 10 for rainfall intensity. The three numbers calculated in this manner are then added together to give a score somewhere between 45 and 225 for each region, thus allowing it to be accorded a status.

If this value is greater than or equal to 175, the zone is automatically classified as protected forest (*hutan lindung*). If the score is between 125 and 174, the region falls into the category of forest suitable for limited lumbering (*hutan produksi terbatas*). Below 124 points, the forest can be used for unlimited logging (*hutan produksi tetap*) or can be transformed for other purposes (*hutan produksi yang dapat dikonversi*).

There are six further exclusive situations, in addition to the general conditions, which cause forest to be categorized directly as protected forest :

when the gradient of the slope is greater than 45%
when delicate soils of category 5 are combined with slopes above 15%
when a zone is situated less than 100 m from a water course
when forest is situated within a radius of 200 m from a spring
when the altitude is greater than or equal to 2,000 m
when it is required by necessity or special circumstances

The natural forest reserves (*hutan suaka alam*) are usually selected from amongst the protected forest because of the wealth of their ecological heritage or due to the role they play in the hydrological balance. They are thus attributed a name, and in principle a protection, which is more significant than that accorded to the simple "protected" forests.

The weaknesses of the system :

This system conceals two great weaknesses. In the first place, it practically only takes into account of factors related to the type and, especially, the delicate nature of the soil. It is effectively a question of meaningful data which are, however, a long way from being adequate for establishing a relevant, rational and efficient system of forest protection. Several fundamental factors have been overlooked and have not been included in the forest classification system.

The present system is above all of interest to pedologists. There are no botanical criteria such as endemism, rare species, or types of forest certain of which are known to be delicate (*Heathforest*, forest on limestone, or *Barringtonia* formation). Neither is there any specifically climatic criterion, as the rainfall intensity criterion takes into account neither the length of the dry season nor the annual rainfall. In fact, the figure for rainfall intensity is the same whether 3,000 mm of rain fall in 200 days or 600 mm fall in 40 days, even though the characteristics of both the climate and the forest in these two cases would very obviously be different.

One criterion that it would no doubt be prudent to include is that of the percentage of forest remaining in the region. In level zones with just mediocre soil, all forest is usually declared to be suitable for conversion to agricultural land or timber production, whereas it would perhaps be desirable to retain, whenever this is possible, at least 15 to 20% of the original forest cover to establish recreational areas and to ensure an evapotranspirational potential whose effects, even if they are as yet little understood, are fundamental to the climatic mechanisms of the region.

The other significant weakness of the system is that it requires very precise knowledge of topography, pedology and climate, information which is lacking for many regions. In Sumatera Selatan, for example, good topographical maps for the whole of the province do not as yet exist, and until the appearance of new pedological maps, currently being printed, those available are of rather mediocre quality.

The island of Sumatra is nevertheless, together with Java, one of the best mapped regions in the Indonesian Archipelago [28]. Rainfall measurement, sometimes little understood, usually varies significantly from year to year. This implies, therefore, a need for considerable approxi-

mation in the allocation of the various statuses.

In other respects, the system is unquestionably a little "mechanistic". In consequence, high altitude forests are only protected above 2,000 m, with the result that certain mountains, such as Gunung Raya (1,843 m) to the east of Ranau Lake, receive no legal protection even though its significance in the hydrological stability of the region is undeniable [29]. In fact, during the survey of the area carried out in June 1990, the slopes of Gunung Raya had for the most part been converted to coffee plantations, some going almost to the summit. The sixth exclusive clause in the classification system is no doubt designed to remedy this problem, but its extremely imprecise nature tends to prejudice its implementation.

Even so, the weighting of the three chosen criteria (slopes, soils and rainfall intensity) by constant values (set at 20, 15 and 10) would appear to be arbitrary and somewhat inflexible in view of the broad diversity of conditions.

It would appear that one of the keys to environmental management could come from adapting the regulations relating to land placed under the jurisdiction of the Ministry of Forests. The flagrant inconsistencies between government regulations and the facts encountered in the field could alone provide the justification. It may be useful to recall that the territory officially described as forest extends over 40 to 50% of the provinces affected, and that they are located in a region that is already fairly heavily populated and, in addition, subjected to demographic pressure from Java. Furthermore, in order to improve things, both the consequences of conflicting policies and the lack of dialogue between government groups need to be overcome.

■ Conflicting policies and inadequate dialogue between government bodies

A PROPERTY RESERVE FOR ALL ?

The history of the creation of agricultural settlement villages in Lampung, from the colonial period up to the Local Transmigration programmes, demonstrates to what extent the forest had been likened to a virtually inexhaustible real estate reserve. According to needs and time, the policy of "development" resulted in forest areas, which were considered as vacant and uninhabited, being granted a special status in order to guarantee timber production and the establishment of plantations or settlement villages.

This approach only served to illustrate a practice commonly encountered in tropical countries. Almost everywhere, traditional law accepts that land belongs to the person who clears it. This is self-evident for the local people. For the immigrant who is accepted into a rural area, it is customary, having come to an agreement with the representative of the local community, a family or a native clan, that he be granted land in the neighbouring forests, which are considered free but, within certain limits recognized by the village society, still under the group's control. Up until recent times, this agreement was only made official by the handing over of a gift in kind from the requesting party to the landholders. In certain cases, whenever there was a commonality of interests, for example to increase the size of the group, the land was donated. It was in this way that the Abung of Kotabumi donated land to the Ogan of Batumarta at the beginning of the century, in order to increase their numbers sufficiently to be recognized by the government as a village unit. As shown in surveys carried out in the southern part of the province [30], this practice has not completely died out today.

A further example quoted by W. L. Collier, demonstrates how the land and forests were perfectly controlled by the traditional power of the *marga* who, through their management, ensured the protection of their own environment.

Until just a few years ago, in the Palembang region and the province of Sumatera Selatan, these local people were primarily governed by their *marga* institution which was headed by a *pesirah* who was their leader. Throughout these areas, the boundaries of each *marga* were recognized by the local people, and they knew which *marga* controlled what areas and groups of residents. The *marga* had well defined rules for opening up the forest, for maintaining cultivation or giving up the land, for the use of rivers for fishing, for cutting timber in the forest, and for fishing in inshore coastal areas. If a person wanted to open land, he had to get approval from the *pesirah* who tried to allocate land to responsible residents and tried to prevent exploitation of suitable forest land for agriculture. The *marga* had various rules for managing the environment. Two factors, therefore, made it possible for these areas to be rather effectively managed. One was the institutions of the *marga* which had environmental control elements, while the second was the low population density which meant that the pressure on the land resource was minimal. Thus the environmental impact of this local settlement was also minimal, except on the mangroves along the rivers.

Ten years ago, however, it became apparent that the *marga* leadership was in conflict with the local government structure. The *pesirah* performed the same role as the *kecamatan*, and thus there were two different authorities controlling the people in these areas. It was inevitable that the two would not be able to function along side of each other. In the mid 1980s, the Government abolished the role of the *marga* in governing the local people, though some

of the institutions survive informally.

Even before the abolition of the *marga*, its power had begun to decline because the central government had taken over major environmental responsibilities. In the past, the *marga* could decide who could cut timber in the area. The Government issued forest concessions in the marga areas. Previously, the *marga* would hold an action to determine who had the right to manage the fisheries in the rivers and the onshore waters. This control was weakened by exploitation of the shrimp resource by large firms. Formerly, the *marga* controlled who could open up forest for agriculture. This was changed when the Government approved the large Transmigration projects in the areas of the *marga*. Thus, it was inevitable that control over this resource exploitation should pass to the Government rather than to an informal institution such as the *marga* in Southern Sumatra.

Before the demise of the *marga*, groups of Buginese spontaneous migrants were able to get permission to open up various areas along the rivers. Usually, these areas were in the back swamps with peat soils, and as the Buginese drainage canals were effective for only 2 or 3 kilometres at the very most, they were primarily found near the rivers and not in the interior of the deltas where the deep peats are located. Since the Buginese were mainly interested in small-holder coconut plantations, they had to drain the swampy areas with somewhat deeper canals than those of the local Melaya people. These deeper canals and the coconut farming systems, and especially the draining of the peat areas, had some negative environmental effects on these regions. However, since they could not penetrate too far into the deltas, the impact on the wildlife and the primary forest in the swamps was not too severe.

But it is just as obvious that the aims of the Ministry of Transmigration could not be achieved without damaging the remaining forest areas of the province, which are both extensive and lightly inhabited. The marshy regions have of course been the centre of attention and have undergone upheavals which have been described [31].

However, if large-scale development of the marshy regions of an archipelago nation take precedence over conservation in an environment of amphibious life and swamp forests, it would seem more of a contradiction, on the other hand, to open up the last remnants of remaining forest in the centre of the province. A policy of settlement and regional development implies that forests will be more and more subjected to antagonistic pressures. They are simultaneously viewed as a property reserve, a source of raw material, a store of animal and vegetable genetic material and, in addition, as a tool for providing protection against erosion and the risks of climatic modification both at the local and global levels.

OPPOSING MEASURES AND NON-INTERFERENCE

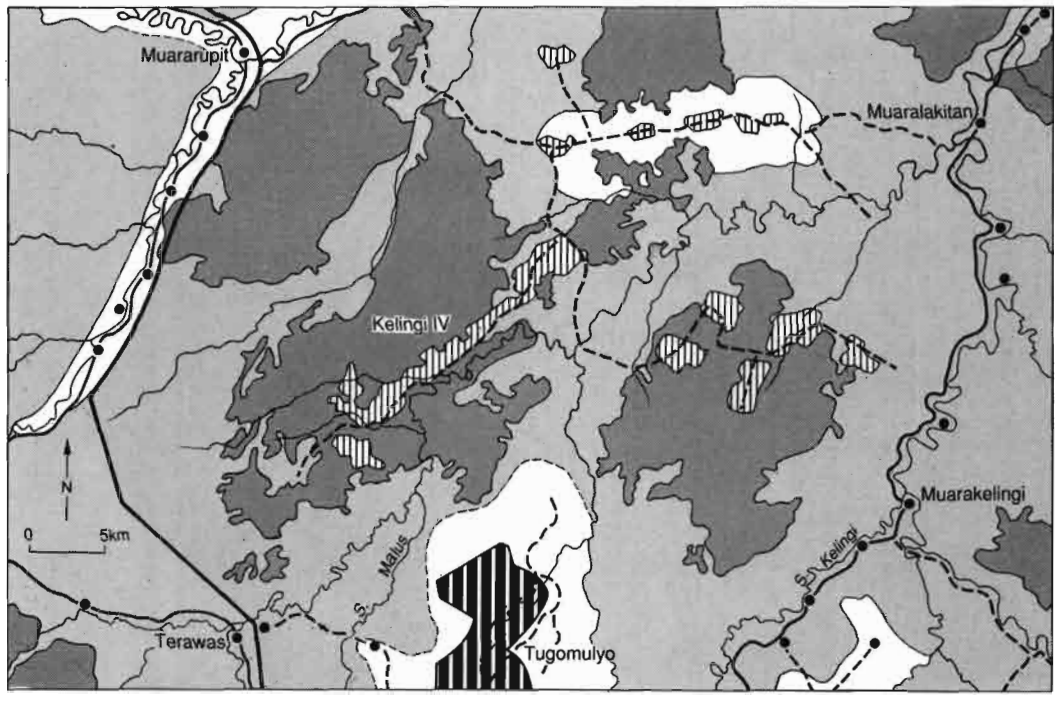
The separate sheet "Agricultural settlement and forest retreat" expresses and transforms into the rural scene the conflicting policies of different ministries. On one side, the aim is to win back a minimum level of truly wooded areas for ecological and economic reasons. On the other side, there is a need to do something about the demographic pressure. In a fairly heavily populated area which is "owned" by the native people, the forest appears to be the only unoccupied space, the pre-eminent real estate reserve. Establishing the Transmigration villages of Bunga Mas on the very edge of the only large wooded mountain range still remaining on the plains to the north-west of Lahat, as can be seen on the map, means taking the double risk of seeing spontaneous clearing increase inside the remaining forests and of setting up a conflict situation with the forestry concessions of PT Aneca Mercu Suar, PT Swoody, and PT Inhutani II, who have been granted logging permits by the government. "Untamed" clearing will only made easier by the tracks which crisscross the mountains and which are clearly visible on the SPOT images.

The Transmigration centres of Kelingi are themselves in the very middle of the forest. The map shows the large open clearings to the north of Tugomulyo and the break cleared on both sides of a straight road which, for the future, splits one of the last relict ranges in two. These centres appeared to be in the process of construction in the 1987 images (Fig. 45).

Slightly further to the east, around the older centres of Sekayu Babat Toman, set up between 1979 and 1983, the correlation between the establishment of the Transmigration villages and the growth in clearing can be directly established from the SPOT images. As well as the clearings linked to traditional settlements in the secondary forests, there is a significant eating away of the edges of the dense forest located in the vicinity of the agricultural settlement villages, certainly the result of separate spontaneous clearings following the opening up of new access tracks and the influx of a substantial population. Spread out in an arc at a distance of 5 to 10 kilometres from the Transmigration centres, these clearings formed an apparently very active front when the images was taken in 1987 (Fig. 46).

Such consequences lead to the abandonment of decisions taken in favour of nature conservation. The authorities have no option but to ratify situations created by a lack of rigour or foresight. It is not uncommon to see reserves converted to timber production, protected forest transformed into a farming zone, or even arbitrary redeployment. For example, in February 1988, 49,000 ha of forest reserve in the north-east of Sumatera Selatan had their

Fig. 45 OCCUPATION OF THE REMAINING FOREST BY THE TRANSMIGRATION
OCCUPATION DES DERNIERS LAMBEAUX FORESTIERS PAR LA TRANSMIGRATION



(Kelingi IV transmigration settlement - *centre de Kelingi IV)* Kabupaten Musi Rawas

M P / j z 1991

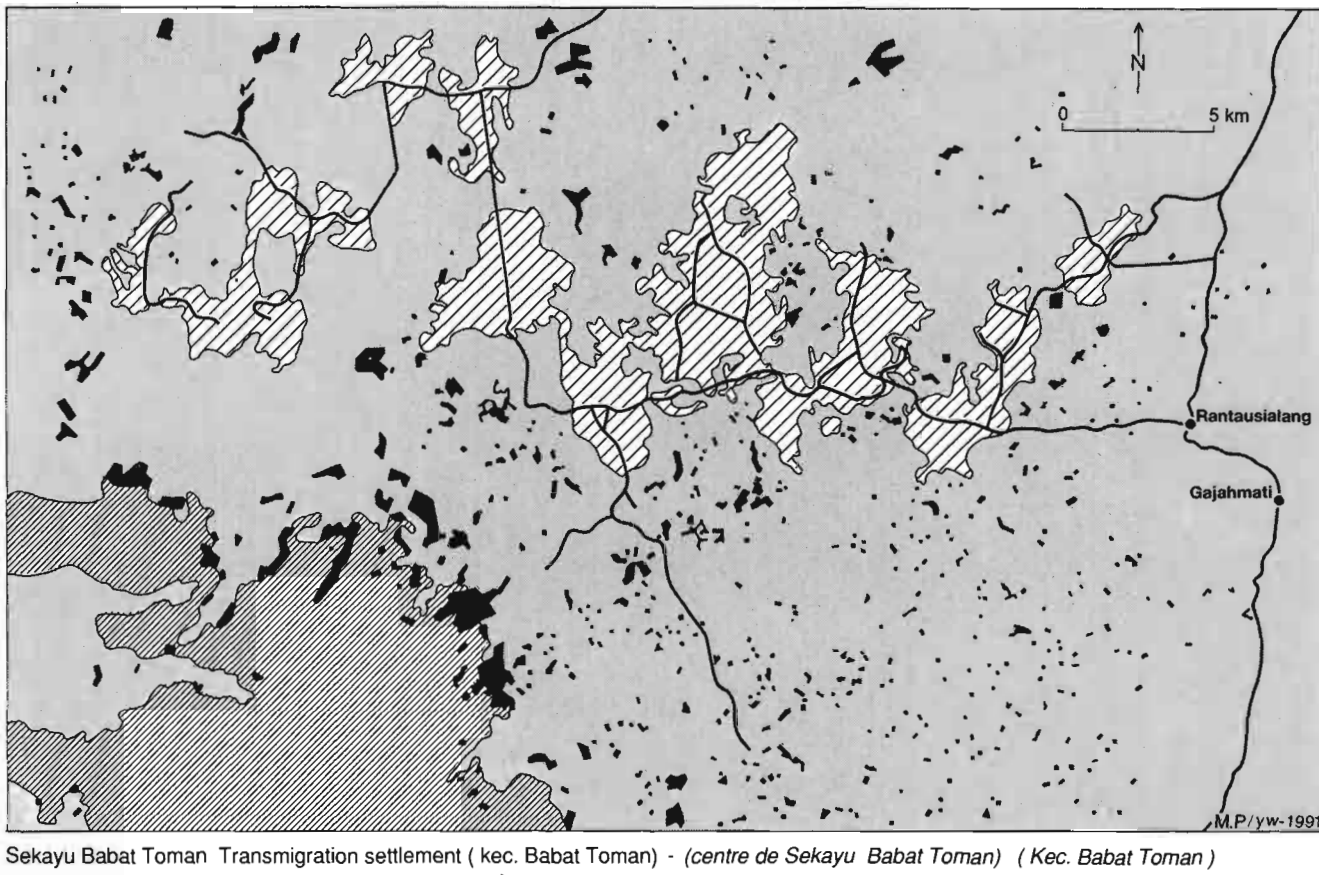
- remaining forest, without any trace of human settlement
  lambeau forestier, sans trace d'occupation humaine
- secondary forest - *forêt secondaire*
- autochthonous / settlements - *anciens villages*
- old organized settlement - *peuplement organisé ancien*
- new Transmigration settlement - *nouveau centre de Transmigration*
- main road - *route principale*
- access road - *voie d'accès*

Sources - *Sources*

SPOT satellite imagery - *images satellite SPOT* 275/356, nov. 1987
Topographic maps JANTOP - *cartes topographiques JANTOP*
Kanwil Departemen Transmigrasi, Palembang

Section of separate sheet No. 3 "Agricultural Settlement and Deforestation"
Repris de la planche hors-texte n° 3 "Colonisation agricole et recul de la forêt"

Fig. 46 RECENT CLEARINGS NEAR TRANSMIGRATION SETTLEMENTS
CLAIRIERES DE DEFRICHEMENT RECENTES A PROXIMITE DES CENTRES DE TRANSMIGRATION



Sekayu Babat Toman Transmigration settlement (kec. Babat Toman) - *(centre de Sekayu Babat Toman) (Kec. Babat Toman)*

forest probably primary, without any trace of human settlement
forêt vraisemblablement primaire, ne portant pas de trace d'occupation humaine

secondary forest - *forêt secondaire*

ring of clearings around agricultural settlement villages
auréole de défrichement autour des villages de colonisation agricole

isolated clearings in secondary forest or on the fringes of primary forest
clairières de défrichement isolées dans la forêt secondaire ou en bordure de la forêt primaire

trail, access road - *piste, voie d'accès*

sources - *sources*

SPOT satellite imagery - *images satellite SPOT* (276/356, 26/10/1987)

classification changed to timber-producing forest in order to allow a private company to set about development In September 1990, this modification had not yet been included on the majority of maps used by the Ministry of Forests.

Non-intervention and the difficulty of carrying out checks, due to lack of available means, lead to inextricable situations and failure to comply with the law. A significant portion of the PT Great Andalas Timber concession has already been passed over to agriculture. It can equally be noticed, however, that the zone of worked primary forest apparently goes beyond the legal boundaries in its northern part. In addition, it can be seen that the southern portion of the concession lies partly in protected forest (Fig. 47).

Out of 870,000 ha allocated by the relevant authorities for commercial plantations, only a relatively limited portion, of the order of 10%, has actually been converted to crops. The remainder has been acquired by speculators who will wait for a rise in the price of land before selling it without having improved it. In the area examined in detail in the *kabupaten* of OKU (separate sheet No. 5), seven companies have set up. Their land holdings vary from 1,555 ha to 49,000 ha respectively. In 1986, according to SPOT images, they were still in the planning or construction phases. In fact, the reckoning carried out showed that only 2% of the surface examined was really used by large private and governmental plantations which, moreover, accounts for the differences observed between the soil use maps and the official land allocation map. Government officials, now aware of this problem, grant agricultural concessions with greater caution.

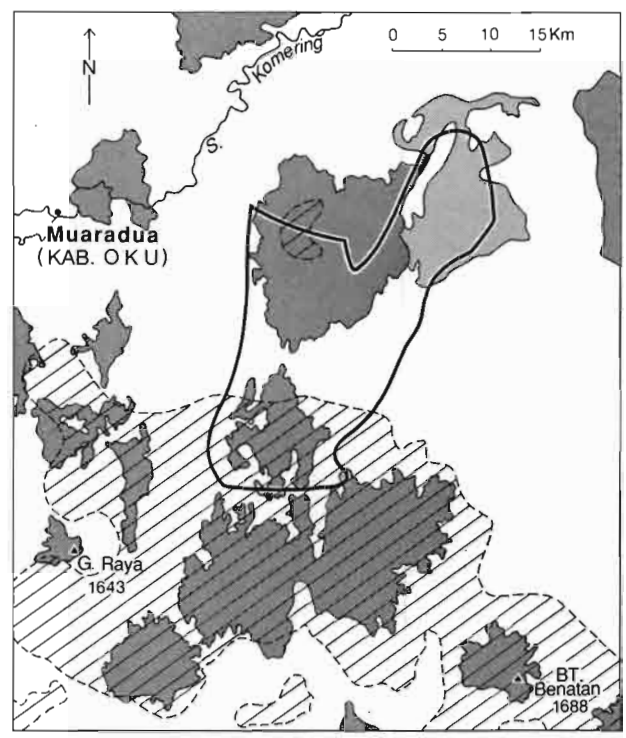
Real estate speculation, coupled with a lack of scruples on the part of certain people in authority, encourages new arrivals and, in certain cases, the local people, to recklessly open up "prohibited land", that they either keep for themselves or quickly resell as new plantations to honest migrants, sometimes using false title deeds. The increase in the number of false certificates of title, particularly in Java, Lampung and Sumatera Selatan, even forced the Badan Pertanahan Nasional (Agraria) to promulgate less easily falsified titles from 1 September 1990 [32].

The lack of harmonization between government bodies, at least until recently, resulted in the same land being allocated twice. The construction of Local Transmigration villages in northern Lampung was carried out on property that had originally been granted to the P.T B.G Daassad concession, who held an operating permit over 85,000 ha. Bargaining between the developer and the relevant ministries led to the concession being split up and reduced to 30,000 ha.

Portions of twelve of the twenty-five concessions in Sumatera Selatan are located in protected forest or in forest reserves. Of the total area granted as concessions (2,272,300 ha), more than 14% (342,025 ha) lies outside the official boundaries. Similarly, the Bukit Barisan Selatan National Park, created in the provinces of Lampung and Bengkulu in 1982, was allocated a strip of forest which had already been granted in 1981 to a timber company, Bina Lestari. In 1990, the case was still being considered and the concession boundaries have not yet been altered.

Overlap is also observed between the Transmigration programmes and non-transformable forests. In the Musi Banyuasin region, several projects reveal large areas of contentious land, some overlaid on forest for timber production and even protected forest .

Fig. 47 EXISTING FOREST IN THE AREA OF THE FOREST CLAIM PT GREAT ANDALAS TIMBER / *LES FORETS DE LA CONCESSION FORESTIERE PT GREAT ANDALAS TIMBER*



FD/yw 1991

primary forest / *forêt primaire*

primary forest under exploitation / *forêt primaire exploitée*

boundaries of forest claim / *limite de la concession*

boundaries of natural reserve and protected forest
limite des réserves naturelles et des forêts protégées

sources - *sources* :
primary forest and protected forest /
forêt primaire et forêts protégées : RePPProT,1988
forest claim - *concession forestière* : Departemen Kehutanan ,1990

On the assumption that the original boundaries were maintained, it could be asked whether it was dangerous to plan Transmigration programmes on the edge of forest reserves without creating buffer zones which could possibly prevent overflow. It has been shown that these risks do exist in the plain regions, at Bunga Mas for example.

Perhaps more critical than these questions of overlapping land under different jurisdictions are the decisions, with irremediable consequences for the future, taken despite the weakness of preliminary studies and impact statements, resulting from the absence of reliable documents and real possibilities of action.

THE DEFICIENCY OF DEPENDABLE DATA AND TOOLS SUITABLE FOR REGIONAL PLANNING.

The government departments involved are aware of the weaknesses of the system but they also remain overwhelmed by the dimension assumed by these phenomena, particularly so as they do not always have the training necessary to bring them under control, or the data which would allow them to act or to influence decision making.

The lack of precise and compatible maps is one of the fundamental causes of observed errors and distortions. The documents available to the administration are very frequently approximate, drawn to a small scale and, in consequence, too general. The information they contain is expressed, except in particular cases, without strict regard to scale. The dimensions of phenomena on locality maps are almost always over scale. A broader coverage of this subject will be given in the section "cartographic documents and thematic maps".

Precise documents alone do not always produce the desired result. Serious errors of interpretation between different data sources, as could be observed in the soil use study, can create confusion (Fig. 48). Significant discrepancies between maps showing the same phenomenon do not always allow local government officials to make decisions. It was because of this that the comparison of the protected forest boundaries according to RePPProT (1988) and the Ministry of Forests in the south of the *kabupaten* of OKU, on a scale of 1:250,000, showed up a 4 kilometre margin of error (Fig. 49). These documents, moreover, usually intended for government officers, are not well distributed even at the *kecamatan* level. This is more particularly so at the village level, where all that is often available are hand-made sketches drawn by the most energetic officials.

An urgent critical analysis needs to be carried out of all administrative documents that could be useful tools, just as much for those in charge of government departments as for those responsible for applying the decisions in the field.

A second reason for the disputes mentioned comes from the lack of material means. Even supposing that the area controlled by the Ministry of Forest were reduced significantly, the regional services do not have sufficient field staff to put the boundaries of the regulated land into place, even though this step, which is occasionally carried out, is essential. Efforts have been made in this direction, but they remain inadequate. Although certain officers in charge have requested teams of forest rangers, their present lack does not allow the necessary checks to be made.

These shortages are widely-known. Certain measures, such as the digitizing of the basic map of Sumatra, the bringing up to date of land use maps using SPOT images, and the setting up of a well-defined procedure for better coordinating the decisions taken in future at the provincial level, have been put in motion.

There remains one unknown, however, which is inherent in the carrying out of all large-scale decisions. Is it always possible to evaluate the changes that will be brought about by any major settlement programme, or determine a suitable system of production, or measure, a priori, the impact of significant projects such as the large-scale improvement of swampy regions ?

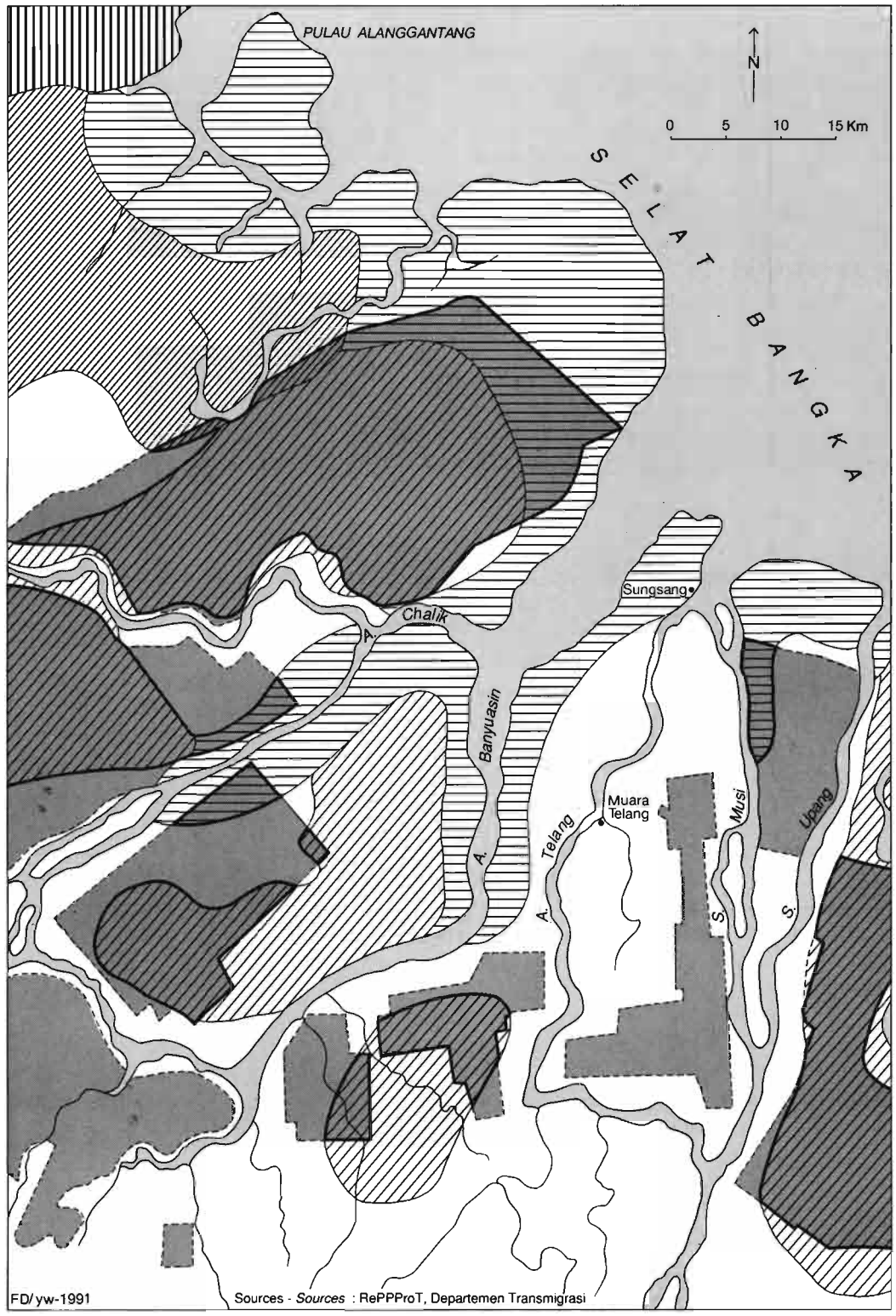
Two examples will be examined which will show the significance that must be attached to preliminary studies. These can be shown to be inadequate even when they are carried out diligently.

The development project for the swamps of the Mesuji and Talang bawang Rivers, close to where they flow into the Java Sea, should cover about 50,000 ha and host a total of 17,300 families (cf. first section of the book). The works began in 1986-87, but the programme launch ran into some unexpected ups and downs necessitating additional studies and modifications. The rise and fall of the tide, the rate of surface runoff, and the salinity, all turned out to be points that should have been further looked into [33].

The development of the Musi Delta involved more then 300,000 ha and about 55,000 families. The programmes were originally based on two crops of irrigated rice annually. According to subsequent analyses carried out and the observations of W. L. Collier, it very quickly became apparent that this was impossible, as the effect of the tide did not force the river water into the secondary canals and the fields. There was a clear influence in the navigation canals between the rivers and some in the primary canals, but it was not significant enough to reach the secondary canals and rice fields. What had been designed as irrigation canals for these projects, therefore, became drainage canals instead.

At present, the projects appear to be reasonably successful in these delta areas, though it took up to ten years for the soils to stabilize sufficiently for the farmers to

Fig.48 OVERLAP BETWEEN TRANSMIGRATION PROJECT AND FOREST IN THE MUSI RIVER DELTA
CHEVAUCHEMENTS ENTRE PROJETS DE TRANSMIGRATION ET FORETS DANS LE DELTA DE LA MUSI



natural park, reserve
réserve forestière

productive forest to be convected to other uses
forêts productives devant entre converties à d'autres usages

protected forest
forêts protégées

transmigration settlement
projets de Transmigration

production forest
forêts destinées à la production

overlapping area having different forest status
aire de recouvrement entre terres de statut forêts

achieve steady and sustainable agriculture. The productivity is still rather low by Javanese standards, with farmers producing 1.5 tons of rice per ha from one rice crop per year. Recently, some farmers have started using fertilizer and insecticides and are claiming yields up to 4 tons per ha.

Within a few years, projects that had originally been planned for migrants from Java also involved a substantial number of spontaneous migrants. This became possible as many of the projects' original settlers returned to Java and abandoned their holdings. The Transmigration's officials then allowed spontaneous migrants to take their place. In most of the projects, there was a small quota for settlers from the local area.

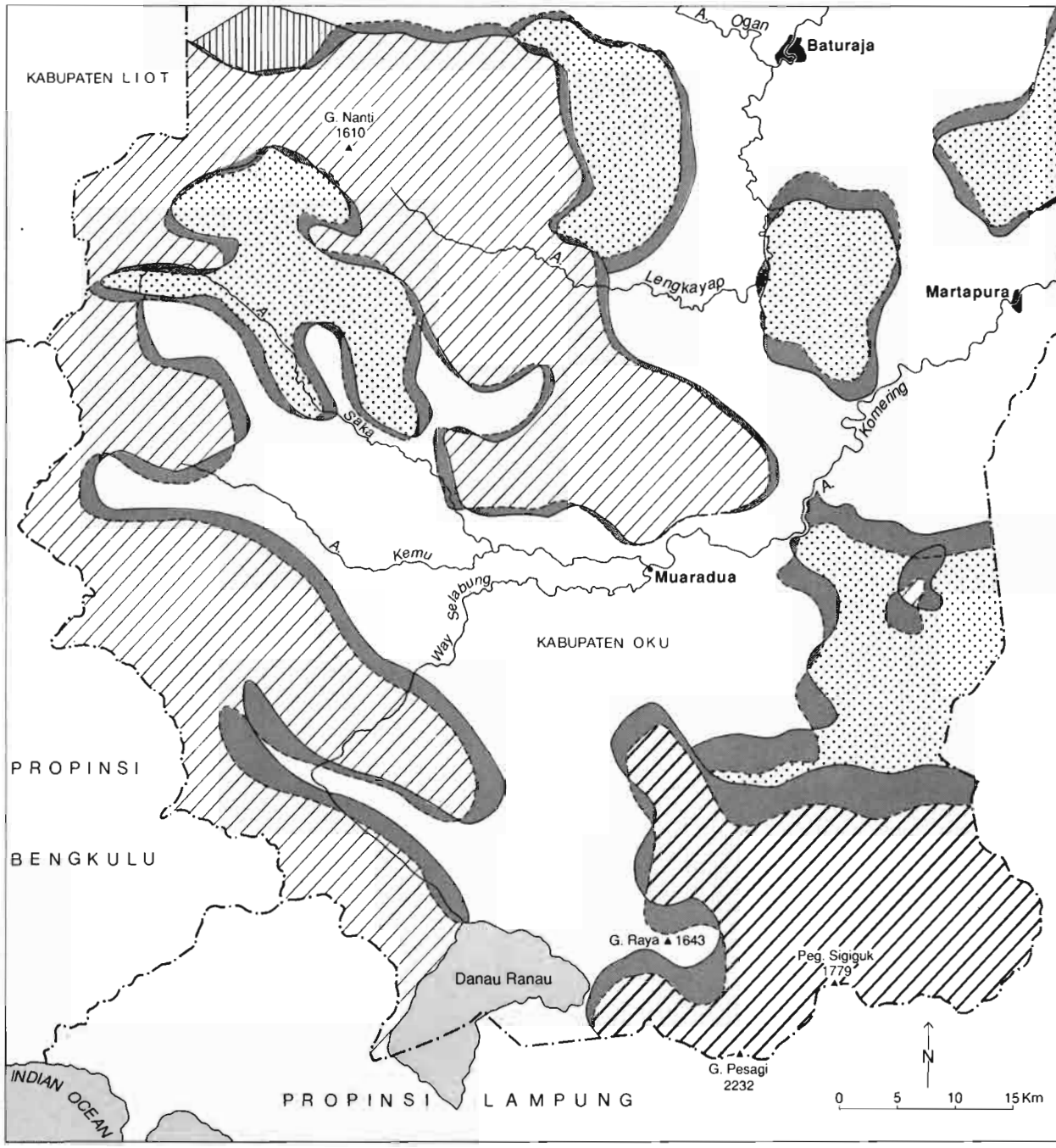
There is a choice between maintaining the primary forest and opening up the area for settlement. In these swampy areas, a very valuable primary forest has been lost. It has been replaced by a fairly low level of production and rather stable agriculture which supports several hundred thousand people. Which is best ?

There was no environmental impact assessment for any of these original projects as the law requiring an EIA had not yet been passed. At the present time, however, the proposed second stage development projects require a rigourous EIA before approval. These new development projects are not opening up any more land, but are rather trying to make the transmigrants' farming more productive.

Another problem that becomes apparent when examining SPOT satellite images of these swampy regions in Riau, Jambi and Southern Sumatra, is that of areas opened up by canals but never occupied. On the SPOT images, canals can be seen in the middle of impoverished primary forest that has never been used for settlement. It would appear that land was developed in very unfavourable environments using canals but, fortunately, never occupied. Nevertheless, it had a serious impact on the environment. This indicates that, if more areas are to be opened up for settlement, there should be very careful environmental assessment before work begins.

In view of the difficulties encountered in implementing the settlement policy, and taking into account the ever-increasing and not easily managed rise in spontaneous migratory movements, it would seem absolutely essential to coordinate administrative measures, just as it seems fruitless to believe that an evolution, which involves more the whole than a single element of the regional scene, no matter how critical this element might be, can be checked by force. The "spontans" are usually the object of actions taken in high places, whereas it has been shown that regional development involves, in various ways, a array of participants. The lack of dialogue could, in the long run, obstruct an evolution which is far from having only negative aspects, even though these remain in the forefront of public opinion. What's at stake comes back in some way to changing perspective, to thinking medium and long term, which is not worth contemplating without giving the "spontans" a better deal, and implies the joint setting up of an outline regional development master plan.

Fig. 49 THE STATUS OF THE FORESTS IN THE SOUTH OF *KABUPATEN* OKU (SUMATERA SELATAN)
LE STATUT DES FORETS DANS LE SUD DU KABUPATEN *OKU (SUMATERA SELATAN)*



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boundaries of the zones according to RePPProT 1988
limite des zones selon RePPProT 1988

boundaries of the zones according to Departemen Kehutanan 1986 - 1987 / *limite des zones selon Departemen Kehutanan 1986 - 1987*

natural reserve found on both maps
réserve naturelle commune aux deux cartes

protected forests found on both maps
forêts protégées commune aux deux cartes

production forests zone found on both maps
forêts destinées à la production commune aux deux cartes

production forest zone found only on RePPProT 1988
zone de forêt destinée à la production ne figurant que sur RePPProT 1988

overlapping area having different status
aire de recouvrement entre terres de statut différent

Sources · *Sources* : RePPProT 1988, Departemen Kehutanan 1986-1987

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(8) *The World Bank, 1986*

(9) *Ulin or Eusideroxylon zwageri*

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(28) *For further information, see "Cartographic documents and Thematic Maps", last section of the book.*

(29) *Gunung Raya forest reserve is situated next to the mountain without including it (Fig. 26), despite the recommendation of the Dutch forestery consultant, Steup, in 1925* (in PUDOC op. cit.)

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(31) *COLLIER, L.B. Book 2, Second part.*

(32) *Jakarta Post, 14 september 1990 ; Suara Pembuaran, 22 september 1990*

(33) *Ministry of Publics Works*, Irrigation sub-sector loan project. Preparatory designs, Mesuji-Tulang Bawang Project, *Review report Directorate General of water Resources Development, Jakarta, 1987.*

Fig. 50 PRIMARY FOREST OR SMALLHODER COFFEE PLANTATIONS ?
FORET PRIMAIRE OU PLANTATIONS FAMILIALES DE CAFE ?

Large beheaded trees, remains of the primary forest, replaced today by smallholder coffee plantations (Barisan Range)
Grands arbres décapités, vestiges de la forêt primaire aujourd'hui remplacée par les petites plantations de café (Monts Barisan)

CONCLUSIONS

Rehabilitating the "spontans"

Marc Pain

Planned migrations and settlements, particularly the Transmigration, have rather a negative image and in general are not well-viewed by the public. Whenever they take the appearance of a mass phenomenon and whenever powerful spontaneous migratory flows develop in their wake - which is the case in the southern part of Sumatra - the upheavals that result are generally analyzed according to a pessimistic scenario.

1. The pessimistic scenario : analysis of the possible components of a crisis

■ Consequences of the settlement policy

THE INTENSIFICATION OF MIGRATORY MOVEMENTS

In 1960, Sumatra had received 9/10 of the Indonesian transmigrant families. Even if the desire for a better distribution had brought this proportion back to 6/10 at the end of the 1980s, the provinces in the south of Sumatra remained the principal population centres of the most far-reaching programme of agricultural settlement ever undertaken in the world up to this point in time.

The power of attraction of the Transmigration's villages amplified the effects of the policy undertaken by government authorities. The agricultural settlement villages' function as host and transit point became a key factor in the migratory movements. Surveys have shown that half the spontaneous migrants made a stop or passed through the centres of Belitang and Tugumulyo in the province of South Sumatra, and Pringsewu and Metro in Lampung, which were developed during the colonial period.

In the earliest Transmigration projects in Lampung, populations have been swelling now for three and sometimes four generations. The original allotments have been subdivided down to their lowest practical limit, being 3,000 to 4,000 m^2. Measured over the area of the administrative division, the *kecamatan*, global population densities for the province of Lampung in 1987 reached 1,111/km^2 in Pringsewu, 928 in Metro, and 693 in Gadinrejo. Measured over the cultivated area, rural population densities approached those encountered in Java and were well above 1,000/km^2.

The Transmigration's territories developed before the Second World War or during the period prior to planning (PRAPELITA, before 1969) are encountering saturation phenomena which are driving young bachelors, young couples or disappointed transmigrants, who are too constrained by the tiny allotments, to leave.

On the other hand, the appeal engendered by already-established families, the setting up of new areas intended for agriculture, and the establishment of a transportation infrastructure, contribute to strengthening the power of attraction of the region and to encouraging the departure of those who have stayed in Java where, in spite of improve-

Pour une réhabilitation des "spontans"

Marc Pain

Les transferts organisés de population, la Transmigration en particulier, ont plutôt une image négative et sont généralement mal perçus du public. Lorsqu'ils prennent l'allure d'un phénomène de masse et qu'à leur suite s'instaurent de puissants courants migratoires spontanés - c'est le cas du sud de Sumatra - les bouleversements qu'ils entrainent sont généralement analysés suivant un scénario pessimiste.

1. Le scénario pessimiste : analyse des éléments potentiels d'une crise

■ Les conséquences de la politique de peuplement

LE RENFORCEMENT DES MOUVEMENTS MIGRATOIRES

En 1960, Sumatra avait reçu les 9/10 des familles de transmigrants indonésiens. Si une volonté de meilleure répartition ramène cette proportion à 6/10 à la fin des années 80, les provinces du sud de Sumatra demeurent les principaux foyers de peuplement du plus vaste programme de colonisation agricole jamais entrepris jusqu'à ce jour dans le monde.

La force d'attraction des villages de la Transmigration a multiplié les effets de la politique engagée par les pouvoirs publics. La fonction d'accueil et de transit des villages de colonisation agricole est devenue une donnée essentielle des mouvements migratoires. Les enquêtes ont révélé que la moitié des migrants spontanés faisait halte ou passait par les centres créés à l'époque coloniale, Belitang et Tugumulyo dans la province de Sumatra-Sud, Pringsewu et Metro au Lampung.

Dans les réalisations les plus anciennes du Lampung, les densités se sont accumulées depuis déjà trois et quelquefois quatre générations. Les lots initiaux ont été divisés jusqu'à l'extrême limite de leur viabilité, soit trente à quarante ares. Rapportées à la superficie de l'unité administrative, le kecamatan, *les densités brutes atteignent 1111 hab/km2 à Pringsewu, 928 à Metro, 693 à Gadinrejo dans la province de Lampung en 1987. Rapportées à l'espace cultivé, les densités rurales se rapprochent de celles qu'on rencontre à Java et se situent nettement au-dessus de 1000 hab/km2.*

Les périmètres de la Transmigration créés avant la deuxième guerre mondiale ou lors de la période précédant la planification (PRAPELITA, avant 1969) connaissent des phénomènes de saturation qui poussent au départ les jeunes célibataires, les jeunes couples ou les transmigrants déçus, trop à l'étroit sur des lots exigus.

En outre, l'effet d'appel des familles déjà installées, l'aménagement de nouveaux espaces destinés à l'agriculture, la création d' infrastructures de transport contribuent à renforcer le pouvoir d'attraction de la région et à inciter au départ ceux qui sont restés à Java où, en dépit d'améliorations, les difficultés sont toujours présentes dans les villages d'origine des anciens migrants.

Mouvements de débordement, induits par la surcharge démographique des centres anciens de transmigration, et mouvements migratoires inter-îles se conjuguent pour alimenter les processus de conquête de nouvelles terres, encore libres en abondance sur les espaces peu peuplés de Sumatra, du moins en comparaison

ments, difficulties are still evident in the villages of origin of the earlier migrants.

Overflow movements, brought about by demographic overload in the old Transmigration centres, together with inter-island migratory flows, combine to feed the process of new land development in the lightly-populated areas which are still abundantly available, at least in comparison with the Javanese countryside, in Sumatra. The opening up of new roads, giving access to isolated regions and bringing settlers and clearers on site, provides an efficient means of stimulating an overall settlement of the area, from the dry land of the plains, to the swamps and the volcanic landscapes.

As well as this basic phenomenon, certain "trigger" factors, such as an increase in the price of coffee or cloves, cause a real invasion of the mountain regions. When the price of coffee to the producer went from 1,000 Rp/kg in 1981 to 3,500 Rp/kg in 1986, the southern part of Sumatra was the scene of a wave of clearing which was recorded beyond doubt by the satellite images taken during the Summer of 1986.

Cloves, which are used to add aroma to tobacco, have experienced an unprecedented demand in recent years. The very significant price rises, which reached record levels in the mid-1980s, provide the explanation for the recent circle of clearing which has advanced towards the summit of the Raja Basa volcano even though it is located inside a protected forest reserve. In 1985-86, however, the price of cloves at Kalianda, administrative centre of the *kabupaten* of "Lampung Selatan" situated at the base of the volcano, stood at 13,000 Rp/kg. In 1988, the price fell to 3,500 Rp/kg. If new plantations are uncommon today, the mountain slopes bear the indelible scars of the last explosion in prices.

THE RISKS OF OVERLOAD

In a region undergoing very heavy demographic expansion, the risks of over-population or critical population levels are often much closer than is generally thought. Although only a recent phenomenon, the shortage of territory available for large-scale development is becoming a limiting factor, which is even more pronounced here as a related requirement, that of soil quality, is rather average.

A decade of intense clearing in the Barisan Range has resulted in profound alterations to the landscape and to the make-up of community groups. The invasion of mountain regions, when not combined with protective measures, can lead to a destabilization of traditional systems or to occasional significant social tensions over remarks made in the village councils. At the regional level, an overall environmental decline should be anticipated even if reasons can be put forward for a well thought-out settlement of the area and for an accommodation with local conditions.

The warning signal used by the majority of observers relates to a reduction in forest area. Deforestation, which has been speeding up for 50 years, is mobilising public opinion, government officials and, for some time now, lenders (The World Bank, EEC) who grant significant amounts for studies devoted to the phenomenon. The southern part of Sumatra would appear to be the ideal point of reference. Pre-war, forest covered three-quarters of the land area. At the present time, primary forest covers less than 20% of the province of South Sumatra and just greater than 10% of the province of Lampung [1].

Added to the statistics of a significant deforestation is the string of natural catastrophes which is usually associated with it: gully erosion on the inclines, slipping on slopes following heavy rain - it is sometimes forgotten that this also takes place in wooded mountains that are uninhabited -, spectacular floods that wash away banks and villages along the water courses, alteration of the climate, and loss of the animal and plant heritage. The logical reaction is demonstrated by the intervention of the institutional bodies.

THE GOVERNMENT REACTION

The government reacts, as has been observed, by restating its ban on forest grazing, by preserving natural parks and, more recently, by attempts to classify those areas that are genuinely wooded. Reafforestation trials, better demarcation of forest reserves, or even the strengthening of protection measures in the catchment areas which feed the irrigation systems of the official programmes at the foot of the mountains, are undertaken.

In a more energetic display than these simply administrative measures, forced resettlement or destruction of dwellings is ordered for those settlers illegally established in protected forests. The setting up of immense programmes of population resettlement within the region itself, such as that of the Local Transmigration in Lampung which in about ten years (1980-90) was responsible for the displacement from forest reserves of 50,000 illegally settled families, some 240,000 people approximately, is proof of the determination of the public authorities.

A TIME OF CONFLICTS

In this manner, the components of a crisis were brought together. It is possible for them to trigger off a situation of conflict between the government and the farmers, and

avec les campagnes javanaises. L'ouverture de routes nouvelles permettant l'accès de régions isolées et amenant à pied d'oeuvre colons et défricheurs contribue efficacement à généraliser l'occupation de l'espace, des plaines de terre ferme aux marécages ou aux reliefs volcaniques.

A ce phénomène de fond, certains facteurs "déclencheurs ", comme une hausse des cours du café ou du clou de girofle, provoquent un véritable envahissement de la montagne. Lorsque les cours du café payés aux producteurs sont passés de 1000 Rp en 1981 à 3500 Rp en 1986, le sud de Sumatra a été le lieu d'une vague de défrichements enregistrée de façon indubitable sur les photographies satellite prises au cours de l'été 1986.

Le clou de girofle, utilisé pour aromatiser le tabac, a connu un succès sans précédent ces dernières années. La très forte progression des cours, qui ont atteint des records au milieu de la décennie 80, explique la récente couronne de défrichement qui a progressé en direction du sommet du volcan Raja Basa bien qu'il soit à l'intérieur d'une réserve forestière protégée. Mais en 1985-1986, le clou de girofle se vendait 13 000 Rp le kilo à Kalianda, chef-lieu du kabupaten de "Lampung Selatan" situé au pied du volcan. Les cours sont tombés à 3500 Rp/kg en 1988. Si les nouvelles plantations sont rares aujourd'hui, les versants de la montagne portent la marque durable de la dernière flambée des cours.

LES RISQUES DE SURCHARGE

Dans une région en très vive croissance démographique, les risques de surcharge ou les seuils critiques sont parfois moins loin qu'on ne le pense généralement. Bien que récent, le manque d'espaces disponibles pour des aménagements de grande envergure devient contraignant, d'autant plus qu'au critère de superficie est associé celui des potentialités des sols qui sont ici plutôt médiocres.

Une décennie de défrichements intenses dans la chaîne des Barisan a abouti à une modification profonde des paysages et de la composition des groupes humains. L'envahissement de la montagne, s'il n'est pas assorti de garde-fous, peut conduire à une déstabilisation des systèmes autochtones ou à des tensions sociales parfois sensibles dans les propos tenus au sein des conseils villageois. A l'échelle régionale, une dégradation générale de l'environnement doit être envisagée même si les arguments peuvent être trouvés pour une occupation raisonnée de l'espace et une adaptation aux conditions locales.

Le cri d'alarme, commun à la plupart des observateurs, concerne le recul de la forêt. La déforestation, accélérée depuis un demi-siècle, mobilise l'opinion, les pouvoirs publics et depuis quelque temps, les bailleurs de fonds (La Banque Mondiale, CEE) qui accordent de larges crédits aux études consacrées au phénomène. Le sud de Sumatra peut apparaître comme la référence idéale. La forêt occupait les trois quarts de la superficie du sol avant-guerre. Les forêts primaires s'étendent à l'heure actuelle sur moins de 20 % de la province de Sumatra-Sud et sur à peine plus de 10% dans la province de Lampung (1).

Aux chiffres d'une déforestation considérable, s'ajoute le cortège des catastrophes naturelles qui lui est généralement associé: ravinements dans les pentes, mise en mouvement des versants à la suite de fortes pluies - on oublie quelquefois qu'ils existent également dans les montagnes boisées non peuplées -, crues spectaculaires emportant les berges et les villages riverains des cours d'eau, modification du climat, perte du patrimoine faunistique et de la flore. La réaction logique se manifeste par l'intervention des organismes institutionnels.

LA REACTION DE L'ETAT

La réaction de l'Etat se traduit, on l'a vu, par la réaffirmation des mises en défends de la forêt, le maintien de parcs naturels, et plus récemment, par des tentatives de recensement des espaces réellement boisés. Des essais de reboisement, une meilleure délimitation des réserves forestières, ou encore le renforcement des mesures de protection des bassins-versants qui alimentent les systèmes d'irrigation des programmes officiels situés au pied des montagnes, sont entrepris.

De manière plus vigoureuse que ces mesures d'ordre administratif, des déplacements autoritaires ou des destructions de maisons de colons illégalement installés dans les forêts protégées sont ordonnés. La mise en oeuvre de vastes programmes de transfert de population à l'intérieur même de la région, tel celui de la Transmigration Locale au Lampung qui, en une dizaine d'années (1980-1990), a opéré le déplacement de 50 000 familles en situation irrégulière dans les réserves forestières, soit environ 240 000 personnes, est une preuve de la détermination des pouvoirs publics.

LE TEMPS DES CONFLITS

Les éléments d'une crise se trouvent ainsi réunis. Ils peuvent déclencher une situation conflictuelle entre l'Etat et les paysans, entre les différents services administratifs, et à la limite, remettre en cause une politique nationale.

Les tensions peuvent se développer non seulement entre l'Etat et les "spontans", migrants venus de Java ou des vieilles régions de Transmigration, mais aussi avec les populations locales qui se trouvent prises dans le processus d'éviction, alors que leur mode d'exploitation traditionnel s'appuie sur des mouvements à courte distance et des défrichements aujourd'hui freinés par la

between different sections of the administration, and to challenge, ultimately, a national policy.

Tensions can build up not only between the government and the "*spontans*", migrants coming from Java or from early Transmigration regions, but also with the local people who find they are caught up in the eviction process, even though their traditional farming methods rely on short-range displacements and clearing which has today been checked by strict application of the regulations.

Conflicts of jurisdiction suddenly spring up between ministries who accuse each other of being responsible for the worsening of the situation. Arising out of this is a lack of understanding between central government, provincial government and local representatives of the government, who are faced with the lack of realism of some decisions or by the impossibility of carrying out the measures contemplated.

How can the number of families that it would be desirable to move be determined when, by nature, a significant number of "spontans" are not included in the censuses and when one of their characteristics is their mobility? How can those areas which need to be protected be demarcated when fundamental up-to-date mapping is sadly lacking and the majority of government departments only work with approximate maps? In the absence of reliable cartographical documents, the overlapping of land officially allocated for several purposes or to several users is a common occurrence.

THE FAILURE OF A POLICY?

There are those who emphasise the failure of a national policy which, in spite of the level of means brought into play, has not succeeded in relieving Java of its population congestion and has only served to reproduce the same rural over-population phenomena in the neighbouring province of Lampung. The poverty has just been moved to the Transmigration villages. Other voices are raised to point out the economically and culturally hemmed in villages built from start to finish in the middle of uninhabited territory. Today, some stress the uncontrollable spontaneous forest clearing activity carried along in the wake of the settlement policy.

The predicament of authorities faced with contradictory policies and divergent points of view is widespread in the receiving regions. In Lampung and South Sumatra, the Transmigration soaked up a significant part of the development budget granted by the central government. Transmigrants were settled in the interfluvial regions of the plains and on the marshy coastal plain as a result of a more ready availability of land and an emptiness that can be partly explained by the mediocrity of the soil. Some immense geometrically shaped clearings were opened up in the middle of residual forests. The valleys of the mountainous region were saved from any large scale project and left to a "natural" evolution because of a more diffuse established local population, difficulties in finding large uninhabited tracts which were both accessible and easily worked, and more directly visible dangers for the environment.

The development of the inland and coastal plains required the construction of substantial elements of infrastructure, such as the irrigation network essential for intensive rice growing, or even drainage works in the coastal marshes. In the case of dry farming on the plains, a significant fertilizer input was necessary after two or three annual harvests. But what the government or private industry could provide for agro-industrial plantations of cassava, sugar cane or pineapples, was not within the capacity of families of settlers, even if they were assisted or relieved by a plentiful labour force of "spontans" which gathered around the nucleus of the organized settlement.

As a result, a number of the migrants headed for the slopes of the volcanic landscapes where the soil was fertile, thereby adding to the development already undertaken by the native inhabitants. The spontaneous increase in the population of the mountain regions has been one of the driving forces behind the regional economic activity of recent decades. Forbidding settlement of the slopes in order to protect the catchment areas reverts to depriving farmers of their best land and to blocking the growth of a region which is henceforth inextricably linked to the future of the provinces concerned. Should it happen that they are driven out, they will look for slopes still free from eviction measures even further to the north in the Barisan Range.

The scope of the phenomenon alone implies that it cannot be resolved straightforwardly, and even less so using simplistic means. If the need for some resettlement is unreservedly accepted, authoritarian measures cannot be applied indefinitely without taking the risk of alienating public opinion and provoking violent negative reactions. The authorities we met were hesitant as to what measures to implement and sought the advice of experts who could obviously not produce an immediate solution or a miracle cure.

The same questions are always raised. Is the region capable of hosting further people? Must evacuation plans be implemented and in what locations? Must all or maybe only a portion of the illegally established families be resettled? How and according to what criteria can the areas for conservation be defined? Is it possible to simultaneously protect the retention capacity of the catchment areas while permitting farmers to settle on the slopes?

stricte application des réglements.

Des conflits de compétence surgissent entre les ministères qui se renvoient la responsabilité de la dégradation de la situation. De là naissent les incompréhensions entre services centraux , services provinciaux et représentants locaux de l'Etat confrontés à l'irréalisme de certaines décisions ou à l'impossibilité de pouvoir appliquer les mesures envisagées.

Comment définir le nombre de familles qu'il conviendrait de déplacer lorsque, par essence, un nombre important de "spontans" échappe aux recensements et que l'une de leur caractéristique est leur mobilité? Comment délimiter les espaces qu'il faudrait protéger lorsqu'une cartographie de base, à jour, fait cruellement défaut et que la majorité des services ne disposent que de cartes approximatives? En l'absence de documents cartographiques fiables, les recouvrements de terrains officiellement affectés à plusieurs usages ou à plusieurs attributaires sont monnaie courante.

L' ÉCHEC D'UNE POLITIQUE ?

Certains soulignent l'échec d'une politique nationale qui, malgré l'importance des moyens mis en oeuvre, n'a pas réussi à décongestionner Java de son trop plein d'hommes et n'a fait que reproduire dans la province voisine du Lampung les mêmes phénomènes de surpeuplement rural. La pauvreté aurait été transférée dans les villages de Transmigration. D'autres voix s'élèvent pour souligner l'enclavement économique et culturel de villages créés de toutes pièces au milieu d'espaces vides. Aujourd'hui, certains insistent sur les mouvements incontrôlables de défrichements spontanés que la politique de peuplement a entrainé dans son sillage.

Dans les régions d'accueil prédomine l'embarras des autorités confrontées à des politiques contradictoires et à des points de vue divergents. A Lampung et Sumatra-Sud, la Transmigration a absorbé une grande partie du budget de développement accordé par le gouvernement central. Les Transmigrants ont été installés sur les interfluves des plaines et sur la plaine côtière marécageuse en raison d'une meilleure disponibilité foncière et d'une vacuité qui s'explique en partie par la médiocrité des sols. Des clairières, immenses et géométriques, ont été ouvertes au coeur des forêts résiduelles. Les vallées de la zone montagneuse ont été épargnées de tout projet d'envergure et laissées à une évolution "naturelle" en raison d'un peuplement ancien plus diffus, des difficultés à trouver de larges espaces libres, accessibles et faciles à exploiter, et des dangers plus immédiatement perceptibles pour l'environnement.

La mise en valeur des plaines intérieures et côtières implique la construction d'infrastructures lourdes, comme celles des réseaux d'irrigation indispensables pour une riziculture intensive, ou encore des travaux de drainage dans les marécages côtiers. Des apports importants d'engrais sont nécessaires dans les plaines après deux ou trois années de récolte s'il agit de cultures en sec. Mais ce que peuvent assurer l'Etat ou le secteur privé pour les plantations agro-industrielles de manioc, de canne à sucre ou d'ananas n'est pas à la mesure des familles de colons, même si celles-ci sont aidées ou relayées par une main d'oeuvre abondante de "spontans" venus s'agglutiner autour des noyaux de peuplement organisé.

Une partie des migrants se dirigent donc là où la terre est fertile, sur les pentes des reliefs volcaniques. Ils viennent fortifier la mise en valeur déjà entreprise par les populations autochtones. Le renforcement spontané du peuplement des pays de montagne a été l'un des moteurs du dynamisme économique régional des dernières décennies. Interdire l'occupation des pentes pour préserver les bassins versants revient à priver les paysans des meilleures terres et à geler l'évolution d'un espace désormais indissociable de l'avenir des provinces concernées. S'il advient qu'on les chasse, ils chercheront des pentes encore à l'abri des mesures d'éviction, toujours plus au nord dans la chaîne des Barisan.

L'ampleur même du phénomène fait qu'il ne peut être résolu simplement, et encore moins avec des mesures simplistes. Si l'on doit approuver sans réserve la nécessité de certains déplacements, les mesures autoritaires ne peuvent pas s'appliquer indéfiniment sans prendre le risque de se couper de l' opinion et de susciter de violents mouvements de rejet. Les responsables rencontrés hésitent sur les mesures à mettre en oeuvre et interrogent les experts qui ne peuvent évidemment pas apporter de solution immédiate ou de remède miracle.

Mais toujours reviennent les même interrogations : la région peut-elle encore accueillir des hommes? Faut-il mettre en oeuvre des plans d'évacuation et en quels lieux ? Faut-il déplacer toutes les familles illégalement installées ou bien une partie seulement? Comment définir les espaces à préserver et sur quels critères? Peut-on protéger en même temps la capacité de rétention des bassins-versants et laisser les agriculteurs occuper les pentes ?

■ *La crise, vue à travers la presse*

De cette crise, la presse indonésienne s'est faite l'écho. Une approche des faits, au travers des articles publiés ces dernières années, montre d'une part, l'importance et l'intérêt portés à un phénomène qui n'est pas sans avoir quelquefois des conséquences dramatiques et, d'autre part, une assez grande variété d'opinions qui peuvent s'exprimer ou transparaître à travers une analyse systématique des écrits, notamment ceux des quotidiens régionaux. Le recueil des informations, présenté dans un synopsis établi pour les années 1988-1990, donne la mesure du débat (2).

■ The crisis as seen by the press

The Indonesian press has given broad coverage to this crisis. Looking at the facts as they appeared in articles published in recent years shows, on one hand, the significance and the interest given to a phenomenon which sometimes is not without dramatic consequences and, on the other hand, a fairly broad range of opinions which can be obtained or derived by using a systematic analysis of the texts, in particular those of the regional newspapers. A collection of news items, presented as a synopsis for the period 1988-90, demonstrates the extent of the controversy [2].

ENVIRONMENT : THE CRITICAL LIMIT

Indonesian Times, 13 May 1988

The Minister of the Interior stated that the Transmigration movements in Lampung had exceeded the critical acceptable threshold beyond which negative effects could damage the environment ("Transmigrants from Java to Lampung surpass maximum level"- I.T.)

BY ORDER OF THE GOVERNOR, HUNDREDS OF HOUSES ARE DESTROYED BY FIRE IN THE FORESTS OF LAMPUNG

Jakarta Post, 29 December 1988, 2 January 1989
Indonesian Observer, 30 December 1988
Tempo, 7 January 1989
Kompas, 14 January 1989

The Governor of Lampung announced to the official news agency Antara that "illegal settlements in the Pulau Panggung forest are the most severe problem confronting the provincial government".

In the district of Pulau Panggung, 2,376 families would have to be shifted to the *kabupaten* of "North Lampung" and the province of Riau. Only 575 families have agreed to move. The people involved, who are mostly of Javanese origin, came to Lampung during the last fifty years under the auspices of the Transmigration.

Following several warnings, the failure of attempts at persuasion, and the expiration of the time limit granted for the voluntary demolition of houses built in the protected zones, 469 houses were burnt and 500 destroyed by government order during the months of November and December 1988.

This authoritarian destruction provoked strong reactions. Academics protested against methods which they deemed to be "inhuman" (*Indonesian Observer*). Some said they were confused about environmental damage caused by people living in and around the developed areas. They quoted the example of Malang in Eastern Java, a mountainous region almost completely covered with coffee plantations "where up to the present day, not a single case of landslide has been reported" ... "The demolition (of homes) is not the only way to save the environment" they added (I.O.).

THIRTY DEATHS IN A CONFRONTATION BETWEEN THE POLICE AND RADICAL MUSLIMS

Indonesian Times, Indonesian Observer, Jakarta Post, 10 February 1989

A tragic incident which took place in the *kabupaten* of Lampung Tengah made headlines in the Indonesian newspapers. In the region of Way Jepara, about thirty people were killed during an operation to restore law and order which brought the police and the "Komando Mujahidin Fisabilillah" (KMF), said to be a group of Muslim extremists, into conflict.

According to the press, the commandos were part of a group of 200 or 300 migrants of Javanese origin who came to Lampung in the 1960s, and which is in permanent conflict with the authorities. Investigations made subsequently seem to indicate that the question of land ownership and more especially the eviction of settlers living illegally in the forest reserves of the Gunung Balak plateau, famous for the quality of its soil, may have inflamed the aggressiveness of the religious community.

CONTROVERSY OVER AGRICULTURAL SETTLEMENT IN THE PROVINCE OF SOUTH SUMATRA

During the month of August 1990, a series of articles printed in the *Sriwijaya Post*, published in Palembang, spoke of incidents which illustrate the complexity of the problems raised by agricultural settlement, a source of antagonism in the allocation of land.

Disruption of the ecosystems

- 9 August 1990, Lubuk Linggau. A herd of elephants, driven out of its forest habitat by land clearing, devastated the rice fields of recently established Transmigrants in the village of Megangsakti III. As a result, according to witnesses, half of the inhabitants have been reduced to eating cassava.

ENVIRONNEMENT : LE SEUIL CRITIQUE

Indonesian Times, *13 mai 1988*

Le Ministre de l'Intérieur déclare que les mouvements de Transmigration au Lampung ont dépassé le seuil critique acceptable au-delà duquel des effets négatifs peuvent porter atteinte à l'environnement ("Transmigrants from Java to Lampung surpass maximum level"-I.T.)

SUR ORDRE DU GOUVERNEUR, DES CENTAINES DE MAISONS SONT DETRUITES PAR LE FEU DANS LES FORETS DU LAMPUNG

Jakarta Post, *29 décembre 1988, 2 janvier 1989*
Indonesian Observer, *30 décembre 1988*
Tempo, *7 janvier 1989*
Kompas, *14 janvier 1989*

Le Gouverneur de Lampung déclare à l'agence de presse officielle Antara que "l'occupation illégale de la forêt de Pulau Panggung est le plus grave problème auquel l'administration provinciale doit faire face".

Dans le district de Pulau Panggung, 2376 familles devaient être déplacées vers le Nord Lampung et la province de Riau. Seules 575 familles ont accepté leur transfert. Les personnes concernées sont pour la plupart originaires de Java, arrivées au Lampung dans les années cinquante dans le cadre de la Transmigration.

Après plusieurs avertissements, l'échec des tentatives de persuasion et le dépassement de la date limite accordée pour la démolition volontaire des maisons installées dans les zones protégées, 469 maisons ont été brûlées et 500 détruites sur ordre du gouvernement au cours des mois de novembre et de décembre 1988.

Ces destructions autoritaires ont suscité de vives réactions. Des universitaires se sont élevés contre des méthodes qu'ils jugeaient "inhumaines" (Indonesian Observer). Certains ont exprimé leur perplexité sur les atteintes à l'environnement causées par des habitants familiers des milieux mis en valeur. Ils donnent l'exemple de Malang, à Java Est, région montagneuse très largement recouverte par les plantations de café "où jusqu'à ce jour, aucun cas de glissement de terrain n'a été mentionné ... La destruction des maisons n'est pas la seule solution pour sauvegarder l'environnement" ajoutent-ils.

TRENTE MORTS DANS L'AFFRONTEMENT ENTRE FORCES DE L'ORDRE ET RADICALISTES MUSULMANS

Indonesian Times, Indonesian Observer,
Jakarta Post *10 février 1989*

Un dramatique incident survenu dans le kabupaten de Lampung Tengah fait la une des journaux indonésiens. Dans la région de Way Jepara, une trentaine de personnes ont trouvé la mort lors d'une opération de maintien de l'ordre opposant le "Komando Mujahidin Fisabilillah" (KMF), présenté comme un groupe de musulmans extrémistes, et les forces de l'ordre.

D'après la presse, le commando était issu d'un groupe de 200 à 300 migrants originaires de Java, arrivés au Lampung dans les années 60, et en rébellion constante contre les autorités. Des analyses faites ultérieurement, il semble ressortir que la question foncière et plus particulièrement les évictions de colons illégalement installés dans les réserves forestières du plateau de Gunung Balak, renommé pour la qualité de ses sols, auraient exacerbé l'agressivité de la communauté religieuse.

POLEMIQUES AUTOUR DE LA COLONISATION AGRICOLE DANS LA PROVINCE DE SUMATERA-SUD

Au cours du mois d'août 1990 une série d'articles publiés dans le Sriwijaya Post, édité à Palembang, relatait des incidents qui illustrent la complexité des problèmes posés par la colonisation agricole, source de conflit pour des terres à partager.

Les écosystèmes perturbés

- 9 Août 1990, Lubuk Linggau. Une harde d'éléphants, chassée de son habitat forestier par les défrichements, saccage les rizières des transmigrants récemment installés dans le village de Megangsakti III. La moitié des habitants, selon les témoignages, en serait réduite à consommer du manioc.

Les rapports entre petits planteurs et investisseurs

- 20 Août 1990. Pendant la nuit, des bulldozers appartenant à une société agro-industrielle, dont les propriétaires restent volontairement anonymes, ont abattu des centaines d'hectares d'hévéas appartenant à quatre villages.

- 23 Août 1990. Certains financiers sont suspectés d'avoir organisé la destruction par le feu des huttes des planteurs afin de pouvoir ouvrir une mine d'or à leur emplacement.

L'action du gouvernement

- 21 Août 1990. Une subvention de quatre milliards des roupies est accordée par l'Etat pour déplacer des milliers de chefs de famille demeurant encore dans les forêts protégées.

- 25 Août 1990. Le Gouverneur indique que de nouvelles terres doivent être trouvées pour les défricheurs

Relations between small growers and investors

- 20 August 1990. During the night , bulldozers belonging to an agro-industrial company, whose owners deliberately remain anonymous, knocked down hundreds of hectares of rubber trees belonging to four villages.

- 23 August 1990. Certain financial backers are suspected of having organized the burning down of planters huts so that they could open a gold mine on the same location.

Government action

- 21 August 1990. A grant of four billion rupees has been made by the government to resettle thousands of heads of household still living in protected forests.

- 25 August 1990. The Governor announced that new areas of land would have to be found for land reclaimers operating illegally, and requested the assistance of the Ministry of Transmigration.

- 26 August 1990. Promulgation of draconian measures against farmers who refuse to leave their plantations established in the mountains.

The reasons put forward to justify government intervention are the rapid reduction in forest area, the protection of catchment areas and the rate of flow of the Musi River, the appearance of erosion phenomena on cleared land, the risk of drought and, more broadly, the damage to the regional climate.

Operation Bukit :

- 21 August 1990. Land reclaimers are arrested as part of operation *Bukit* launched in the *kabupaten* of Lahat. These actions, which were impossible to carry out by road, were accomplished by helicopter. They will be continued for a month.

- 22 August 1990. "The local government (of South Sumatra) gave land reclaimers the opportunity to get in their harvest before departing, but as they refused to burn their plantations after the first harvest, the intercessory group had to adopt firm measures".

- 23 August 1990. An operational military unit has been created to bolster, if necessary, the action of civil authorities during the *Bukit* operation. "But there will be no confrontation" the lieutenant-colonel in charge announced.

- 26 August 1990. "It was made quite clear that chief commissioner was going to take extreme steps against any person involved in forest clearing, not excluding against village chiefs associated with land reclaimers" (in the sale of land situated in protected zones).

Thousands of coffee plants ready for harvesting were burnt down. "We wish to point out our firm decision to save these forests. The future of our children is at stake" declared the chief commissioner of Lahat.

Operation Lestari :

- 22 August 1990. The Bukit operation has been expanded. The Lestari operation will take in the whole of the province of Southern Sumatra.

Attitudes and reactions of land clearers

- 21 August 1990. The land clearers of Gunung Raya, settled in the protected forest of Gunung Raya, claim to be ready to leave the mountain area. Departing volunteers will be directed towards the P.I.R. programmes but will have to undergo a selection process as "the conditions will be more difficult than those encountered when they were growing coffee in the fertile soil of Gunung Raya".

At Belitang, 72 clearers coming from OKU agreed to abandon their coffee plants and to go to work on an oil palm plantation.

- 22 August 1990, the Lahat region. Arrested clearers claim that they are not well-informed about the bans on farming in the forests. A number of them point out that they purchased their land through a village chief. The solidarity of the clearers is strong and some even dare to challenge members of the police force.

- 25 August 1990, Lubuk Linggau (Musi Rawas). In four days, 97 clearings have been opened up, some of which have been in locations reserved for the Transmigration or protected forests. Farmers admit their ignorance of the prohibition on settlement in these locations.

- 26 August 1990. Farmers had promised to leave the forest after the harvest, "but they have not kept to their commitment and their number has increased", the chief commissioner of Lahat pointed out.

Opinions of observers

- 22 August 1990. "Setting fire to the plantations and houses of occupants lacks humanity. It is an insult to common sense and it has no educational value" observed the Dean of the Law Faculty in Palembang.

en situation illégale, et demande l'aide du Ministère de la Transmigration.

- 26 Août 1990. Annonce de mesures draconiennes contre les planteurs qui refusent de quitter leurs plantations installées dans les montagnes.

Les arguments avancés pour justifier l'intervention des autorités sont le recul rapide de la forêt, la protection des bassins-versants et du régime hydrographique du fleuve Musi, l'apparition de phénomènes d'érosion sur les terres défrichées, les risques de sécheresse et, plus globalement, les atteintes au climat de la région.

Opération Bukit :

- 21 Août 1990. Des défricheurs sont arrêtés dans le cadre de l'opération Bukit lancée dans le kabupaten *de Lahat. Les interventions, impossibles à mener par voie terrestre, sont effectuées par hélicoptère. Elles seront poursuivies pendant un mois.*

- 22 Août 1990. "Le gouvernement local (de Sumatra Sud) avait donné aux défricheurs la possibilité d'effectuer leur récolte avant de partir mais comme ils ont refusé de brûler leurs plantations après la première récolte, le groupe d'intervention a dû opter pour des méthodes rigides".

- 23 Août 1990. Un groupe d'intervention militaire a été formé pour soutenir, si nécessaire, l'action des autorités civiles pendant l'opération Bukit. "Mais il n'y aura pas d'affrontement" déclare le lieutenant-colonel responsable.

- 26 Août 1990. "Il a été dit clairement que le préfet allait prendre des mesures sévères à l'encontre de n'importe quelle personne impliquée dans le défrichement des forêts, y compris contre les chefs de villages compromis avec les essarteurs" (dans les ventes de terres situées dans les zones protégées).

Des milliers de plants de café prêts à la récolte ont été brûlés. "Nous voulons montrer notre ferme décision de sauver ces forêts. L'avenir des nos enfants est en jeu", déclare le préfet de Lahat.

Opération Lestari :

- 22 Août 1990. L'opération Bukit est étendue. L'opération Lestari concernera l'ensemble de la province de Sumatra-Sud.

Attitudes et réactions des défricheurs

- 21 Août 1990. Les défricheurs du Gunung Raya, installés dans la forêt protégée de Gunung Raya, se disent prêts à quitter la montagne. Les volontaires au départ seront orientés vers des programmes P.I.R. mais devront être sélectionnés car "ils devront affronter des conditions plus difficiles que lorsqu'ils cultivaient le café sur les terres fertiles du Gunung Raya".

A Belitung, 72 défricheurs venant de OKU ont accepté d'abandonner leurs caféiers et de venir travailler dans une plantation de palmier à huile.

- 22 Août 1990, région de Lahat. Les défricheurs arrêtés déclarent ne pas être au courant des interdictions de cultiver dans les forêts. Quelques-uns précisent qu'ils ont acheté leurs terres par l'intermédiaire d'un chef de village. La solidarité des défricheurs est forte et certains osent même défier les représentants des forces de l'ordre.

- 25 Août 1990, Lubuk Linggau (Muara). En quatre jours, 97 clairières ont été ouvertes, dont certaines dans des sites réservés à la Transmigration ou dans des forêts protégées. Les paysans avouent leur ignorance des interdictions d'installation sur ces sites.

- 26 Août 1990. Les paysans avaient promis de quitter la forêt après la récolte, "mais ils n'ont pas tenu leur engagement et leur nombre s'est multiplié", indique le préfet de Lahat.

Jugements d'observateurs

- 22 Août 1990. "Mettre le feu aux plantations et aux maisons des habitants manque d'humanité. C'est un outrage au bon sens et cela n'a pas de valeur éducative" commente le doyen de la faculté de droit de Palembang.

Pour le doyen, "les mesures répressives n'apprennent pas au peuple à respecter la loi. Il existe des méthodes plus souples et plus efficaces"... "Le plus important est de discuter ensemble du problème pour ne pas établir une coupure entre l'appareil gouvernemental et le peuple".

- 23 Août 1990. Des experts de l'environnement de Palembang estiment que l'approche persuasive susceptible d'être appliquée devrait se baser sur le principe qui veut que "les fourmis se rassemblent autour du sucre". Les paysans descendraient de la montagne si le gouvernement leur donnait une indemnité et proposait une alternative qui leur soit favorable.

- 23 Août 1990. Le président du bureau régional du P.P.P. (Parti de l'Union de Développement) de Lahat a souligné l'importance du préjudice causé aux planteurs lors des destructions par le feu des maisons et des plantations. Il a demandé par ailleurs que les contrevenants ne soient pas arrêtés.

Les autres partis politiques (P.D.I. et GOLKAR) approuvent totalement les mesures d'éviction car "on ne peut plus tolérer le défrichement des forêts".

Ainsi, au cours de ce mois d'août 1990, pratiquement chaque jour dans la presse locale de la province

For the Dean, "repressive measures do not teach the people to respect the law. More flexible and efficient methods are available"..."The most important thing is to discuss the problem together so as not to create a breach between the apparatus of government and the people".

- 23 August 1990. Environmental experts from Palembang estimate that the persuasive approach likely to be used should be based on the principle which assumes that "ants are attracted to sugar". The farmers would come down from the mountains if the government offered them compensation and proposed an alternative that would be acceptable to them.

- 23 August 1990. The President of the regional office of the P.P.P. (Union Development Party) in Lahat, emphasised the significance of the damage inflicted on farmers during the burning down of their homes and plantations. He requested, however, that those responsible not be arrested.

The other political parties (P.D.I. and GOLKAR) totally supported the eviction measures on the grounds that "forest clearing can no longer be tolerated".

Virtually every day during the month of August 1990, therefore, an article in the local press of the province of South Sumatra was devoted to land problems, to land reclaimers, to "spontans" or to the steps that were being taken to try to stamp out the phenomenon.

Assembling the negative factors of what could appear to be the failure of a policy of land development or describing the components of a crisis situation is often easier than proposing solutions for breaking the stalemate in a development which is certainly without question but which is mixed with risks which could jeopardize the conservation of the region's potential. Is the crisis inescapable? Shouldn't we consider spontaneous migratory movements as a significant fact, a new element in the geography of the Indonesian territory, and seek to integrate them into an overall policy that would endeavour to make use of their positive elements?

2. The optimistic scenario : recognition of the "spontans"

Incessantly accused of opening up the forest and of settling without permission on protected land, which is true even if they are not alone in this, the "spontans" are often blamed for inflicting serious damage on the environment, for not having legitimized their land-holding position or for having overlooked doing it, in short, for having evaded government control. These *penghuni liar*, as they are often called in a rather derogatory way, these "dwellers on the fringe of the law", are nevertheless an integral part of the Indonesian nation. Their demographic and economic strength have become such that from now on it will no longer be possible to resolve the problem with a stroke of the pen or with a new eviction order. Is it not possible to consider the scope of the movement as a force? By virtue of their numbers, spontaneous migrants represent the key factor behind a better distribution of the rural population in the archipelago.

A new approach would require the recognition of generally excluded representatives and an understanding of their needs. If the variety of situations and the extreme originality of each personal profile make the creation of the typical profile of an immigration candidate tricky, a group of common characteristics at least allows the migrant community to be differentiated.

The majority of them come from a rural background. They are uprooted for reasons that are mainly economic, but it is not by chance that some leave and some stay. The surveys of H. Bouvier and G. Smith have shown that the family background of two-thirds of them shows a link with population movements, an understanding of journeys undertaken by others, be they their close or distant family, or neighbours or acquaintances from their place of origin. Most of them have had an experience which has hardened them for their own adventure. An address or a reference point in the host region, even if it isn't systematically used, boosts their confidence. The decision to leave the village, therefore, will lead them towards an "unknown" which is neither totally unexplored nor without an anchorage point.

The will to be successful in their own migration is governed as much by the need to survive as by the wish to guarantee an education and a suitable future for their children. Coupled to this objective is the shame that would result from a failure and from a difficult return to the village following an unsuccessful journey. Out of this comes the ability to face up to very difficult situations and,

de Sumatra-Sud, un article était consacré aux problèmes de terre, aux défricheurs, aux "spontans" ou aux mesures qui étaient prises pour tenter de juguler le phénomène.

Réunir les facteurs négatifs de ce qui peut apparaître comme l'échec d'une politique d'aménagement du territoire, décrire les éléments d'une situation de crise est souvent plus facile qu' apporter des propositions pour sortir de l'impasse d'un développement certes incontestable, mais assorti de risques qui peuvent mettre en cause la préservation du potentiel régional. La crise est - elle inéluctable? Ne serait-il pas nécessaire de considérer les migrations spontanées comme un fait majeur, une donnée nouvelle de la géographie de l'espace indonésien, et de chercher à les intégrer dans une politique d'ensemble qui s'efforcerait d'en utiliser les éléments positifs ?

2. Le scénario optimiste : reconnaître les "spontans"

Accusés d'ouvrir sans cesse la forêt et de s'installer sans autorisation sur des terres protégées, ce qui est vrai bien qu'ils ne soient pas les seuls, on reproche souvent aux "spontans" d'infliger de graves dommages à l'environnement, de n'avoir pas régularisé leur situation foncière ou d'avoir négligé de le faire, bref d'échapper au contrôle de l'Etat. Mais ces penghuni liar *comme on les appelle parfois de manière assez péjorative, ces "habitants en marge des lois" font partie intégrante de la nation indonésienne. Leur poids démographique et économique est devenu tel qu'il n'est plus possible désormais de régler le problème d'un trait de plume ou par une nouvelle mesure d'éviction. Ne pourrait-on pas considérer l'ampleur du mouvement comme une force? Par leur multitude, les migrants spontanés représentent le principal facteur d'une meilleure répartition des populations rurales de l'archipel.*

Une nouvelle approche passe par la nécessaire reconnaissance d'interlocuteurs généralement ignorés et par la compréhension de leurs besoins. Si la variété des situations et la profonde originalité de chaque biographie rendent délicat l'établissement d'un portrait-robot du candidat à l'émigration, un ensemble de traits communs permet du moins d'individualiser la communauté des migrants.

La majorité d'entre-eux sont issus du monde paysan. Les raisons du déracinement sont essentiellement d'origine économique mais ce n'est pas le hasard si certains partent et d'autres restent. Les enquêtes de H.Bouvier et G.Smith ont montré que les deux tiers des migrants ont dans leur passé familial un lien avec les mouvements de population, une connaissance des migrations vécues par d'autres, parents proches ou éloignés, voisins ou relations de leur pays d'origine. La plupart d'entre eux disposent d'une expérience qui les a aguerri pour leur propre aventure. Une adresse, un point d'appui dans la région d'accueil, même s'il n'est pas systématiquement utilisé, les conforte. La décision de quitter le village les conduira ainsi vers un "inconnu" qui n'est pas totalement inexploré, ni sans points d'ancrage.

La volonté de réussir leur propre migration est autant guidée par la nécessité de survivre que par le désir d'assurer aux enfants des études et un avenir convenables. S'ajoute à ce dessein la honte que provoquerait un échec et le difficile retour au village après un périple raté. Il en résulte la capacité de faire face à des situations très dures et quelquefois l'acceptation de tâches ou de conditions qui auraient été refusées dans la communauté de la région de départ.

La plupart des personnes rencontrées préfèrent finalement poursuivre leur expérience migratoire plutôt que de rentrer au pays, même si le désir ou l'envie en est presque toujours exprimé. Nombreux sont les javanais qui ont réussi dans la région d'immigration et qui déclarent vouloir retourner à leur village d'origine mais que l'on retrouve encore, plusieurs années après, à Sumatra.

Pour tous ceux qui quittent volontairement un contexte de surcharge démographique et une situation de pauvreté pour s'établir ailleurs que dans les concentrations urbaines, il paraît important de ne pas reproduire les éléments constitutifs d'un état de crise, et donc d'agir sur les institutions. Les transformer conduirait à modifier les comportements des migrants spontanés et permettrait d'intervenir efficacement sur l'aménagement du territoire indonésien. La première mesure, sans doute la plus importante, devrait favoriser l'accès à la terre lorsque celle-ci est déjà correctement cultivée, ce qui implique que l'Etat reconsidère les statuts ou les textes qui régissent l'espace national. C'est là qu'est le choix: l'adaptation ou non d'une législation devenue obsolète sous la pression des faits.

■ Définir un statut de propriétaire

Reconnaître l'existence des "spontans", leur donner un statut de propriétaire, contribuerait à faciliter leur intégration. Le passage d'une situation mal définie, ambigüe ou marquée par la précarité, à un statut juridique stable, et par conséquent maîtrisable, deviendrait possible. Une approche moins négative que celle qui prévaut permettrait de promouvoir une transition indispensable, l'évolution d'une mentalité de défricheur à l'avenir incertain, soucieux d'amasser au plus vite un capital sur des terres dont il n'a pas officiellement la jouissance, à celle d'un paysan qui, fort d'un titre foncier, n'aurait

sometimes, the acceptance of tasks or conditions that would have been rejected in the community of the region they left.

Most of the people encountered ultimately prefer to persevere with their migratory experience rather than return home, even if the desire or the wish to do so is almost always expressed. There are many Javanese who have been successful in the immigration region and who claim that they would like to return to their village of origin but who are still found several years later in Sumatra.

For all those who willingly leave a setting of population overload and a situation of poverty to settle other than in the great conurbations, it seems essential not to recreate the constituent elements of a nation in crisis and, hence, to bring pressure to bear on the institutions. Transforming them would result in an improvement in the attitude of the spontaneous migrants and would allow an efficient implementation of the development of the Indonesian region. The first and undoubtedly the most significant of these measures should aim to facilitate access to land, whenever it is already correctly farmed, which implies that the government should reevaluate the laws and regulations that control state-owned land. Herein lies the choice : to adapt or not to adapt legislation that the pressure of events has rendered obsolete.

■ Defining ownership status

Recognizing the existence of the "spontans", and giving them ownership status, would assist in their integration. The transition from a position which is poorly defined, ambiguous or distinctly precarious, to a legal status which is stable and consequently controllable, would become possible. A less negative approach than the one which currently exists would allow the furthering of an imperative transition, the evolution from the attitude of a clearer with an uncertain future, worried about accumulating capital as quickly as possible from land to which, officially, he has no right, to that of a farmer who, armed with a land title, would only have the one worry of looking after and protecting the plantation or field developed by his own efforts.

It would be realistic to accept the existing situation of land clearing. Appreciating the true significance of the thousands of family plantations which cover the Barisan mountains would be fair recognition for the work and investment provided to create the "coffee-belt" in the south of Sumatra. This approach would allow pressure to be brought on the conditions of regional development.

In fact, from the moment that the land access question has been settled, with the assistance and the guarantee of the government, it would not be utopian to contemplate that the right of ownership be combined with certain duties, made more acceptable as they would aim to develop better conditions for farming. The know-how of the Javanese farmers, accustomed since time immemorial to farming on steep slopes, to carving out terraces and to fighting against erosion, doesn't need to be demonstrated. The technical expertise of the majority of migrants is beyond doubt. If this is not demonstrated, it is basically because they are not sure that they will have their efforts recognized. For these settlers, the level of their investment outlays is directly proportional to the degree of precariousness of their land-holding situation. In extreme cases, they imitate the expeditious cultural habits of the natives who do not need, as do the Javanese or the Balinese, to go in for true gardening or to use all the resources of a limited area in order to survive.

Full title to land would encourage the settlers to take immediate environmental protection measures to be spontaneously implemented when they were offered in return for access to land. Security of land holding, a great incentive in the Indonesian context, would open the way to a more responsible attitude. Replacing the forest by a perennial system of production, and no longer by a system of land clearing, would create the possibility of raising environmental questions, no longer in terms of risks, but in terms of optimal utilisation and of conservation of the existing potential.

The know-how of the migrants is backed up by the unshakeable will to take control of their migratory course, which translates into the flexibility to adapt brought out in all the surveys. The capacity to adapt is no doubt more a reaction dictated by the circumstances than a value determined by the fact of being a migrant, but the detailed interviews collected by the researchers, who shared the life of the "spontans" for several weeks, all point out the determination of the families to put together some capital and to provide for the future of their descendants.

Although the difficulties encountered are experienced individually inside each family group, they are also shared by the migrants as a whole. Necessity leads to innovation and mutual support. In a certain way, the feeling of belonging to a group united by the interplay of circumstances but welded together by common interests is created, which compensates in part for the scattered nature of the settlements on the established sites and the weakening of the systems of mutual support and of the village community tradition.

Faced with precarious situations, the "spontans" demonstrate greater entrepreneurial spirit than the transmigrants who willingly hide behind the government who looks after them for the first five years of their settlement. They organize themselves, they contact transporters to take away their harvests, they put pressure on the local government in order to have a school built, or they join forces in

qu'un souci: garder et préserver la plantation ou le champ mis en valeur par ses soins.

Accepter la situation actuelle de défrichement serait réaliste. Apprécier à leur juste importance les milliers de plantations familiales qui couvrent les monts Barisan rendrait justice au travail et aux investissements réalisés pour la création du " coffee- belt " du sud de Sumatra. Cette approche permettrait de peser sur les conditions du développement régional.

En effet, dès lors que la question foncière serait réglée, avec le support et la garantie de l'Etat, il ne serait pas utopique d'envisager que le droit de propriété soit assorti de devoirs d'autant mieux acceptés qu'ils viseraient à créer de meilleures conditions d'expoitation. Le savoir-faire des paysans javanais, habitués à cultiver depuis des temps immémoriaux des pentes escarpées, à façonner des terrasses, à combattre le ravinement, n'est pas à démontrer. La maîtrise technique de la majorité des migrants ne fait aucun doute. S'ils ne l'utilisent pas, c'est essentiellement parce qu'ils n'ont pas la certitude de voir leur travail reconnu. Pour ces colons, l'importance des investissements effectués est directement lié au degré de précarité de leur situation foncière. Dans les cas extrêmes, ils imitent les façons culturales expéditives des autochtones qui n'ont pas, comme le Javanais ou le Balinais, à pratiquer un véritable jardinage et à utiliser toutes les ressources d'un espace limité pour survivre.

La pleine propriété pousserait les colons à prendre des mesures immédiates de protection de l'environnement, mises spontanément en oeuvre si elles étaient présentées comme la contrepartie de l'accès à la terre. La sécurité foncière, particulièrement incitative dans le contexte indonésien, ouvrirait la voie à la responsabilisation. Le remplacement de la forêt par un système de production pérenne, et non plus par celui de l'essartage, donnerait la possibilité d'aborder les questions d'environnement, non plus en termes de risques, mais en termes d'utilisation optimum et de conservation du potentiel existant.

Le savoir-faire des migrants est doublé par la volonté farouche d'assumer leur cursus migratoire, ce qui se traduit par une souplesse d'adaptation démontrée par toutes les enquêtes. Certes la capacité d'adaptation est-elle plus une réponse dictée par les circonstances qu'une valeur intrinsèque à la qualité de migrant mais les minutieux entretiens recueillis par les chercheurs , qui ont partagé la vie des "spontans" pendant plusieurs semaines, montrent tous la détermination des familles à rassembler un capital, et à préserver l'avenir de leur descendance.

Bien qu'elles soient vécues individuellement à l'intérieur de chaque cellule familiale, les difficultés rencontrées sont partagées par l'ensemble des migrants. La nécessité conduit à innover et à s'épauler. D'une certaine manière se crée le sentiment d'appartenance à un groupe, réuni par le jeu des circonstances mais soudé par une rencontre d'intérêts, ce qui compense partiellement la dispersion des implantations sur les sites conquis, l'affaiblissement des systèmes d'entraide et de la tradition communautaire villageoise.

Confrontés à des situations précaires, les "spontans" manifestent plus d'esprit d'entreprise que les transmigrants, volontiers retranchés derrière l'administration qui les gère pendant les cinq premières années de leur installation. Ils s'organisent eux-mêmes, contactent des collecteurs pour écouler leur récolte, font pression sur les autorités locales pour obtenir la création d'une école ou allient leurs forces pour créer un chemin d'accès.

Par leur nombre, les migrants spontanés ont soutenus les programmes officiels et participé à leur désenclavement. Ils ont contribué à la consolidation du peuplement régional, tout en favorisant les conditions d'une intégration. La mobilité et l'étendue de leur réseau de relation, qui englobe aussi bien les différentes communautés de migrants que les autochtones, les désignent comme des agents dynamiques des systèmes de production et des échanges.

■ *"Modus vivendi" entre migrants spontanés et autochtones*

Par ailleurs, malgré l'hypothèse souvent avancée de déculturation des régions d'accueil, de "javanisation"ou de conflit entre populations autochtones et migrants, l'observation permet de pondérer des assertions hâtives, moins fondées à Sumatra-Sud dans un contexte d'immigration modérée, qu'au Lampung.

Les autochtones voient d'un assez bon oeil l'arrivée de nouveaux venus sur les vastes terroirs dont ils disposent de façon traditionnelle . Ils ne connaissent pas encore les fortes densités des îles centrales. C'est pour eux l'occasion de vendre les biens fonciers dont ils ont l'usage en abondance ou d'utiliser une main-d'oeuvre peu exigeante, prête à accepter des conditions de travail difficiles en contrepartie d'une parcelle de terre ou d'une portion de plantation, ce qui se fera lors de la première récolte après un partage entre le propriétaire et l'agent de la mise en valeur. Les occupations de fait existent mais ne constituent pas la règle. Dans presque tous les cas, l'accès à la terre est l'objet d'une transaction avec le tenant du droit de propriété ou du droit d'usage, l'accord étant entériné devant le responsable officiel du village et l'occasion de menus cadeaux en espèces ou en nature.

Quelques jeunes migrants ont pu rapidement s'enraciner et asseoir leur réussite grâce à un mariage avec une jeune fille autochtone qui leur donne accès à la richesse foncière. Les mariages inter-ethniques sont souvent encouragés par les familles d'accueil qui y voient le moyen d'une utilisation optimum de leur patrimoine foncier, souvent délaissé par leurs propres enfants, plus attirés aujourd'hui par les centres urbains que par la terre. Les personnes rencontrées insistent toujours sur l'existence de mariages entre Sumatranais et Javanais, preuve s'il en est de la bonne entente entre les deux groupes. La mesure statistique de ces mariages n'a pas été possible. Cependant, il est évident qu'ils sont bien

order to build an access track.

By virtue of their numbers, spontaneous migrants have underpinned official programmes and have assisted in opening them up. They have contributed to the consolidation of regional settlement while furthering the conditions for integration. The mobility and extent of their relational network, which encompasses as much the different migrant communities as the natives, marks them out as the dynamic agents of the farming and trading systems.

■ "Modus vivendi" between spontaneous migrants and natives

Moreover, in spite of the theories of deculturation often put forward in the host regions, of "Javanisation" or of conflict between the native and migrant peoples, observations allow hasty assertions, less justified in a context of moderate immigration in South Sumatra than in Lampung, to be counterbalanced.

The natives look fairly favourably on the arrival of the newcomers to the vast lands that they have traditionally owned. They have not as yet had to contend with the high population densities of the central islands. For them, it means the possibility of selling their land assets, of which they have an abundant supply, or of using a not very demanding labour force which is ready to accept difficult working conditions in exchange for a plot of land or part of a plantation, the exchange taking place at the time of the first harvest following a division of the output between the owner and the migrant farmer. Some *de facto* settlements exist but they are not the general rule. In almost all cases, access to land is in the form of a transaction with the holder of the land-ownership or land-use rights, the agreement being ratified before the official village head and accompanied by small gifts in cash or in kind.

A few young migrants have been able to quickly establish themselves and assure their success by marriage to a young native girl who provides them with access to a wealth of land. Inter-ethnic marriages are often encouraged by host families who see in them a means of obtaining *optimum* use of their land heritage which has often been neglected by their own children who are more attracted today by urban centres than by the land. The people encountered always emphasize the existence of marriages between Sumatrans and Javanese as a form of proof of the good relations between these two groups. It has not been possible to obtain statistics of these marriages. Nevertheless, it is clear that there are many more of them amongst the spontaneous migrants than amongst the Transmigrants who live in a much more closed society.

In Southern Sumatra, the reception given to new arrivals is somewhat favourable, mainly because of the complementary nature of interests. The few cases where Javanese or Balinese migrants have been rejected, as very clearly explained by some native villages, not only show that there are limits to their capacity to welcome, but also that a certain watchfulness exists with regard to preserving a threatened cultural identity. The example of Lampung, where the "Javanisation" is unquestionable (in 1980, three quarters of the households spoke Javanese or Sundanese in the domestic context), demands caution, even if the ethnic switch, which occurred as early as 1930, has taken place without major clashes and without the total obliteration of the regional cultural characteristics. However, in-depth studies in this area would be necessary in order to provide the backing for a sounder judgement.

■ Strengthening the agricultural potential

Attention is usually drawn towards a spectacular event, it unquestionably being in this case the destruction of the forest, with the result that the positive aspects, economic and other, and the benefits brought to the region by the migratory movements are forced into the background.

The receiving regions absorb and "digest" their population increase in spite of its size. Set apart by its magnitude, the demographic expansion in a basically rural province such as Lampung can be compared to that of the national capital, the largest conurbation in the country. Between 1930 and 1980, the population of Lampung rose from 360,000 to 4,625,000 whereas that of Jakarta increased from 533,000 to 6,500,000, in both cases the initial number being increased twelvefold. During the same period, the demographic increase in the province of South Sumatra, although more modest, was fivefold.

Although the two host provinces have reached the same level of population since 1980 (6.0 and 6.4 million respectively in 1990), their economic conditions are different both by their nature and in their level. The province of South Sumatra covers three times the area and has not had to face the flood of migrants that invaded Lampung. In 1983, South Sumatra was the province with the third highest regional *per capita* income (not including mining income) in Indonesia, while only the two provinces located in the western part of the archipelago (Nusa Tenggara Barat and Nusa Tenggara Timor) were worse off than Lampung. Here, agriculture accounts for 47.4% of the Gross regional product (GRP) compared with 18.4% in South Sumatra [3]. In absolute terms, the value-added of agriculture, in spite of everything, remains higher in South Sumatra due to the significance of small holders' plantations devoted principally to rubber. In Lampung, on the other hand, food-producing crops are much more widespread .

plus nombreux chez les migrants spontanés que chez les Transmigrants qui vivent dans un monde beaucoup plus fermé.

A Sumatra-Sud, l'accueil fait aux nouveaux venus est plutôt favorable, essentiellement en raison d'une complémentarité d' intérêts. Les quelques exemples de refus de migrants javanais ou balinais, très clairement exprimés par des villages autochtones, indiquent non seulement que la capacité d'accueil a des limites, mais qu'il existe aussi une certaine vigilance pour préserver une identité culturelle menacée. L'exemple du Lampung où la "Javanisation" est indéniable (les trois quarts des maisonnées parlaient le javanais et le sundanais dans le cadre domestique en 1980) force à la prudence, même si le basculement ethnique, opéré dés 1930, s'est fait sans heurts majeurs et sans l'effacement total des caractéristiques culturelles régionales. Mais pour étayer un jugement plus solide, des études approfondies dans ce domaine seraient nécessaires.

■ Le renforcement du potentiel agricole

L'attention est généralement attirée par l'événement spectaculaire, qui est ici sans conteste la destruction de la forêt, ce qui fait passer au deuxième plan les aspects positifs, économiques entre autres, et les bénéfices que les mouvements migratoires apportent à la région.

Les provinces d'accueil absorbent et "digèrent" leur croissance démographique bien qu'elle soit exceptionnelle. Unique par son ampleur, la progression de la population d'une province profondément rurale comme celle du Lampung, est comparable à celle de la capitale nationale, la plus grande entité urbaine du pays. Entre 1930 et 1980, le Lampung passe de 360 000 hab. à 4 625 000 hab. tandis que Jakarta croît de 533 000 hab. à 6 500 000 hab., soit dans les deux cas une multiplication par douze du chiffre initial. Pour la même période, la population de Sumatra-Sud, bien que la progression soit plus modeste, a quintuplé.

Si depuis 1980, les deux provinces d'accueil atteignent les mêmes chiffres de population (6 et 6,4 millions en 1990), les situations économiques diffèrent par leur nature et leur niveau. Sumatra-Sud s'étend sur trois fois plus d'espace et n'a pas connu le flot migratoire qui a envahi le Lampung. En 1983, Sumatra-Sud était la troisième province d'Indonésie pour les revenus régionaux per capita (hors revenu minier) tandis que seules les deux provinces de la partie orientale de l'archipel (Nusa Tenggara Barat et Nusa Tenggara Timor) étaient plus démunies que le Lampung. Ici, l'agriculture occupe 47,4% du PRB contre 18,4% à Sumatra-Sud (3). La valeur ajoutée de l'agriculture reste malgré tout supérieure en valeur absolue à Sumatra-Sud en raison de l'importance des petites plantations familiales, essentiellement dévolues à l'hévéa. Les cultures vivrières sont par contre beaucoup plus étendues au Lampung.

Cependant, c'est par l'analyse de l'évolution de l'agriculture qu'on peut le mieux saisir l'impact économique du mouvement migratoire. En 1984, la province de Lampung devient pour la première fois excédentaire en riz. Elle détient ainsi la meilleure performance d'Indonésie pour l'accroissement annuel des productions de riz irrigué de 1973 à 1983 (10,9%). Comparée à l'ensemble national, la part de l'agriculture de la province de Lampung progresse entre 1983 à 1988, passant de 2,9% à 3,3%, alors qu'elle stagne pour Sumatra-Sud (3,7% en 1983 contre 3,8% en 1988). Les efforts du gouvernement en faveur de l'agriculture (doublement des surfaces irriguées entre 1969 et 1985, forte amélioration des rendements) ont pratiquement donné ici d'aussi bons résultats qu'à Java et Bali. Faut-il préciser que les rizières irriguées sont travaillées en grande partie par les mêmes groupes ethniques? Les périmètres sont parfaitement accessibles aux réseaux de distribution, notamment pour les engrais chimiques dont l'utilisation est l'une des plus fortes des provinces extérieures (205 kg/ha de rizière, contre 341 à Java-Est et seulement 86 à Sumatra-Sud en 1982/1983)(4).

Les recherches effectuées au Lampung ont démontré que les populations de migrants spontanés participent pleinement à cette évolution. Leur rôle serait accru si leur intégration était améliorée.

L'isolement des pionniers constitue un handicap majeur, le frein au développement, qu'il s'agisse de commercialisation des récoltes, d'accès aux équipements collectifs ou aux achats d'engrais. Alors que l'apport d'engrais sur les rizières irriguées est maintenant quasi général grâce au programme Bimas, l'utilisation d'engrais pour les cultures vivrières en sec est encore aléatoire pour la majorité des cultivateurs en l'absence d'un programme d'intensification. Cette situation est particulièrement désastreuse dans les régions de colonisation agricole où les potentialités des sols sont beaucoup plus médiocres qu'à Java. Le colon, qu'il soit encadré par la Transmigration ou non, se trouve dans l'impossibilité d'investir en fertilisants et en est réduit, après quelques récoltes, à faire de la monoculture de manioc.

Dans la partie la plus peuplée du Lampung, les cultures en sec représentent 42% de l'espace rural contre 4% pour les rizières irriguées et 9,4% pour les plantations familiales (5). Les cultures vivrières en sec sont largement dominées par le manioc qui fait de la province la première région productrice per capita *d'Indonésie (6). Dans de tels systèmes, caractérisés par des cultures de subsistance mal rémunérées, le déséquilibre entre population et ressources a pour conséquence le maintien de revenus médiocres. Sumatra-Sud, à l'inverse, ne connaît pas la même pression démographique. La province dispose d'un espace encore suffisant pour effectuer à la fois rotation des terres et jachère forestière. Elle peut intégrer de petites plantations à côté de cultures purement vivrières.*

Les revenus procurés par les cultures commerciales permettent à des familles de plus en plus nombreuses d'accéder à un niveau de vie décent qui vient récompenser

The economic impact of the migratory movement can, however, best be grasped from an analysis of the growth in agriculture. In 1984, the province of Lampung became a net exporter of rice for the first time. As a result, its annual increase in irrigated rice production from 1973 to 1983 of 10.9% was the best in Indonesia. The contribution to total national agricultural production from the province of Lampung increased between 1983 to 1988, going from 2.9% to 3.3%, whereas that from the province of South Sumatra stagnated (3.8% in 1988 compared to 3.7% in 1983). The assistance of the agricultural policy implemented by the government (doubling the area under irrigation between 1969 and 1985, strong improvement in yields) produced results that were virtually as good as those in Java and Bali. It goes without saying that the irrigated rice fields were for the most part cultivated by the same ethnic groups. Rice producing areas have easy access to transport networks, especially for chemical fertilizers whose use is one of the highest among the outer provinces (205 kg/ha of *sawah* in 1982/83 compared with 341 in the province of East-Java and only 86 in the province of South Sumatra) [4].

Investigations carried out in Lampung have shown that the spontaneous migrant population contributed significantly to this growth. They would have played an even more important role if their integration had been improved.

The isolation of settlers provides a major handicap which slows down development, whether it concerns getting crops to market or having access to collective equipment or purchases of fertilizer. Although the use of fertilizer for irrigated rice-growing is now virtually standard practice as a result of the Bimas programme, the use of fertilizer for the dry cultivation of food crops is still risky for the majority of farmers while there is no established intensification programme. This situation is particularly bad in the agricultural settlement regions where the soil quality is much poorer than in Java. The settler, whether he be supported by the Transmigration or not, finds himself totally unable to purchase fertilizer and as a result is reduced, after a number of harvests, to carrying on a cassava monoculture.

In the most densely populated area in Lampung, dry farming accounts for 42% of rural land as opposed to 4% for irrigated ricefields and 9.4% for small-holders' plantations [5]. Cassava is by far the most significant dry-farming food-producing crop and results in the province being the highest *per capita* production region in Indonesia [6]. In such systems, which are characterized by poorly-remunerated subsistence crops, the imbalance between the population and its resources perpetuates the earning of meagre incomes. Conversely, the province of South Sumatra is not subjected to the same demographic pressures. The province still has sufficient territory available to enable both crop rotation and fallowing of forest land. Small plantations can be introduced alongside crops that are purely food-producing.

The income earned from commercial crops allows a greater and greater number of families to reach an acceptable standard of living which they attain in compensation for waiting the initial years of settlement, which are always very harsh, on the pioneer fringes of agricultural settlement. Although failures are in most cases hidden or not mentioned, and hence little known, the surveys disclose a large number of successes. In the province of Lampung, outside the appropriately irrigated ricefields, "wealthy" regions with family incomes of above 1.5 million Rp in 1986/87 can be noted in places where the production systems rely on small-holders' plantations. These are plantations made up entirely of coffee trees, clove trees and pepper plants, or mixed plantations interspersing coffee and clove trees, or coffee trees and vegetables (at higher altitude). Although agricultural incomes in this area are unequally divided between Javanese immigrants who work on other people's properties and rich Sumatrans, they do bring about the development of the region. Conversely, the poor villages, being those with family incomes lower than a critical level of 500,000 Rp per year, group together the zones of dry food-producing crops on recently cleared land or in the Transmigration centres not having access to an irrigation network [7].

■ The emergence of a structured region

From the man-made isolated clearing to the hamlet by the roadside, which depicts the final stage of the territorial strategies, the population fronts spread out by force of numbers into a broader context, that of a region stimulated by economic flows and by networks.

In Lampung, the recent arrival of abundant labour and the bringing of new land under crops have given a new impetus to the piedmont areas of Kotabumi-Bukit and Kemuning-Banjit, which had been dedicated to commercial crops under the will of the colonial authorities.

At Sukoharjo and Kalirejo in the centre of the province, the shaping of the countryside, which raised rural population densities to 500/km^2 as the result of a skilful combination of wet crops on the valley floors and commercial crops in the interfluvial zones, makes up a fine example of a development carried out by settlers who came and set themselves up without the support of the government on land that was virtually uninhabited a few decades ago. Similar examples may be found in the region of Sukadana where rice, soja beans, pepper or cloves are associated.

In the north-west, on the slopes of the volcanic ranges

l'attente, toujours très dure, des premières années d'installation dans les marges de colonisation agricole. Bien que les échecs soient le plus souvent cachés ou non-dits, et donc mal connus, les enquêtes révèlent un nombre important de réussites. Dans la province de Lampung, en dehors des périmètres de riziculture correctement irrigués, des régions "riches" avec des revenus familiaux supérieurs à 1,5 million de Rp. en 1986/87 s'individualisent là où les systèmes de production s'appuient sur les plantations familiales: plantations pures de caféiers, de girofliers et de poivriers ou associations intercalant caféiers et girofliers, caféiers et légumes (en altitude). Bien qu'inégalement répartis entre immigrants javanais travaillant sur les terres d'autrui et riches sumatranais, les revenus de l'agriculture entraînent ici le développement de la région. A l'opposé, les villages pauvres, déterminés par des revenus familiaux inférieurs au seuil critique de 500000 Rp/an, regroupent les zones de cultures vivrières en sec sur défriches récentes ou dans des centres de Transmigration non desservis par un réseau d'irrigation (7)

■ *L'émergence d'un espace régional structuré*

De la clairière de défrichement isolée au hameau au bord de la route, qui représente l'étape finale des stratégies spatiales, les fronts de peuplement s'élargissent sous l'effet du nombre, à un cadre plus vaste, celui d'une région animée par des flux économiques et des réseaux.

Au Lampung, l'apport récent d'une main-d'oeuvre abondante et la mise en culture de nouvelles terres ont donné un second souffle au piémont de Kotabumi-Bukit Kemuning-Banjit, voué aux cultures commerciales par la volonté coloniale.

Dans le centre de la province, à Sukoharjo et à Kalirejo, le façonnement de campagnes portant des densités rurales de 500 hab/km² à la suite d'une habile combinaison de cultures inondées de fond de vallée et de cultures commerciales sur les interfluves, constitue un bel exemple de mise en valeur par des colons venus s'installer sans l'appui de l'Etat sur des terres très peu peuplées il y a quelques décennies. On pourrait trouver des exemples semblables dans la région de Sukadana où se trouvent associés riz, soja, poivre ou clou de girofle.

Au nord-ouest, sur les versants des massifs volcaniques des kecamatan *de Belalau et de Bandarjaya, la transformation des paysages s'accélère sous l'impulsion d'un très fort courant migratoire et par la création d'une multitude de plantations familiales, en association avec des populations autochtones ou sud-sumatranaises.*

C'est finalement l'ensemble de la province qui est affecté par la vague de la colonisation agricole spontanée. Les petites dimensions de la province de Lampung, la vague migratoire des dernières décennies qui a submergé un fond de peuplement limité et l'occupation récente des interstices encore libres ont favorisé une certaine unité, ou du moins la coalescence des régions mises en valeur sans l'intervention de l'Etat et celles des programmes agricoles créés de toutes pièces. On assiste peu à peu à l'émergence d'une aire de centralité autour de laquelle la vie et l'économie de la région s'organisent, malgré le poids de la capitale provinciale, Bandarlampung, située en bordure de l'ensemble. L'une des différenciations essentielles de l'espace, en dehors des systèmes de production et des densités, est celle de l'accessibilité à l'axe principal, à la voie nationale Trans-Sumatra (Fig. 51).

A Sumatra-Sud, dans une province beaucoup plus vaste et anciennement occupée, les programmes de peuplement et la colonisation agricole spontanée se sont insérés dans un espace plus fortement hiérarchisé et mieux tenu par les populations autochtones. Aujourd'hui, les densités sont encore inférieures de trois fois à celles du Lampung. En raison des distances, d'une histoire et d'une géographie originales, différentes unités s'individualisent, sans parfaitement se rejoindre. Grossièrement, deux centres se détachent à l'échelle de la province, avec chacun leurs périphéries. L'un s'organise autour de la métropole la plus importante du sud de Sumatra, Palembang, et de son arrière-pays, façonné par un fleuve et les structures héritées d'un sultanat puissant jusqu'au XIXe siècle. L'autre correspond aux piémonts, réunis par la voie Trans-Sumatra, qui dessine un axe nord-sud, alors que les grandes vallées de peuplement traditionnel, de direction est-ouest, établissent la liaison entre plaines et montagnes, destinations privilégiées des mouvements migratoires contemporains, les uns officiels, les autres non encadrés (Fig. 51).

L'établissement de circuits commerciaux entre lieux de production et villes est un fait établi, qui va en se renforçant. L'apparition et l'amélioration des routes a favorisé la diversification des cultures. Les légumes produits dans les régions tempérées par l'altitude sont directement acheminés vers les capitales provinciales ou même jusqu'à Jakarta. A Sumatra-Sud, les vergers des terroirs traditionnels des vallées alluviales alimentent des circuits inter-régionaux, parfois au détriment des marchés urbains locaux. Des accords sont passés entre propriétaires des arbres fruitiers et collecteurs, qui réservent à l'avance la récolte ou achètent sur pied la production annuelle. Celle-ci sera surveillée et cueillie par les villageois, tâche pénible et quelquefois périlleuse lorsqu'il s'agit des grands duku *ou des* durian.

Des liens de complémentarité s'instaurent entre régions voisines. Des échanges entre les plaines rizicoles et la montagne se sont établis sous la conduite de groupes fortement structurés comme, par exemple, ces Balinais installés dans le périmètre de Belitang qui ont par la suite cherché à compléter et à diversifier leur revenus par des plantations situées dans les monts Barisan, de part et d'autre de la route Muaradua-lac Danau. Les communautés de migrants, implantées dans les plaines comme dans les régions de montagne, sont autant de noeuds d'un réseau en formation. De proche en proche, une circulation des hommes et des productions se fortifie entre les quatre provinces méridionales de Sumatra, Lampung, Sumatra-Sud, Bengkulu et Jambi.

Les échanges inter-îles, sans parler des circuits

in the *kecamatan* of Belalau and of Bandarjaya, the transformation of the landscape was sped up through the impetus of a very strong migratory current and through the creation of a vast number of family plantations in combination with the native people or with South Sumatrans.

In the end, the entire province was influenced by the wave of spontaneous agricultural settlement. The small dimension of the province of Lampung, together with the migratory wave of recent decades, which swamped a limited population base, and the recent settlement in those gaps that were still available, have encouraged a certain unity or, at least, the coalescence of those areas developed without government assistance with those of the agricultural programmes built up entirely by the authorities. We are witnessing the gradual emergence of a central area of action around which the life and the economy of the region is developing despite the power of the provincial capital, Bandarlampung, situated on the fringe of the whole entity. One of the essential differentiating aspects of the territory, excluding the systems of production and population density, is that of the accessibility to the main trunk road, the national Trans-Sumatra Highway (Fig. 51).

In the province of South Sumatra, in a much more extensive and much earlier inhabited province, settlement programmes and spontaneous agricultural colonization were integrated into a territory that was much more strongly organized and more firmly held by the native people. Even today, population densities are still only a third of those in Lampung. Due to distance, history, and a particular geography, different elements acquire an identity of their own without completely joining up. Broadly speaking, two centres stand out at the provincial level, each having its outlying areas. The first is established around the most significant urban centre in the southern part of Sumatra, Palembang, and its hinterland which was formed by a river and the structures inherited from a sultanate that was powerful up until the XIX th century. The second is represented by the piedmont areas, tied together by the Trans-Sumatra Highway running along a north-south axis, whereas the large valleys traditionally used for settlement, lying in an east-west direction, provide the link between the plains and mountains, preferred destinations of present migratory movements, some being official, others independent (Fig. 51).

The setting up of commercial links between production sites and towns is an established fact which keeps on getting stronger. The development and improvement of roads has assisted crop diversification. Vegetables produced in areas which are tempered by virtue of their altitude are despatched directly to the provincial capitals or even to Jakarta. In the province of South Sumatra, the orchards of the traditional alluvial valley regions supply inter-regional networks to the accasional detriment of local town markets. Agreements are entered into between villagers and collectors who reserve the crop in advance or purchase the annual production on the tree. The villagers must then oversee and pick, a difficult and sometimes dangerous task in the case of the tall *duku* or *durian*.

Links of a complementary nature are established between neighbouring regions. Exchanges between the rice-growing plains and the mountains are set up under the leadership of highly-structured groups such as, for example, those Balinese living in the Belitang area who have subsequently sought to add to and diversify their sources of income using plantations located in the Barisan Range, on both sides of the Muaradua-Danau Lake road. Each of the migrant communities, located both on the plains and in the mountain regions, is an evolving network focal point. Little by little, a movement of people and products is being built up between Sumatra's four southern provinces, Lampung, South Sumatra, Bengkulu and Jambi.

Inter-island exchanges, without mentioning the old networks established by groups which have spread out over the entire coast of the "javanese Mediterranean sea", can only expand. Maintaining these links and returning to one's village of origin once a year to celebrate Idul Fitri appears as a leitmotif in the aspirations of the settlers, even if this wish must go unheeded for several years.

Without wishing to underestimate the risks of destabilization linked to too heavy or totally uncontrolled population flows, it does not appear utopian to point out a number of positive factors which allow some credit to be granted to the *spontans*, and which allow their endorsement as full participants in regional development.

Such an approach follows the direction of new initiatives put forward by the Ministry of Transmigration. Although population transfers remain a fundamental part and a priority of national policy, the reality of the situation leads to contemplating a reduction in direct government involvement.

The recent trend in the official figures supplied by the Ministry of Transmigration confirms the choice of a strategy directed from now on towards Transmigration that is unassisted or less assisted by government authorities than it was in the past [8].

If it appears necessary to further refine the concepts of "Spontaneous Transmigration" and undoubtedly to go further into the fundamentals of inter-ministerial action, it only requires that the Indonesian authorities, aware of the increased mobility of the population and of the dimension of the transfers which are affecting the archipelago, officially indicate an interest in the overall approaches which link rural development to management of the natural environment. The control of regional areas, and the management of forests and water resources are the central concerns of those responsible, who are even more taken up by these development problems as they follow from the

anciens organisés par les groupes qui ont essaimé sur tout le littoral de la "Méditerranée javanaise", ne peuvent que se développer. Maintenir des liens, revenir au village d'origine une fois l'an pour fêter Idul Fitri revient comme un leitmotiv dans les aspirations des pionniers, même si ce souhait doit rester lettre morte pendant plusieurs années.

Sans vouloir mésestimer les risques de déstabilisation inhérents à des migrations trop lourdes ou totalement incontrôlées, il n'apparaît pas utopique de relever un ensemble de facteurs favorables qui permettent d'accorder un crédit certain aux "spontans" et de les accepter comme des acteurs à part entière du développement régional.

Une telle approche va dans le sens des nouvelles orientations mises en avant par le Ministère de la Transmigration. Bien que les transferts de population restent

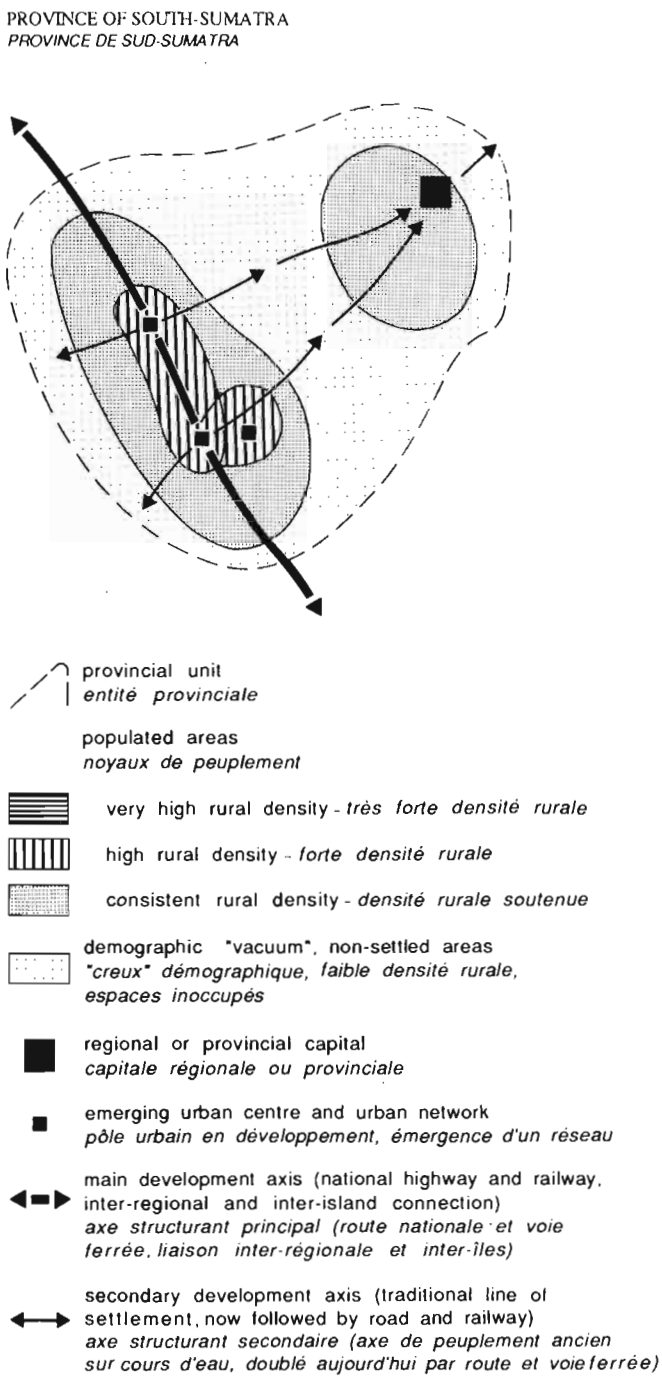
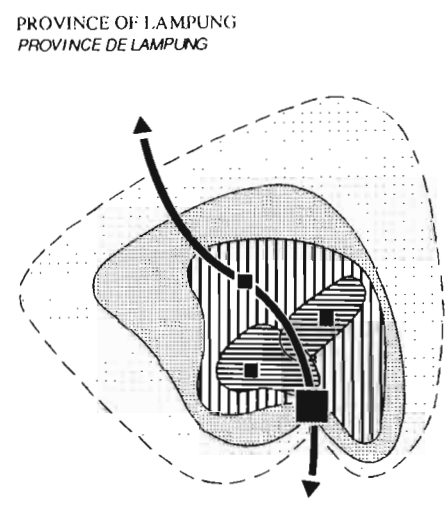


Fig. 51
SKETCH OF THE SPATIAL ORGANIZATION OF THE PROVINCES OF LAMPUNG AND SOUTH SUMATRA

SCHEMA DE L'ORGANISATION SPATIALE DES PROVINCES DE LAMPUNG ET DE SUMATRA - SUD



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ever-present question of demographic pressure in Java and Bali and from the on-going worry of evaluating the receiving capacity of the "Outer Provinces".

3 . Basic parameters for a regional development master plan

The present situation leads to the definition of a planning framework for regional development which has as its main issue the reaching of those decisions needed to improve the economic integration of the southern provinces of Sumatra, a region of some 200,000 km² now inhabited by almost twenty million people compared to only a little more than one million at the beginning of the century, and to guarantee the protection of an environment already placed in jeopardy at certain points in the Barisan Range and on the coast (Fig. 52).

The basis of thinking for development in the southern part of Sumatra must flow from the most obvious facts. They are worth recalling.

The underlying element, the driving force for change, is provided by the large demographic imbalance between two islands where the ratio of population densities in 1985 was still 1:10 in spite of vigorous and increasing migratory flows. Even if the statistical significance of Java has diminished slowly over a period of years (72% of the country's total of the population in 1920, 60% in 1990), the contrasts remain and can only continue to feed the population movements.

The setting up of an extremely voluntaristic settlement policy, exceptional in tropical countries, has drastically disrupted traditional systems. Whereas the latter developed in narrow bands along valleys and marsh-free coasts, or in the mountain basins, agricultural settlement programmes were based on occupying large areas of the plains and suddenly bringing substantial infrastructure and significant human population to virtually uninhabited territory.

The Transmigration's diversification of production systems by using commercial crops instead of irrigated rice growing or dry food-producing crops, or its changing of project locations such as swamp development following dry land interfluvial development, for example, has not changed the style of agricultural settlement practised by the government. The programmes always involve a huge population movement and settlement, as perfectly illustrated by the vast projects in the process of being completed in the Musi delta.

Spontaneous movements of a significant dimension have followed in the wake or on the fringes of the official programmes, providing additional strength to the accelerated settlement in the southern part of Sumatra, which is from now on linked to Java day and night by an efficient ferry service. Long-distance population movements have increased the inter-island and inter-regional connections while the arrival of a very great number of migrants has expanded inter-regional movements.

Following half a century of heavy migration, three types of territory can be delineated : central areas, stabilized or in the process of stabilization, peripheral areas still to be integrated, and the agricultural settlement fronts which could constitute a risk for regional development.

1) The position of the central areas is critical in the territorial organization. If they differ in their origin and their nature, plains and irrigated rice paddies of the Transmigration, immense agro-industrial plantations or long-established valley settlements in the forests through which they cut, the landscapes of which they are made up have virtually reached maturity. Bonds between each element are formed. Networks take shape. The whole territory is taken up or is in the process of being taken up, and the people have substantial mobility around the solid nuclei. The frontier zones, which are created in the near peripheral areas of the centres, exist within their direct sphere of influence and end up by being absorbed, as demonstrated by the process of integration in concentric circles around the population nucleus of Belitang.

These organized sub-groups play a fundamental role in the migratory itineraries, as most of the new arrivals use them as a stopping point. In parallel with their role as a "buffer" between the point of emigration and the settlement zones, they fulfil a function of disseminating a certain amount of knowledge, based on the experience of the longest established migrants, which leads to the migrants being more readily absorbed into the region. They contribute to increasing the usable agricultural land and they further progress towards development, which should become even more evident as a result of infrastructure improvements, a consolidation of the administrative network and the appearance of the first signs of industrial activity. In this case, population growth leads to a building up of facilities and infrastructures.

At the regional level, an entity starts to appear, crossed by a major development axis, the Trans-Sumatra Highway, which in the long term may draw the piedmont zones together, from Bandarlampung in the south to Lubbuk

une permanence et une priorité de la politique nationale, le réalisme conduit à envisager la réduction de l'intervention directe de l'Etat .

L'évolution récente des chiffres officiels fournis par le ministère de la Transmigration confirme le choix d'une stratégie désormais orientée vers la Transmigration non assistée ou moins aidée qu'elle ne l'était auparavant par la puissance publique (8).

S'il paraît nécessaire d'affiner encore les concepts de la "Transmigration spontanée" et sans doute d'approfondir les bases d' une action inter-ministérielle, il n'en demeure pas moins que les autorités indonésiennes, conscientes de la mobilité accrue des populations et de l'ampleur des mutations qui affectent l'archipel, affichent officiellement un intérêt pour les approches globales qui associent développement rural et gestion de l'environnement naturel. La maîtrise de l'espace régional, de la gestion des forêts et des ressources en eau est au centre des préoccupations des responsables, d'autant plus sollicités par ces problèmes d'aménagement qu'ils viennent en aval de la lancinante question de la pression démographique à Java et à Bali et du souci permanent d'évaluer la capacité d'accueil des "Provinces extérieures".

3 . Matériaux pour un schéma d'aménagement régional

La situation actuelle conduit à définir les cadres d'un plan régional d'aménagement, avec comme problématique, les décisions qu'il conviendrait de prendre pour améliorer l' intégration économique des provinces méridionales de Sumatra, un pays de quelque 200 000 km², peuplé de près de vingt millions d'habitants alors qu'il n'en comptait qu'un peu plus d'un million au début du siècle, et pour assurer la protection de l'environnement déjà mis en péril en certains points des monts Barisan et de la côte (Fig. 52).

Les bases d'une réflexion sur l'aménagement du sud de Sumatra doivent partir des faits les plus évidents. Ils méritent d'être rappelés.

Le trait essentiel, le moteur des transformations, tient dans le déséquilibre démographique majeur entre deux îles dont le rapport des densités brutes est toujours, en 1985, de 1 à 10 malgré la vigueur et l'accroissement des flux migratoires. Même si le poids statistique de Java diminue lentement au fil des ans (72 % de la population totale en 1920, 60 % en 1990), les contrastes demeurent et ne peuvent que continuer à alimenter les mouvements de population.

La mise en oeuvre d'une politique de peuplement très volontariste, exceptionnelle dans le monde tropical, a bouleversé les systèmes traditionnels. Alors que ces derniers se développaient en bandes étroites le long des vallées et des côtes non marécageuses, ou dans des bassins montagnards, les programmes de colonisation agricole étaient fondés sur une occupation des plaines par larges blocs, apportant d'un coup dans des espaces pratiquement vides de lourdes infrastructures et de fortes densités humaines.

La diversification des systèmes de production de la Transmigration, cultures commerciales au lieu du riz irrigué et des cultures vivrières en sec, ou les changements de localisation des projets, mise en valeur des marais après celle des interfluves de terre ferme par exemple, n'a pas changé le style de la colonisation agricole dirigée par l'Etat. Les programmes correspondent toujours à une occupation massive, parfaitement illustrée par les immenses projets en cours de réalisation dans le delta de la Musi.

Dans le sillage ou en marge des programmes officiels, des mouvements spontanés d'une grande ampleur ont suivi, contribuant à renforcer le peuplement accéléré du sud de Sumatra, désormais relié à Java nuit et jour par un service de ferries efficace. Des migrations à longue distance ont amplifié les liaisons inter-îles et inter-régionales tandis que l'arrivée d'un très grand nombre de migrants a multiplié les déplacements intra-régionaux.

Après un demi-siècle de fortes migrations, trois types d'espaces peuvent être individualisés : des espaces centraux, stabilisés ou en voie de l'être, des périphéries à intégrer, des fronts de colonisation agricole qui peuvent représenter un risque pour le développement régional.

1) La place des espaces centraux est déterminante dans l'organisation de l'espace. S'ils diffèrent par leur origine et leur nature : plaines et rizières irriguées de la Transmigration, vastes plantations agro-industrielles ou vallées de peuplement ancien profondément établies dans les forêts qu'elles traversent, les paysages qui les composent sont pratiquement fixés. Les liens entre chaque élément se développent. Des réseaux prennent forme. Tout l'espace est occupé, ou en voie de l'être, et la mobilité des populations, autour de noyaux durs, est importante. Les zones pionnières qui s'établissent dans les proches périphéries des centres vivent dans leur mouvance directe et finissent par être absorbées, comme le montre le processus d'intégration en auréoles autour du noyau de peuplement de Belitang.

Ces sous-ensembles organisés joue un rôle fondamental dans les itinéraires migratoires puisque la plupart des nouveaux venus y font étape. Ils exercent, en même temps qu'un rôle "tampon" entre la terre d'émigration et les zones pionnières, une fonction de diffusion d'un certain savoir, nourri par l'expérience des colons plus anciens, qui facilite ainsi l'insertion des migrants dans la région. Ils contribuent à l'extension de l'espace agricole utile et favorisent une dynamique vers le développement, qui devrait s'affirmer encore avec l'amélioration

Linggau in the north. The eastern part of this 60 to 70 km wide strip, encompasses the official settlement programmes and the agro-industrial estates developed on the plains, whereas, in its western section natives and recently-arrived migrants practise small-scale plantation farming on the slopes of the Barisan Range.

The main trunk road, which links several dynamic nuclei, determines the location of the major secondary towns of the region. Some of these, such as Baturaja, Muara Enim and Lahat in the province of South Sumatra, correspond to former centres which were established during the 18th and 19th centuries. Other more recent centres, such as Metro and Kotabumi in Lampung, and Lubbuk Linggau in South Sumatra, only appeared after 1900 following the development of settlement programmes and communication links [9]. These towns all have the status of head of *kabupaten*. They benefit from current population movements and have from 50 to 80 thousand inhabitants.

Although certain centres stand out and the skeleton of an urban network is taking shape [10], the southern part of Sumatra overall still remains largely rural, even in those places where high population densities are found. Twelve to fifteen percent of the population lives in the towns in Bengkulu and Lampung, and less than thirty percent in South Sumatra [11]. The only large towns, Palembang and Bandarlampung, both of which are located on very old port sites, remain apart from the rest of the group. They overwhelm the urban hierarchy and have populations which are at least ten times larger than those of the secondary towns.

Palembang is emerging as the undisputed urban centre of the regional area, stretching its power as far as Bandarlampung, Bengkulu and Jambi. But inside the zone of influence of this already over one million centre, no satellite city has really developed, except within its periphery. Prabumulih, a recent town and a rail and road junction situated in the middle of the plains, is an exception. The secondary centres mentioned earlier are a day or even more by car from the regional capital. This immense hinterland remains very strongly polarised in the same way as the large rivers which converge towards towards Palembang. Similarly, Bandarlampung spreads its influence indisputably over almost the whole of Lampung. The development of a better balanced network which would offset the macrocephaly of the provincial capitals merits consideration. The government should encourage the development of the secondary centres which are already growing from the existing villages

2) The outlying districts or those still poorly linked to the regional core, should form the subject of special regional development plans in order to find a way out of a restricting situation of isolation. They can be found in the mountain regions, and on the fringes or in the extensions of those old settlement nuclei that are still poorly linked to the central zones and, as a result, cut off from urban services. The recent villages of the local Transmigration in the northern part of Lampung, the villages of the *spontans* or the Transmigration settlements of Pematang Panggang in the eastern part of Belitang, or even those in the recently developed zones of the marshes, are good examples of this.

It is no doubt advisable to distinguish between the isolation of individuals and that of regions. Re-establishing a social life, or bringing back to life a traditional *gamelan* orchestra, certainly requires a much greater effort in the middle of dispersed family plantations in the mountains than it does in the village clusters of the plains or in the Transmigration centres of the Musi delta which, even though they are lost in the branch networks of the river, immediately bring together a substantial population of Javanese origin. But taking the analysis a little further, movement and activity are more significant in the mountain regions, as a result of an already long-established settlement, the presence of a hierarchically organized framework of villages and markets, roads, and commercial networks for cash-crops, than they are in the recently subdued marshes that were formerly virgin and now dedicated to food crops . Having said this, it is patently clear that the young people are bored in both cases. Higher investment in transport infrastructure and socio-economic amenities would represent the first step towards breaking down the isolation barrier.

3) The pioneer agricultural settlements "at risk" represent a third group which, in an even more urgent manner, should be accorded great attention.

The first type relates back to the systematic development of the coastal swamps undertaken by the government, the Transmigration and the private sector (agroforestry, plantations, aquafarming). It would seem justifiable to want to integrate vast areas of a huge and underutilized coastline, which are still available, into the national economy. However, questions can be raised on the unknown effects that could come from such a large-scale levelling, covering about three million hectares for the province of South Sumatra alone, of the last of the marshy forests and the extensive natural reserves they contain. Broader environmental impact studies, as proposed by the "Technical workshop on coastal zone environmental planning for the Strait of Malacca" (UNDP) which was held at Palembang in 1988, no doubt need to be carried out urgently.

The second type concerns the mountain environment, a non-stabilised sub-region, which is evolving rapidly and where the risks should not be underestimated, whether

des infrastructures, la consolidation du maillage administratif et l'apparition des premières formes d'activité industrielle. L'accroissement des densités conduit ici au renforcement des équipements.

A l'échelle régionale, se dessine un ensemble, traversé par un axe de développement majeur, la voie Trans-Sumatra, qui pourrait à terme fédérer les zones de piémont, de Bandarlampung au sud à Lubbuk Linggau au nord. Cette bande, de 60 à 70 km de large, englobe dans sa partie orientale les programmes de peuplement officiels et les domaines agro-industriels développés dans les plaines, et dans sa partie occidentale, les pentes des Monts Barisan où autochtones et migrants récents pratiquent une agriculture de petites plantations.

L'axe principal, qui relie plusieurs noyaux dynamiques, fixe les principales villes secondaires de la région. Certaines correspondent à des centres anciens qui se sont affirmés au cours des XVIIIe et XIXe siècles: Baturaja, Muara Enim, Lahat à Sumatra-Sud. D'autres, plus récentes, ne sont apparues qu'après 1900 avec le développement des programmes de peuplement et des voies de communication: Metro et Kotabumi au Lampung, Lubbuk Linggau à Sumatra-Sud.(9). Toutes ont le statut de chef-lieu de kabupaten. Elles bénéficient des mouvements de population actuels et sont fortes de 50 à 80 000 hab.

Bien que certains pôles s'individualisent et que l'ébauche d'un réseau urbain prenne forme (10), l'ensemble du sud de Sumatra reste encore largement rural, même là où existent de fortes densités. Douze à quinze pour cent de la population vivent dans les villes à Bengkulu et au Lampung, moins de trente pour cent à Sumatra-Sud (11). Les seules grandes villes, Palembang et Bandarlampung, toutes deux installées dans un site portuaire séculaire, demeurent excentrées par rapport à l'ensemble. Elles écrasent la hiérarchie urbaine et font état d'une population au moins dix fois plus importante que celle des villes secondaires.

Palembang s'impose comme la métropole incontestée de l'ensemble régional, étendant sa domination jusqu'à Bandarlampung, Bengkulu et Jambi. Mais à l'intérieur de l'aire d'influence de cette ville déjà forte d'un million d'habitants, aucun pôle-relais ne s'est véritablement développé, si ce n'est dans une position périphérique. Prabumulih, ville récente, noeud ferroviaire et routier situé au coeur des plaines, fait exception. Les centres secondaires précédemment évoqués sont à une journée de voiture, voire plus, de la métropole régionale. Ce vaste hinterland demeure très fortement polarisé, à l'image des grandes rivières qui convergent vers Palembang. Bandarlampung étend également sans conteste son influence sur presque tout le Lampung. Le développement d'un réseau plus équilibré, qui contrebalancerait la macrocéphalie des capitales provinciales, mériterait d'être envisagé.Les pouvoirs publics devraient favoriser le renforcement des centres secondaires qui émergent déjà de la trame villageoise

2) Des périphéries plus lointaines, ou mal reliées encore à l'ensemble régional, devraient faire l'objet de plans particuliers d'aménagement pour sortir d'une situation contraignante d'isolement. On les trouve dans les régions de montagne, en bordure ou dans le prolongement des noyaux anciens de peuplement mais toujours mal raccordées aux espaces centraux, et donc éloignées des services urbains. Les villages récents de la Transmigration locale au nord du Lampung, les villages de "spontans" ou les centres de Transmigration de Pematang Panggang à l'est de Belitang, ou encore ceux des zones nouvellement exploitées des marais, en sont de bons exemples .

Il convient sans doute de distinguer entre l'isolement des individus et celui des régions. Recréer une vie sociale, faire revivre un orchestre traditionnel de gamelan demande certainement plus d'efforts au milieu de la dispersion des plantations familiales de montagne que dans les regroupements villageois des plaines ou dans les centres de Transmigration du delta de la Musi qui, bien que perdus dans les ramifications des bras du fleuve, réunissent d'emblée une forte population d'origine javanaise. Mais si l'on veut aller plus loin dans l'analyse, la circulation et l'animation sont plus grandes dans les régions de montagne en raison d'une occupation déjà ancienne, de l'existence d'une trame hiérarchisée de villages et de marchés , de routes et de réseaux de collecte des productions commerciales, que dans les marais récemment conquis sur des terres vierges et voués à une agriculture de subsistance. Cela dit, l'ennui chez les jeunes est patent dans les deux cas. Investir plus dans les infrastructures de transport et les équipements socio-économiques constituerait le premier pas vers le désenclavement.

3) Les fronts de colonisation agricole "à risques" constituent un troisième groupe qui doit de façon plus urgente encore retenir l'attention.

Le premier type ramène à la mise en valeur systématique des marais côtiers entreprise par l'Etat, la Transmigration, et le secteur privé (agro-foresterie, plantations, aquaculture). Vouloir intégrer à l'économie nationale les vastes régions encore disponibles d'un littoral immense et sous-utilisé paraît légitime. On peut s'interroger cependant sur l'inconnue que représente la mise à bas sur une aussi grande échelle, environ trois millions d'hectares pour la seule province de Sumatra-Sud, des dernières forêts marécageuses et des réserves naturelles considérables qu'elles constituaient. De plus amples études d'impact seraient sans doute nécessaires et urgentes, comme le suggérait le "Technical workshop on coastal zone environmental planning for the Strait of Malacca"(UNDP) qui s'est tenu à Palembang en 1988.

Le deuxième type concerne le milieu montagnard, sous-ensemble non stabilisé, en évolution rapide et où les risques ne peuvent être sous-estimés, qu'il s'agisse des dégradations portées à l'environnement ou des conflits entre l'Etat et les colons.

Plus nettement que dans les marais, deux logiques

they be from deterioration of the environment or disputes between the government and the settlers.

More clearly than in the swampy areas, two arguments are in direct opposition. One, that of the government, holds a strict line on environmental protection or the preservation of forests and catchment areas, even in regions where it can be observed that the whole land has already been populated. The other, is that of the settlers who devote themselves totally to succeeding in their migration and to building up capital as quickly as possible based on cash crops, which sometimes results in the use of expeditious farming methods.

Just as many arguments, on one side as on the other, are available to support the two points of view. Rather than provoke a confrontation, it would seem possible, and it is one of the arguments of this work, to contemplate proceeding on a case by case basis and to seek to integrate into rather than remove from the overall region, a mountain endowed with a remarkable agricultural potential due to its soil. A local development plan devoted to a frontier zone where a large number of native peoples come together with migrant peoples, at the level of the valleys and the multiple landscape elements of the region, remains to be undertaken.

The government finds itself confronted with a real geopolitical problem which is particularly noticeable in the southern provinces of Sumatra. When examining the two main forces which have been most instrumental in shaping the landscape of the region, namely urbanisation and planned agicultural settlement, the signifiance of the spontaneous migrations taking place outside the official structures should neitheir be underestimated nor ignored.

The matter needs to be handled by avoiding reliance on unconnected elements - protection of the catchment areas without taking into consideration a general context of agricultural settlement for example - or being limited to certain local factors which are significant but too isolated to be brought out. The analysis excludes a sector-based approach. An analysis should adopt as broad an approach as possible, should consider a framework where those people involved are considered against their historical background, in a society that is still multi-faceted and mobile but which little by little is putting down roots on land freshly torn from the forest, and making its mark on a recently expanded agricultural area. The future regional areas will develop from now on along a continuum from Java to Sumatra and in a living environment which, for the majority of the population, will keep strong links with its place of origin on the adjoining island of Java.

Taking a position in favour of a generalized approach does not mean, for all that, the abandonment of the particular. The fundamental elements, presented here in order to establish a regional development plan, remain specific to the southern part of Sumatra. It would be presumptuous to attempt to generalize them, but they can be used as a basis of comparison for other regions in the archipelego or other countries in South-East Asia. The evaluation and control of large-scale spontaneous migrations require that the knowledge of local characteristics be combined with that of overall processes.

Notes to the conclusion

(1) *LAUMONIER Y.* et al., International Map of the Vegetation - Southern Sumatra *(Carte Internationale du Tapis Végétal-Sud de Sumatra)*, *SEAMEO-BIOTROP, 1983*

(2) *Passages translated into English from Indonesian language press papers are indicated between inverted commas. When they refer to a direct quotation, initials of the newspaper are mentioned.*

(3) *Biro Pusat Statistik,* Pendapatan Regional Propinsi di Indonesia *(Various issues), in HILL, 1989:8-9.*

(4) *Biro Pusat Statistik,* op. cit.

(5) *PAIN M., "Spatial organization and regional development"* in Transmigration and spontaneous migrations, Propinsi Lampung, Sumatera Selatan, *ORSTOM-Departemen Transmigrasi, Jakarta-Paris, 1989:349*

(6) *1.3 million de tonnes en 1984, Biro Pusat Statistik,* op. cit., *HILL, 1989:19*

(7) *LEVANG P.*, in Transmigration and spontaneous migrations, op. cit, *separate sheet No.14, "Farming systems and household incomes"*

(8) *Figures from the Vth plan and Table 4, see first book, chap. 1.*

(9) *RUTZ W.*, Cities and Towns in Indonesia, *Gebruder Borntraeger, Berlin Stuttgart, 1987; map 2, "Cities according to periods and circumstances of foundation"*

(10) *PAIN M.*, op. cit., *1989: 372-380*

(11) *RUTZ W.*, op. cit., *1987:34*

s'affrontent. L'une, celle de l'Etat, maintient des positions strictes sur la protection de la nature ou la sauvegarde des forêts et des bassins-versants, même là où l'on constate que tout le paysage est déjà humanisé. L'autre est celle des colons qui s'investissent totalement dans la réalisation d'un cursus migratoire et l'édification aussi rapide que possible d'un capital fondé sur les cultures de rente, ce qui conduit parfois à des façons culturales expéditives.

Autant d'arguments, d'un côté comme de l'autre, pourraient justifier les deux démarches. Plutôt qu'une confrontation, il semblerait possible - c'est l'une des thèses de cet ouvrage - de procéder au cas par cas et de chercher à intégrer, plutôt qu'à soustraire de l'ensemble régional, une montagne douée de remarquables potentialités agricoles, grâce à ses sols. Un plan local d'aménagement consacré à une zone pionnière où se rencontrent en grand nombre populations autochtones et populations migrantes, à l'échelle des vallées et des multiples unités de paysage de la région, reste à entreprendre.

Le gouvernement se trouve confronté à un véritable problème géopolitique, particulièrement sensible dans les provinces méridionales de Sumatra. Au regard des deux forces majeures qui dans cette région ont le plus contribué au façonnement des espaces, l'urbanisation et la colonisation agricole, la part des mouvements spontanés qui se développent en marge des structures officielles ne saurait être ni mésestimé ni refusée.

Le sujet demande à être traité en évitant de s'appuyer sur des éléments séparés - la protection des bassins-versants sans tenir compte d'un contexte général de colonisation agricole par exemple - ou de se limiter à certains facteurs locaux, significatifs mais trop isolés pour être mis en exergue. L'analyse exclut une approche sectorielle. Elle devra faire le choix d'une réflexion aussi ouverte que possible, considérer un ensemble où les acteurs doivent être abordés dans leur profondeur historique, dans une société encore multiple et mobile qui peu à peu s'enracine sur des terres juste ravies à la forêt, et qui donne sa marque à un espace agricole récemment élargi. L'avenir régional se déroule désormais dans un continuum, de Java à Sumatra, et un cadre de vie qui, pour une majorité de la population, garde de profondes attaches avec le pays d'origine, dans l'île mitoyenne de Java.

Cette prise de position en faveur d'une approche globale ne signifie pas pour autant l'abandon du particulier. Les matériaux élémentaires, présentés ici pour l'établissement d'un schéma d'aménagement régional, restent propres au sud de Sumatra. Il serait présomptueux de vouloir les généraliser mais ils peuvent servir de points de comparaison avec d'autres parties de l'archipel ou d'autres pays de l'Asie du Sud-Est. La mesure et l'encadrement des mouvements spontanés de grande ampleur implique que l'on intègre la connaissance des spécificités locales à celles des mécanismes généraux.

Notes de la conclusion

(1) LAUMONIER Y. *et al, Carte Internationale du Tapis Végétal - Sud de Sumatra* (International Map of the Vegetation, Southern Sumatra), SEAMEO-BIOTROP, 1983

(2) Les extraits correspondant à la traduction de l'indonésien en français de certains passages d'articles de presse sont placés entre guillemets. Lorsqu'il s'agit d'une citation, les initiales du journal sont mentionnées.

(3) Biro Pusat Statistik, *Pendapatan Regional Propinsi di Indonesia* (Various issues), *in* HILL, 1989:8-9.

(4) Biro Pusat Statistik, *op. cit.*

(5) PAIN M., "Organisation de l'espace et développement régional" *in Transmigration et migrations spontanées, Propinsi Lampung, Sumatera Selatan,* ORSTOM-Departemen Transmigrasi, Jakarta-Paris, 1989:349

(6) 1.3 million de tonnes en 1984, Biro Pusat Statistik, *op. cit.,* HILL, 1989:19

(7) LEVANG P., *in Transmigration et migrations spontanée, Propinsi Lampung, op. cit,* planche hors-texte n° 14, "Systèmes de production et revenus familiaux"

(8) Objectifs du cinquième Plan et tableau 4, voir première partie, chap. 1.

(9) RUTZ W., *Cities and Towns in Indonesia,* Gebruder Borntraeger Berlin Stuttgart, 1987; map 2, "cities according to periods and circumstances of foundation"

(10) PAIN M., *op. cit.,* 1989: 372-380

(11) RUTZ W., *op. cit.,* 1987:34

The representation of data on the map is schematic and does not correspond with the exact location of the phenomena - *La représentation des données inscrites sur le croquis a été traitée de façon schématique et ne correspond pas à l'exacte localisation des phénomènes*

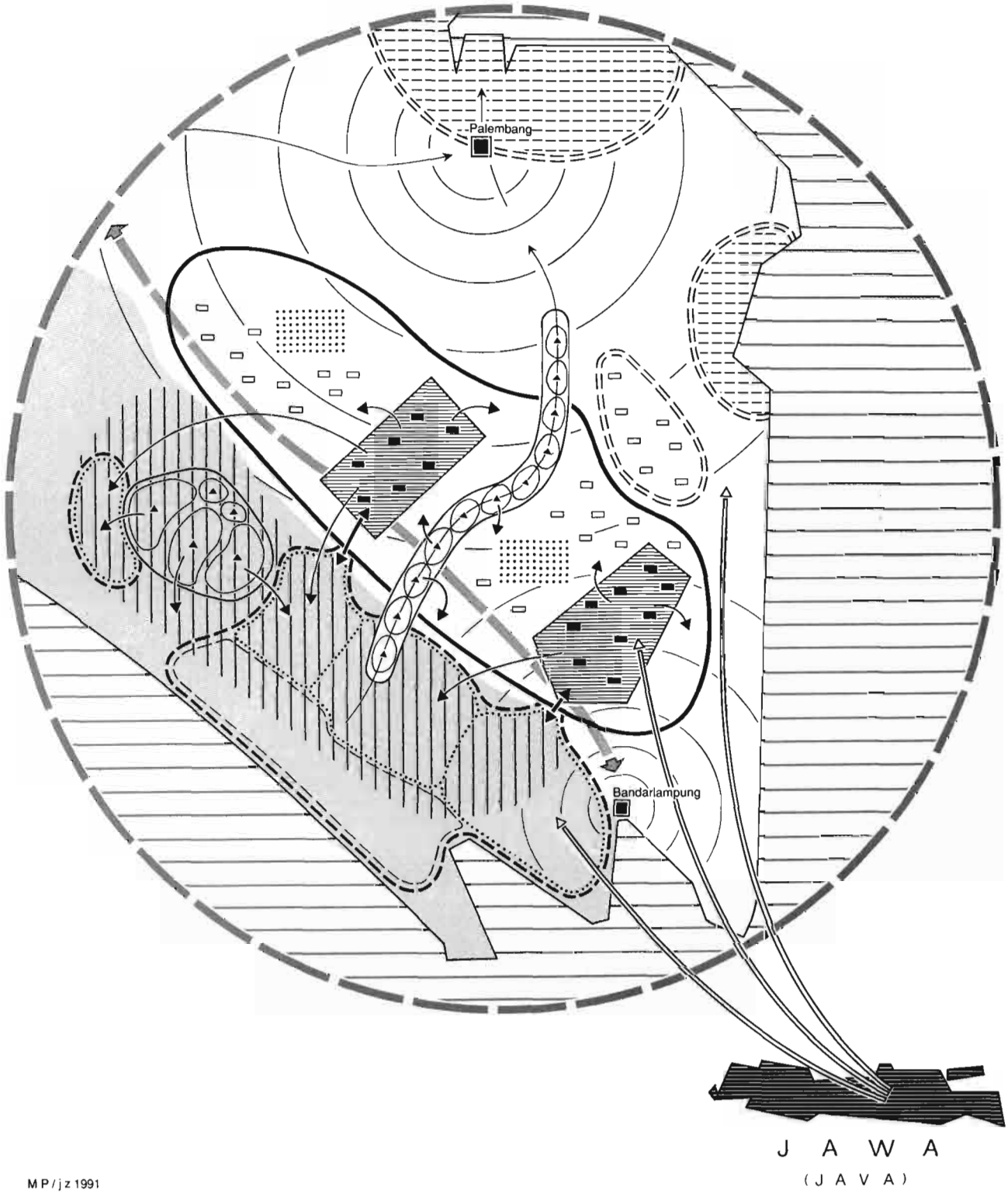

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Fig. 52 BASIC INPUTS FOR REGIONAL DEVELOPMENT PLANNING FOR SOUTH SUMATRA
MATERIAUX POUR UN SCHEMA D'AMENAGEMENT REGIONAL DU SUD DE SUMATRA

TYPES OF SETTLEMENT AND FARMING SYSTEMS - *FORMES DE PEUPLEMENT ET D'OCCUPATION DE L'ESPACE*

traditional territories - *terroirs traditionnels* :

mountainous region with fertile volcanic soils - *région de montagne aux bons sols d'origine volcanique*

mountain villages, smallholder plantations on slopes, upland rice fields - *villages dans bassins intra-montagnards, plantations familiales sur les pentes, rizières de bas de versants*

succession of villages in alluvial valley, rice fields on low terraces or behind the river banks, plantations in interfluvial areas (jungle rubber) - *villages et terroirs en chapelet dans vallée alluviale, rizières sur basses terrasses ou derrière le bourrelet de crue, plantations sur les interfluves (jungle rubber)*

recent agricultural settlement - *colonisation agricole contemporaine* :

old government assisted settlements, based on irrigated rice - *programmes de peuplement anciens, fondés sur la riziculture irriguée*

link between catchment area and irrigation system - *liaison bassin-versant montagnard / système d'irrigation*

recent transmigration settlements, based on dry-land cultivation or smallholder plantations - *centres de transmigration récents, fondés sur cultures vivrières en sec ou plantations divisées en petits lots*

new transmigration settlement under development in swampy area - *aménagement des marais en cours*

government or private estates - *plantation d'état ou privée*

DEMOGRAPHIC IMBALANCE AND POPULATION MOVEMENTS
DESEQUILIBRES DEMOGRAPHIQUES ET MOUVEMENTS DE LA POPULATION

average density by island in 1985 - *densité moyenne par île en 1985* :

Java , *Java*
737 hab./ km²

Sumatra , *Sumatra*
69 hab./ km2

high local densities
fortes densités locales

major urban center
métropole régionale

long-distance movements - *mouvements à longue distance* :

Javanese migration : search for available fertile land, family link with previous migrants - *migrations de javanais: recherche de terres libres et de bons sols, relations parentales avec familles déjà immigrées*

short-distance movements - *mouvements à courte distance* :

clearings inside or on the periphery of village territories, movements caused by demographic growth in Transmigration areas - *défrichements à l'intérieur ou à la périphérie des terroirs villageois, mouvements nés de la surcharge démographique des régions de Transmigration*

FUTURE PERSPECTIVES AND REGIONAL DEVELOPMENT PRIORITIES
PERSPECTIVES D'EVOLUTION ET PRIORITES DE L'AMENAGEMENT REGIONAL

area that has stabilized or is in the process of stabilization, mature landscape
sous-ensemble stabilisé ou en voie de stabilisation, paysages fixés

area strongly dependent on regional capital
sous-ensemble fortement polarisé sur la capitale régionale

major development trunk road
axe de développement principal

protected area
sous-ensemble mis en défends

natural park
parc naturel

protected catchments and forest
bassin-versant et forêt protégés

pioneer areas that have not reached stability, agricultural settlement penetration with risks : environmental degradation, conflict between the State and spontaneous settlers, master plan for local development needed - *sous-ensemble non stabilisé ou en évolution rapide, front de colonisation agricole à risque : dégradation de l'environnement, conflit Etat- colons spontanés ; plan local d'aménagement à envisager*

area not yet integrated with other regions, master plan for local development needed - *sous-ensemble mal raccordé à l'ensemble régional, situation d'enclavement; plan local d'aménagement à envisager*

region undergoing changes, poorly developed urban network except with major urban centers in the periphery, master plan for regional development required - *ensemble régional en mutation, faiblesse du réseau urbain en dehors de métropoles excentrées, plan d'aménagement à établir*

Beyond Southern Sumatra

Muriel Charras

Beyond Lampung and South Sumatra, it is necessary to examine the global spontaneous agricultural settlement in outer Indonesia and the regional and national consequences of such a movement. We have confined ourselves primarily to migrants coming from Java and Bali, as it is from here that a large-scale movement is anticipated.

1. Spontaneous agricultural in the Outer Provinces

■ Attempt to estimate the spontaneous movement

As we have noted previously (Book 1, Chapter 1) an estimation of the present spontaneous movement is not easy using only the census data which no longer take into account the ethnic origin of family groups. The World Bank has suggested a recapitulative evaluation over thirty years (1950-1980), based on the languages spoken by rural-based families and an evaluation of the natural growth-rate of the transmigrant communities [1]. Overall, there were 5.3 million people who were natives of inner Indonesia who, in 1980, were living in the rural areas of outer Indonesia and who did not reach there by way of the Transmigration. Putting aside the special cases of Lampung and North Sumatra, there remain 850,000 spontaneous settlers in the other outer provinces, more than three quarters of which are concentrated in the other provinces of Sumatra (Table 35.).

A further estimation was attempted based on the change of province of residence statistics between 1975 and 1980, including only those migrations which were directed towards the rural areas of the outer provinces and excluding those transmigrants who settled between 1974 and 1979 [2]. Out of the 1.3 million newly-settled people in the countryside of one outer province, 32% were settled via the Transmigration. If the provinces of West Sumatra and South Sulawesi, which have been affected by a strong traditional emigration and thus a negative migratory balance, are omitted from the calculations, there remain some 800,000 people of all origins combined who arrived by their own means in these rural areas. Although 75% of these new spontaneous migrations took place in Sumatra, it is interesting to note that Kalimantan and Sulawesi each probably accepted more than 10,000 people per year.

These two evaluations allow certain imperfections to be rectified and permit a better understanding of this flow as a function of time. Establishing an estimate for the last decade, 1980/1990, is still impossible using only the raw data from the last census. In any case it will be more difficult to the extent that, since 1983, transmigration statistics have only covered families and no longer displaced individuals and that, since 1986, "spontaneous transmigrants", a poorly defined category [3], have inflated the figures. Between 1986 and 1988, there should have been roughly about 1.8 million people settled by the Transmigration, but during the same period the press raised the issue of numerous villages which had been built but which remained empty. It can be simply stated that, by

Au-delà du sud de Sumatra

Muriel Charras

Au-delà de Lampung et de Sumatra-Sud, il convient de s'interroger sur l'ensemble de la colonisation agricole spontanée dans l'Indonésie extérieure et sur les conséquences régionales et nationales d'un tel mouvement. Nous nous en tiendrons essentiellement aux migrants venant de Java et de Bali, ceux-là même dont on attend un mouvement d'envergure.

1. La colonisation agricole spontanée des provinces extérieures

■ Essai d'évaluation du mouvement spontané

Comme nous l'avons vu auparavant (Livre I, Chap. 1) l'évaluation du mouvement spontané actuel n'est pas aisée à partir des seules données du recensement qui ne tiennent plus compte de l'origine ethnique des familles. La Banque Mondiale a proposé une évaluation récapitulative sur trente ans (1950-1980), en se basant sur les langues parlées dans les familles en milieu rural et en évaluant la croissance naturelle des communautés de transmigrants [1]. Au total, ce sont 5,3 millions de personnes originaires de l'Indonésie intérieure qui vivent en 1980 dans les campagnes de l'Indonésie extérieure et qui n'y sont pas venues par l'intermédiaire de la Transmigration. Si l'on écarte les cas particuliers du Lampung et de Sumatra-Nord, il y aurait 850 000 colons spontanés dans les autres provinces extérieures, dont plus des trois-quarts se concentrent dans les autres provinces de Sumatra (Tab. 35).

Nous avons tenté une autre estimation, basée sur les statistiques de changement de province de résidence entre 1975 et 1980, en ne retenant que les migrations se dirigeant sur les campagnes des provinces extérieures et en déduisant les transmigrants installés entre 1974 et 1979 [2]. Sur les 1.3 million de personnes nouvellement installées dans les campagnes d'une province extérieure, 32% l'ont été par les soins de la Transmigration. En écartant des calculs les provinces de Sumatra-Ouest et de Sulawesi-Sud qui connaissent une forte émigration traditionnelle et donc un solde migratoire négatif, il y aurait eu quelques 800 000 personnes, toutes origines confondues, qui seraient arrivées par leurs propres moyens dans ces campagnes. Si 75% de ces nouvelles installations spontanées se sont faites sur Sumatra, il est intéressant de noter que Kalimantan et Sulawesi accueilleraient chacune plus de 10 000 personnes par an.

Ces deux estimations permettent de corriger certaines imperfections et de mieux saisir ce flux dans le temps. L'actualisation de l'estimation pour la dernière décennie, 1980/1990, est encore impossible à partir des seuls résultats bruts du dernier recensement. Elle sera de toute façon plus délicate dans la mesure où les statistiques de la transmigration ne concernent plus depuis 1983 que les familles, et non plus les individus déplacés et que, depuis 1986, les "transmigrants spontanés", une catégorie mal définie [3], sont venus gonfler les chiffres. Entre 1986 et 1988, il y aurait eu 1,8 million de personnes installées par la Transmigration mais la presse soulevait dans le même temps le problème de nombreux villages construits, mais restés vides. On peut simplement noter qu'en appliquant le taux de croissance démographique nationale de chacune des décennies aux provinces d'accueil, celles-ci (Sumatra, Kalimantan, Sulawesi, les Moluques et l'Irian Jaya) ont un différentiel de population plus important dans l'absolu ces dix dernières années: plus 3,6 millions entre 1980 et 1990 contre 2,6 millions entre 1971 et 1980.

applying the national demographic growth rate for each decade to the receiving provinces (Sumatra, Kalimantan, Sulawesi, the Moluccas and Irian Jaya), the absolute population differential is more significant over the last ten years, being 3.6 million between 1980 and 1990 versus 2.6 million between 1971 and 1980.

■ Sulawesi and Kalimantan

Detailed studies of other receiving areas are still scarce, thus making a point by point comparison of the processes implemented difficult.

THE BALINESE IN SULAWESI

The agricultural settlement of the Balinese in central Sulawesi has been extensively documented [4]. The origin of the movement goes back to a small community of exiles (due to their opposition to the colonial power or because they had breached local customs) who, following a stop in Banda, arrived in 1906 at Parigi, a small trading post on the Gulf of Tomini where the opportunities for farming were more in line with the know-how of the Balinese. When banishment was abolished (1928), a significant number of the exiles returned to Bali thus placing the survival of the community in jeopardy. A small group of about a dozen families, attached to the irrigated ricefields they had won from the forest, nevertheless strove to attract new migrants on each trip they made to their island of origin. The flow of migrants remained a trickle until a chance meeting with some Balinese, who had been converted to Christianity and who were undergoing a systematic exclusion from society as a whole; they foresaw in this migration the possibility of recreating a community in a relatively peaceful environment. From 1952 to 1966, it was essentially Balinese Christians who migrated. The Balinese Hindus did not react to the urgent calls of the small community of the same religion until after the anti-communist massacre which followed the 1965 coup d'état and which was particularly violent and traumatic for the Balinese people. The situation in Sulawesi had also become more peaceful following the end of the rebellions in the north (1958-1961) and in the south (1955-1965) of the island. From this time on, the two religious communities continuously sustained the flow of migrants.

The narrow coastal plain, *Tana Boa*, which was sparsely settled in 1960 by two hundred families had, by 1976, received more than 13,000 Balinese with the result that the dense forest had given way to more than 2,900 ha of intensely irrigated ricefields. The movement continued towards Poso, which is now accessible by an excellent road, a stretch of the Transsulawesi.

Initially, the original community at Parigi requested land from the local authorities which was then subsequently obtained from the Transmigration. Requests were also made to the Transmigration for the inclusion of this isolated region in its programme with a view to assisting the least fortunate candidates and especially to arranging for their travel. Up until 1977, the role of the Transmigration was restricted to the allocation of land and the provision of transit accommodation. Land for future villages was broadly defined, but with the responsibility for clearing and house construction being left to the migrants. There were no government employees on this plain and the village organization was carried out by the settlers.

The largest numbers arrived by their own means and, as the trip was long and difficult [5], they were in most cases accompanied by an already-established settler coming back after a visit to Bali. Because of this, the migration was instantly of a family nature and viewed as permanent. Receiving families were easily found as everybody on the plain was looking for labour to work their two hectares of rice which carried two and a half crops per year. During this period, the future settlers built up some savings, gathered together the material and tools necessary for setting up, organized themselves into a group, sought out available land and took the necessary steps for acquiring it.

The very first attempt at settlement was carried out by developing a clearing at some distance from the original community; this failed because of its isolation, and the 23 families returned to the northern periphery of Parigi. Following this, settlements were structured consecutively from the nearest point to Parigi and along a track opened up by the migrants and constantly lengthened. This was started in 1960 on the right bank of the Dolago River and in 1976 it had reached the small port of Malakosa some 50 kilometres away. While some settlers drove back the forest to the east and straightaway constructed large villages, small groups took over the areas left vacant between the track and the beach, already occupied in places by Buginese villages.

On the Tana Boa, land disputes have been infrequent as this plain had earlier been cleared when its population was defeated in an internecine war, and as, since the beginning of the century with the exception of the coastal Buginese hamlets, it had become a refuge for small groups of people banished from their societies (Bada and Besoa in the mountains and people from South Sulawesi who had been active in the Kahar Muzakar rebellion movement). The return of the original people, the Kaili, and their claim to the land of their ancestors, initially caused the withdrawal of the newly-established Balinese, whose attitude, however, subsequently became less flexible as a result of the works already carried out and, no doubt, of their numerical

■ *Sulawesi et Kalimantan*

Les études détaillées sur d'autres lieux d'accueil restent rares et rendent difficile une comparaison point par point des processus mis en oeuvre.

BALINAIS A SULAWESI

La colonisation agricole des Balinais à Sulawesi-Centre est l'un des cas les mieux étudiés [4]. L'origine du mouvement prend ses racines dans une petite communauté d'exilés (pour des raisons d'opposition au pouvoir colonial ou parce qu'ayant enfreint la coutume) qui, après un séjour à Banda, arrive en 1906 à Parigi, un petit comptoir sur le golfe de Tomini où les possibilités agricoles correspondent plus au savoir-faire des Balinais. Lorsque le bannissement est aboli (1928), une grande partie des exilés rentre à Bali, mettant en péril la reproduction de la communauté. Attaché à ses rizières irriguées conquises sur la forêt, un petit groupe d'une douzaine de familles oeuvre néanmoins pour attirer de nouveaux migrants à chaque visite dans l'île d'origine. Le flux reste insignifiant jusqu'à une rencontre fortuite avec des Balinais christianisés souffrant de l'exclusion systématique de l'ensemble de la société, qui envisagent cette migration

Table 35. POPULATION, INVESTMENTS AND RURAL POVERTY IN INDONESIA
POPULATION, INVESTISSEMENTS ET PAUVRETE RURALE EN INDONESIE

PROVINCES	POPULATION			IMMIGRATION			INDUSTRY		Rural Poverty	
	Density		Annual Growth	Trans-migrants	Spontans (1)	(2)	Employ-ment	Domestic Investmt	(3)	
	1961	1990	1980/90	1950/86	1950/80	1975/80	1985	1967/85	1980	1987
	people /km2		%	'000 pers.			% of national total		% in each province	
Aceh	29	62	2.7	94	145	30	1.0	3.5	1.8	8.9
North Sumatra	70	145	2.0	67	1642	33	4.9	3.4	6.3	9.2
West Sumatra	47	80	1.6	80	4	-	0.8	1.6	10.4	-
Riau	13	35	4.2	303	125	28	1.2	2.3	28.4	8.9
Jambi	17	45	3.3	287	153	26	0.7	0.9	0.3	6.4
South Sumatra	27	62	3.2	829	156	79	2.0	4.6	1.1	9.8
Bengkulu	19	56	4.3	113	95	23	0.1	0.5	4.8	9.9
Lampung	50	180	2.6	494	2813	375	1.3	1.4	40.1	34.6
West Kalimantan	11	22	2.7	180	110	8	1.0	1.1	4.4	15.4
Central Kalimantan	3	9	3.8	197	16	29	0.8	0.9	0.4	28.6
South Kalimantan	39	69	2.3	178	27	8	1.2	1.0	2.7	11.5
East Kalimantan	3	9	4.3	125	3	25	1.9	5.6	1.8	34.8
North Sulawesi	69	130	1.6	48	4	20	0.4	0.7	19.7	9.2
Central Sulawesi	10	25	2.8	168	n.a	2	0.3	0.4	15.6	21.4
South Sulawesi	62	96	1.4	109	3	-	1.6	1.8	17.4	25.2
Southeast Sulawesi	20	49	3.6	157	6	15	0.2	0.2	23.1	40.7
Maluku	11	25	2.7	65	9	30	0.4	0.8	14.8	36.3
Irian Jaya	2	4	3.4	122	n.a	4	0.1	1.2	-	67.1
NTB	90	167	2.1	-	-	-	0.5	0.5	48.1	18.9
NTT	41	68	1.8	2	-	-	0.2	0.4	44.4	37.6
Bali	320	500	1.2	-	-	-	1.2	0.5	49.4	34.2
Jakarta	5039	13990	2.4	-	-	-	12.2	17.9	-	-
West Java	380	764	2.5	-	-	-	20.2	23.9	26.3	13.1
Central Java	538	834	1.2	-	-	-	21.0	9.4	39.1	15.1
Yogyakarta	707	919	0.6	-	-	-	1.4	0.5	30.7	8.2
East Java	455	678	1.1	-	-	-	23.4	10.6	42.7	17.8

1) World Bank estimation, 1986 : 73.
2) Estimated from a) change of residence between 1975 and 1980, b) rural destination in Outer Indonesia receiving provinces, c) less transmigration settlement 1974-1979.
3) Population living in poverty (including people who does not earn enough to meet their non-food basic needs).
National Socio-economic Survey, 1980 and 1987, BPS.

supremacy.

As in southern Sumatra, and whenever food crops are involved, there is never an individual settlement but always a group settlement. Work carried out cooperatively takes on a real significance from the outset. In Parigi, all the Balinese settlers opened up access roads and cleared land for dwellings; together they constructed rudimentary houses all of the same size; and finally they all moved in on the same day. This mutual aid organization remained in place for several years for the development of agricultural land; clearing, construction of the irrigation network, removal of roots and levelling of lots. Whenever substantial surpluses started to be produced, each family began going its own way: some were happy with their initial plot of land while others were keen to expand by changing over to the use of salaried labour. This solidarity, which is necessary for a quick start-up, is typical of the Balinese migrant communities, even under the Transmigration.

At Luwu (South Sulawesi), which from 1969 underwent an important programme of Transmigration and development (roads, irrigation, plantations), there were fewer spontaneous Balinese migrants. Arriving in families, they all joined up with their transmigrant relatives. As this plain was far from being uninhabited prior to the arrival of the transmigrants (68 people/km^2 in the arable area), the conditions for the introduction of spontaneous migrants here were completely different (Charras, 1982). In 1983, a few Balinese (transmigrants and spontaneous migrants) were able to become tenant rice farmers or were able to acquire undeveloped lots on the fringes of small irrigated areas belonging to the traditional owners. They contributed to the growth of cultivated land and to the intensification of rice growing. However, all the spontaneous migrants had settled in the Transmigration villages, and not a single hamlet had been built outside these areas.

The flow of spontaneous Balinese migrants to Sulawesi is still going on. Stimulated by the success on the Parigi plain, the spontaneous movement has spread over the whole island in the wake of the Transmigration. In 1990, the Office of Transmigration at Denpasar (Bali) recorded a significant number of requests for permission to move to the Transmigration villages located in the swampy area of Luwu, and to the villages of the *kabupaten* of Mamuju, in the north-west of South Sulawesi.

In South Sumatra, a number of Balinese families settled in a migrant setting but outside their own ethnic circle. They became associated socially, and especially from a religious point of view, with one of the Transmigration villages located in the southern part of Sumatra. This fact challenges the idea of a Balinese migration, essentially in groups, in the situation where the receiving area has already been marked out by entrenched communities.

THE JAVANESE AND MADURESE IN KALIMANTAN

The province of South Kalimantan is an illustration of an long-established and significant centre of attraction. It is said that the Javanese assisted in the creation of the Banjar ethnic identity; they were to be found in Banjarmasin, at least as merchants and navigators up until the 17th century, later on they were labourers in the coal-mines of Pulau Laut and, in 1910 they were working on the new rubber plantations.

Both Javanese and Madurese were also settled in South Kalimantan within the framework of *kolonisasi*: 294 families on the first dry-land sight, and 400 families on the first location opened up on the coastal marshes (cf. Part II, Chapter 2). Between 1950 and 1968, some 41,000 people were transmigrated.

The long history of contacts and settlements, and the regularity of maritime links between Surabaya and Banjarmasin by the Madurese and Buginese fleets, have encouraged the establishment of spontaneous settlers from Madura and East Java. These two groups are found primarily on the western slopes of the Meratus Mountains which have never been used by the Banjar. This movement took place from the road towards the summit and little by little kept driving the original inhabitants, the Dayak Bukit, up towards the higher areas. As occurred in southern Sumatra, some spontaneous hamlets became combined with the new Transmigration villages.

The history of spontaneous agricultural settlement in the south-eastern extremity of Kalimantan remains a subject that is worth considerable investigation; the significance of the part played by the Javanese in pepper and rubber growing needs to be studied, as do the current waves of Madurese migration (specialists in dry cultivation, fruit crops including bananas and the raising of cattle), the Javanese migrations (which, in the same environment, cut out terraced ricefields on the slopes of the hills), and finally the settlement of the Buginese established on the coastal marsh to the west of Banjarmasin and on the swamp-free eastern slope of the Meratus Mountains.

IN THE WAKE OF OTHER MIGRANTS

In agro-ecological contexts little known to migrants arriving from inner Indonesia, such as the mountains and the coastal marshes, it has been observed that the migrants join up with the local people or, perhaps more frequently, with other migrants.

In the mountains of Lampung and South Sumatra, the people from Java and Bali followed the Semendo and the Ogan and acquired from them a certain know-how that

comme la possibilité de recréer une communauté dans une certaine quiétude. De 1952 à 1966, ce sont essentiellement des Balinais chrétiens qui arrivent. Les Balinais hindouistes ne répondent aux appels pressants de la petite communauté de même religion qu'après le massacre anti-communiste qui suivit le coup d'Etat de 1965 et qui fut particulièrement violent et traumatisant pour la société balinaise. La situation à Sulawesi était aussi devenue plus calme après la fin des rebellions au nord (1958-1961) et au sud (1955-1965) de l'île. A partir de cette époque, les deux communautés religieuses alimentent sans discontinuer le flux de migrants.

L'étroite plaine côtière, Tana Boa, *sporadiquement occupée en 1960 par deux cents familles, accueille déjà en 1976 plus de 13000 Balinais et la forêt dense a laissé la place à plus de 2900 ha de rizières parfaitement irriguées. Le mouvement se poursuit vers Poso, accessible aujourd'hui par une excellente route, tronçon de la Trans-Sulawesi.*

Les terres ont dans un premier temps été demandées par la communauté initiale de Parigi aux autorités locales puis obtenues via la Transmigration. Celle-ci a aussi été sollicitée pour inclure cette région isolée dans son programme, afin d'aider les candidats les plus démunis et surtout d'organiser leurs voyages. Jusqu'en 1977, le rôle de la Transmigration s'est limité à l'octroi des terres et à la mise à disposition de baraquements de transit. Les futures terres villageoises étaient grossièrement délimitées, à charge pour les migrants de défricher et de construire leurs maisons. Les fonctionnaires étaient absents de cette plaine et les villages étaient organisés par les colons.

Les plus nombreux sont arrivés par leurs propres moyens, accompagnés le plus souvent par un colon déjà installé et de retour après une visite à Bali, car le voyage était long et compliqué [5]. De ce fait, la migration était d'emblée familiale et perçue comme définitive. Les nouveaux trouvaient facilement des familles d'accueil, car tous dans cette plaine étaient en quête de main-d'oeuvre pour travailler leurs deux hectares de rizière supportant deux cultures et demie par an. Pendant ce temps, les futurs colons amassaient un pécule, rassemblaient les matériaux et les outils nécessaires à l'entreprise, s'organisaient en groupe, prospectaient les terres libres et faisaient les démarches nécessaires pour les obtenir.

La toute première tentative d'installation s'était faite par l'aménagement d'une clairière éloignée de la communauté de base; ce fut un échec en raison de l'isolement, et les 23 familles se replièrent à la périphérie nord de Parigi. Ensuite, les aménagements se sont organisés progressivement depuis le point le plus proche de Parigi et le long d'une piste ouverte par les migrants et continuellement prolongée. Commencée en 1960 sur la rive droite du fleuve Dolago, elle atteignait en 1976 le petit port de Malakosa, à une cinquantaine de km. Pendant que certains repoussaient la forêt à l'est et y fondaient d'emblée de gros villages, des petits groupes comblaient les espaces laissés vacants entre la piste et la plage, ponctuellement occupée par des villages Bugis.

Sur la Tana Boa les conflits de terres ont été rares car cette plaine côtière avait été jadis vidée de sa population, vaincue dans une guerre intestine, et que, depuis le début du siècle et mis à part les hameaux côtiers bugis, elle était devenue un refuge pour des populations mises au ban de leur société (Bada et Besoa des montagnes et gens de Sulawesi-Sud ayant participé au mouvement de rébellion de Kahar Muzakar). Le retour des populations d'origine, les Kaili, et la revendication de la terre de leurs ancêtres provoqua dans un premier temps le retrait des Balinais nouvellement installés, mais l'attitude de ces derniers fut moins flexible par la suite en raison des aménagements déjà réalisés et sans doute de leur suprématie en nombre.

Comme à Sumatra-Sud et dès qu'il s'agit de cultures vivrières, l'installation n'est jamais individuelle, mais en groupe. Le travail effectué en commun revêt dès le début une grande importance. A Parigi, tous les colons balinais ouvrent les voies d'accès et défrichent l'espace d'habitation collectivement; ils construisent ensemble les habitations, rudimentaires et de taille identique; ils y emménageront enfin le même jour. Cette organisation communautaire se maintient pendant plusieurs années pour l'aménagement des terres agricoles: défrichement, construction du réseau d'irrigation, extraction des racines et nivellement des parcelles. Lorsque des surplus importants commencent à être dégagés, les destins s'individualisent: certains se contentent de leur parcelle initiale, d'autres n'auront de cesse de s'agrandir en utilisant cette fois de la main-d'oeuvre salariée. Cette solidarité, essentielle pour un démarrage rapide, est une caractéristique des communautés migrantes balinaises, même en Transmigration.

A Luwu (Sulawesi-Sud), qui a connu à partir de 1969 un vaste programme de Transmigration et d'aménagements (route, irrigation, plantation), les spontanés balinais sont moins nombreux. Arrivés en familles, ils rejoignent tous des parents transmigrants. Cette plaine étant loin d'être vide avant l'arrivée des transmigrants (68 hab./km2 dans la partie cultivable), les conditions d'insertion des migrants spontanés y est totalement différente (Charras, 1982). En 1983, quelques Balinais (transmigrants et migrants spontanés) avaient pu obtenir auprès des autochtones des rizières en fermage ou acquérir des parcelles non aménagées en bordure des petits périmètres irrigués. Ils ont contribué à l'extension des surfaces et à l'intensification de la riziculture. Cependant, aucun hameau n'avait été créé et les spontanés s'étaient tous installés dans les villages de la Transmigration.

Le flux de migrants balinais spontanés sur Sulawesi est toujours actuel. Encouragé par le succès de la plaine de Parigi, le mouvement spontané s'est propagé sur l'ensemble de l'île, dans le sillage des créations de la Transmigration. L'office de la Transmigration de Denpasar (Bali) a enregistré en 1990 un bon nombre de demandes d'autorisation pour rejoindre les villages de la Transmigration situés dans la partie marécageuse de Luwu, et ceux du kabupaten *de Mamuju, au nord-ouest de Sulawesi-Sud.*

A Sumatra-Sud certaines familles balinaises se sont

they subsequently adapted to their own normal methods. After the tragic expulsions from Lampung, the Semendo withdrew to their region of origin, attracting the Javanese with them. These people are now also found along a front of active forest clearing further to the north, in the mountainous valleys of Bengkulu and Musi Rawas, on the Jambi border.

Along the coastal marshes, the Javanese associated with the Buginese and Banjar migrants who are experts in the development of this distinctive environment. In South Sumatra the real spontaneous movement is still embryonic. Most of the time it consists of transmigrants or spontaneous transmigrants who are initially employed by the Buginese as farm workers and who subsequently have both the possibility and the means of settling land that has already been developed by a Buginese. These Buginese have left to try their luck elsewhere, either abandoning or selling off their ricefields that are overgrown and require too frequent weeding, or leaving behind their ricefields and coconut plantations under a share-cropping arrangement. No real migratory chain from Java is as yet evident. In South Sumatra the Javanese do not as yet play an active role in the process of new land development.

On the wetlands of Central Kalimantan, on the other hand, the migratory chain is established and has its origins in the hiring of Javanese seamen for the Buginese sailing ships operating between Surabaya and the southern part of Kalimantan (Book 2, Chapter 2). These sailors maintained the trade in wood and rattan and built the link between the agrarian communities, the Buginese and the Banjar, who were settled along the coastal marshes. The recruitment of Javanese from the beginning of the initial development works gave them a fundamental know-how for subsequently taking part in the conquest of new land in their own right. It was by attaching themselves to the Buginese network that these Javanese became key players in the spontaneous settlement of these marshes

■ Stimulation and limitations

In the above situations, a number of recurring elements are found in the procedures implemented. Given that the Indonesian Government plans to encourage the spontaneous movement, the question of what elements appear to promote or restrict this movement should be raised.

The examples of North Sumatra (with its Javanese plantation workers) and of Central Sulawesi (with its small community of exiled Balinese) demonstrate that a significant spontaneous movement can be generated whenever an initial nucleus of Inner Indonesian population is constituted, whatever the primary reasons for this may be. There are numerous potential receiving locations; there are obviously both the *"kolonisatie"* and the Transmigration villages, but to these should be added the large plantations, the small military camps that are found everywhere throughout the region, and the forestry concessions which employ workers hired in Java [6].

If the spontaneous movement of the Javanese towards the towns of the outer provinces appears to bring into play different aspirations and migratory processes, it nevertheless deserves to be examined, for it could be the starting point of the conversion of the urban peripheries to market gardening zones, as has been noted in Palembang.

The movement increases in magnitude as soon as the transport facilities are regular, reliable and reasonably inexpensive. It is this which partly explains the prominence of Sumatra, which has not had to put up with a maritime communication network in poor condition. From Sumatra, it is always possible to return to one's region of origin either by bus, or by getting onto the Transsumatran and obtaining a free ride with one of the many trucks going backwards and forwards to Java. This ease of access also allows young adults to make a circular migration, a prerequisite step to a more final decision to settle.

The position was completely different in Kalimantan, Sulawesi and Irian Jaya prior to 1986. The problems of access and the costs involved meant that migration took place as a family and was viewed as being final. The Balinese emigration to a not easily reached region of Central Sulawesi was an exception and is explained by the powerful force of attraction of the available land that could be converted to irrigated ricefields. The movement to the Mentaya in Central Kalimantan would not have been possible without the network of Buginese sailing boats. Up until now, the islands with a poorer service have had a significantly weaker migration flow and the destination for most families has been to the Transmigration villages. Improving the maritime communications can alter these processes and stimulate the flows. Ever since regular services have been set up between Surabaya and Sulawesi, candidates for migration can apply to agencies which organize the trip from Bali to the nearest small town in the destination region. According to a Balinese shopkeeper who regularly makes the trip to Parigi, the villages receive on temporary visits a number of young men who have "come to have a look", to seek work or even to woo the young girls who are potentially "wealthy heirs" to the ricefields opened up by their parents ...

Agricultural settlement can only spread out if the receiving human environment allows it to. As it has to fit into ethnic environments which are different on each occasion, it would be very risky to generalize because the local studies on this delicate subject are rare. Sometimes,

installées en milieu migrant mais en dehors de leur groupe ethnique. Elles se rattachaient socialement et surtout dans le domaine religieux, à un ou plusieurs villages de la Transmigration situés dans le sud de Sumatra. Ceci remet en question l'idée d'une migration balinaise nécessairement en groupe dans le cas où l'espace d'accueil est déjà bien balisé par des communautés enracinées.

JAVANAIS ET MADOURAIS À KALIMANTAN

La province de Kalimantan-Sud offre le cas d'un lieu d'attraction ancien et important. On dit que les Javanais ont participé à la formation du groupe ethnique Banjar; ils étaient présents à Banjarmasin au moins en tant que marchands et navigateurs jusqu'au XVIIe. Plus tard, on les retrouve ouvriers dans les mines de charbon de Pulau Laut et, en 1910, sur les nouvelles plantations d'hévéas.

Javanais et Madourais furent aussi installés à Kalimantan-Sud dans le cadre de la "kolonisatie" *: 294 familles sur le premier site non-irrigable et 400 familles sur le premier site ouvert sur les marécages côtiers (cf. Livre II, Chapitre 2). Entre 1950 et 1968, quelques 41000 personnes furent transmigrées.*

L'ancienneté des contacts et des implantations, la fréquence des liaisons maritimes entre Surabaya et Banjarmasin par les flottes madouraise et bugis ont favorisé l'installation de colons spontanés de Madura et de Java-Est. Ces deux groupes se retrouvent essentiellement sur le versant ouest des monts Meratus, délaissé par les Banjar. Le mouvement s'est fait depuis la route vers le sommet, repoussant toujours un peu plus vers les hauteurs le groupe d'origine, les Dayak Bukit. Comme à Sumatra-Sud, certains hameaux spontanés ont été englobés dans des nouveaux villages de la Transmigration.

L'histoire de la colonisation agricole spontanée dans cette pointe sud-est de Kalimantan reste un sujet riche à défricher; il faudrait étudier le niveau de participation des Javanais dans la culture du poivre et de l'hévéa, les vagues de migrations contemporaines des Madourais (spécialistes des cultures en sec, des productions fruitières dont les bananes et de l'élevage bovin), celles des Javanais (qui, dans le même environnement, sculptent des rizières en terrasses sur les pentes des collines) et enfin celles des Bugis installés sur le marécage côtier à l'ouest de Banjarmasin et sur la côte libre de marécage du versant est des monts Meratus.

DANS LE SILLAGE D'AUTRES MIGRANTS

Dans des milieux agro-écologiques peu familiers aux migrants venant de l'Indonésie intérieure, les montagnes et les marécages côtiers, on constate qu'ils s'attachent aux populations locales ou, peut-être plus fréquemment, aux autres migrants.

Dans les montagnes du Lampung et de Sumatra-Sud, les gens de Java et de Bali ont suivi les Semendo et les Ogan, et ont acquis auprès d'eux un savoir-faire qu'ils ont ensuite adapté à leurs propres pratiques. Après les expulsions dramatiques du Lampung, les Semendo se sont retirés dans leur pays d'origine, entraînant avec eux les Javanais. On parle d'eux maintenant sur un front actif de défrichements plus au nord, dans les vallées montagnardes de Bengkulu et de Musi Rawas, à la frontière de Jambi.

Dans les marécages côtiers, les Javanais s'accrochent aux experts en aménagement de ce milieu particulier: les colons bugis et banjar. A Sumatra-Sud le mouvement reste embryonnaire. Il s'agit le plus souvent de transmigrants ou de transmigrants spontanés qui, dans un premier temps, sont employés pour les travaux agricoles par les Bugis et qui ensuite auront l'occasion et les moyens d'occuper les terres déjà aménagées par un Bugis. Celui-ci est parti tenter sa chance ailleurs, soit en abandonnant ou en vendant ses rizières envahies par les herbes et demandant des sarclages trop fréquents, soit en laissant en métayage ses rizières et ses plantations de cocotiers. On ne distingue pas encore de véritable chaîne migratoire depuis Java. A Sumatra-Sud, les Javanais ne sont pas pour l'instant des acteurs actifs dans le processus d'aménagement de nouvelles terres.

Sur les marécages de Kalimantan-Centre, par contre, la chaîne migratoire est en place et prend ses racines dans l'emploi de marins javanais sur les voiliers bugis entre Surabaya et le sud de Kalimantan (Livre II, Chapitre 2). Ces navigateurs tiennent le commerce du bois et du rotin et font le lien entre les communautés agraires, bugis et banjar, installées sur les marécages côtiers. L'emploi des Javanais dès les premiers travaux d'aménagement leur donne un savoir-faire essentiel pour ensuite participer seuls à la conquête de nouvelles terres. C'est en s'associant aux réseaux des Bugis que ces Javanais sont devenus des acteurs actifs dans la colonisation spontanée de ces marécages.

■ *Les stimulations et les contraintes*

On retrouve dans les cas ci-dessus certains éléments récurrents dans les processus mis en oeuvre. Dans la mesure ou le gouvernement indonésien songe à favoriser le mouvement spontané, il est opportun de se poser la question des facteurs qui semblent favoriser ou contraindre ce mouvement.

Les exemples de Sumatra-Nord (avec ses ouvriers javanais dans les plantations) et de Sulawesi-Centre (avec sa petite communauté de Balinais exilés) montrent

native populations which are virtually nonexistent (Parigi) or too limited, control certain specific areas of land and leave huge tracts available for conquest (Lampung). Where they do exist, they may give up a portion of their land (South Sumatra), but may also refuse access (in certain regions of South Sumatra, in South Sulawesi, and on the northern coast of Aceh).

This attitude, which is difficult to analyse, depends on the behaviour of the non-native population on the one hand, and on local problems and the state of inter-ethnic relations with the dominant group or groups on the other hand, as much locally as at the national level. The complexity of the situation can be illustrated by the example of Luwu. Although the indigenous population willingly made room for the Buginese from the south-east peninsula and for their neighbours the Toraja, their attitude towards groups from which the Transmigration drew its settlers was much more restrained. The Javanese, who have existed here since 1938 within the framework of *"kolonisatie"* (5,000 families spread across three zones) have never generated a spontaneous movement, as in the southern part of Sumatra, even though the possibilities for rice growing were excellent. Distance and lack of safety were no doubt obstacles during the first fifteen years of Independence, but this rebuff is also the expression of a certain resentment by the local groups against people of the dominant culture. In 1976, several Balinese succeeded in negotiating the purchase of land where no Javanese had been successful. The local people attributed this difference in treatment to the religious factor. Although the religion of the Balinese offends these very devoted Muslims, the strength of their religious practices gained them respect, whereas the carelessness of the Javanese in this sphere served to highlight their resentment.

In Luwu, the tension was high and land disputes - or rather disputes over trees, in particular the sago palm - were frequent. It was observed that if there was a dispute, the transmigrants did not intercede directly but took refuge behind administrative decisions. In South Sumatra, no domineering attitude was felt on the part of the spontaneous migrants and everybody recognised the fundamental right to traditional land ownership.

The effect of regional impetus is another factor in the spreading of the movement. Only Sumatra can be used for a regional analysis of the movement. Its dominance has already been analysed (Part 1, Chapter 1). In the northern part, North Sumatra is strictly speaking no longer a receiving province for spontaneous settlers but, because plantation workers are still hired directly in Java, it is a zone of migration, transit or departure for the neighbouring provinces: to the highlands of Aceh and, according to recent information, to the province of Riau, as much to the small archipelagos (*Riau kepulauan*) as to the mainland (*Riau daratan*).

In the southern part of the territory, the movement was set up initially in Lampung which, having been invaded by settlers, has today become a transit or departure province for the spontaneous migrations which spread out going up towards the north: South Sumatra initially, but also Bengkulu and Jambi, two provinces which since 1971 have undergone a significant increase in their populations. Between these two large regions in the centre of Sumatra, the movement is brought to a halt by the western province, the original territory of the Minangkabau who, even though they leave their land willingly, hardly ever let foreigners acquire it.

On the other islands, spatial organization is still very weak. The splitting up in the provincial regions is of considerable significance and no tendency to a spreading out movement from a single point can be observed.

The elements which help or hinder the agricultural settlement movements may be quite stable or may also be fluctuating or transitory. The social and economic condition of the region where the migrants come from remains all important. In Bali, for example, where the spontaneous emigration flow is fairly significant, some regions retain their populations more than others. Such is the situation in the administrative regions of Gianyar and Badung in the south of the island, where there is a strong diversification of non-agricultural jobs, mainly from employment in tourism, arts and crafts and the clothing industry.

2. Development of the Outer Provinces

The conditions prevailing in the departure areas emphasize the significance of the policies implemented at the national level for a balanced development between Inner and Outer Indonesia. The political intention to settle the outer provinces is evident in the Transmigration programme, which continues to absorb a large portion of the national budget. However, the measures of assistance and support in developing the rural areas and the receiving regions are not so well defined.

The rural areas of the outer provinces cannot attract new farmers by merely guaranteeing them that available land can be found there. Markets for their produce must be found beyond the small receiving region and, in order to give a high return, farming must find the inputs necessary to compensate for the problems related to soil quality. In other words, the receiving regions must have reached a certain level of economic integration.

qu'un mouvement spontané d'importance peut se produire quand un noyau de peuplement initial se forme, quelles qu'en soient les causes premières. Les points d'accueil potentiels sont nombreux; il y a bien sûr les villages de la "kolonisatie" *et ceux de la Transmigration, mais on doit y ajouter les grandes plantations, les petits camps militaires que l'on trouve partout sur le territoire, les concessions forestières qui emploient des ouvriers recrutés à Java [6].*

Si le mouvement spontané des Javanais vers les villes des provinces extérieures semble mettre en oeuvre des aspirations et des processus migratoires différents, il mériterait néanmoins d'être étudié, car il peut être à l'origine de la transformation des périphéries urbaines en zone maraîchère comme on a pu le constater à Palembang.

Le mouvement prend de l'ampleur dès que les transports sont réguliers, fiables et peu coûteux. C'est ce qui explique en partie la prééminence de Sumatra qui n'a pas eu à souffrir du mauvais état du réseau de communications maritimes. De Sumatra, un retour au pays est toujours possible soit en bus, soit en rejoignant la Trans-Sumatra et en obtenant gracieusement un passage auprès d'un des nombreux camions faisant la liaison avec Java. Cette facilité d'accès permet aussi la migration circulaire des jeunes adultes, phase préalable à une décision d'installation plus définitive.

La situation était totalement différente pour Kalimantan, Sulawesi et l'Irian Jaya avant 1986. Les difficultés d'accès et les coûts impliquent une migration perçue comme définitive et en famille. L'émigration balinaise dans une région difficile d'accès de Sulawesi-Centre est une exception qui s'explique par le formidable pouvoir d'attraction de terres libres aménageables en rizières irriguées. Le mouvement sur la Mentaya à Kalimantan-Centre n'aurait pu se faire sans le réseau des voiliers bugis.

Jusqu'à présent, les îles moins bien desservies ont eu un flux de migration nettement plus faible et un processus qui concerne principalement des familles allant rejoindre des parents ou amis dans les villages de la Transmigration. L'amélioration des communications maritimes peut changer ces processus et amplifier les flux. Depuis que des lignes régulières ont été instaurées entre Surabaya et Sulawesi, les candidats migrants peuvent s'adresser à des agences qui organisent le voyage de Bali jusqu'au chef-lieu de destination dans bien des cas. Selon une commerçante balinaise faisant régulièrement le voyage sur Parigi, les villages accueillent provisoirement nombre de jeunes hommes "venus voir", chercher du travail ou encore courtiser les jeunes filles potentiellement "riches héritières" des rizières ouvertes par leurs parents ...

La colonisation agricole ne peut se déployer que si le milieu humain d'accueil le permet. S'insérant dans des milieux ethniques à chaque fois différents, il serait très hasardeux de généraliser d'autant plus que les études locales sur ce sujet délicat sont rares. Parfois, les populations autochtones sont quasiment absentes (Parigi) ou, trop peu nombreuses, elles contrôlent certains domaines particuliers et laissent de grands espaces libres à la conquête (Lampung). Plus présentes, elles peuvent céder une partie de leurs terres (Sumatra-Sud), mais aussi refuser l'intrusion (dans certaines régions de Sumatra-Sud, à Sulawesi-Sud, sur la côte nord d'Aceh).

Cette attitude difficile à analyser dépend d'une part des comportements des populations allogènes, de l'autre des histoires locales et de l'état des rapports inter-ethniques avec le ou les groupes dominants, sur place comme au niveau national. Le cas de Luwu peut illustrer la complexité de la situation. Si les populations locales font volontiers la place aux Bugis de la péninsule sud-est et aux Toraja leurs voisins, leur attitude est beaucoup plus réservée vis à vis des groupes dans lesquels puise la Transmigration. Les Javanais présents depuis 1938 dans le cadre de la "kolonisatie" *(5000 familles réparties sur trois zones) n'ont jamais induit de mouvement spontané comme dans le sud de Sumatra alors que les potentialités rizicoles étaient excellentes. L'éloignement et l'insécurité pendant les quinze premières années de l'Indépendance ont certes été des obstacles, mais ce refus est aussi l'expression d'un certain ressentiment des populations locales vis-à-vis des représentants de la culture dominante. En 1976, plusieurs Balinais avaient pu négocier l'achat de terres tandis qu'aucun Javanais n'avait réussi. Les autochtones expliquaient cette différence de traitement par le facteur religieux. Bien que la religion des Balinais heurte ces musulmans très pratiquants, la solidité de leurs pratiques religieuses forçaient leur admiration, tandis que le laisser-aller des Javanais dans ce domaine focalisait leur animosité.*

A Luwu, la tension était forte et les conflits de terre - ou plutôt d'arbres, en particulier pour le sagoutier - étaient fréquents. On constatait qu'en cas de litige, les transmigrants n'intervenaient pas directement mais se retranchaient derrière les décisions administratives. A Sumatra-Sud, on ne ressentait aucune attitude conquérante de la part des migrants spontanés et tous reconnaissaient le droit fondamental du maître du sol.

*L'effet d'entraînement régional est un autre facteur pour l'expansion du mouvement. Seule Sumatra peut se prêter à une analyse régionale du mouvement. Sa prééminence a déjà été analysée (Livre I, Chapitre 1). Dans la partie nord, Sumatra-Nord n'est plus à proprement parler une province d'accueil pour les colons spontanés mais, en recrutant toujours des ouvriers de plantation directement à Java, elle est une région de migration, de transit ou de départ pour les provinces voisines: vers les hautes terres d'Aceh et, selon des informations récentes, vers la province de Riau, aussi bien dans les petits archipels (*Riau kepulauan*) que sur la grande terre (*Riau daratan*).*

Dans la partie sud, le mouvement s'organise à partir du Lampung qui, après avoir été envahi par les colons, devient aujourd'hui province de transit ou de départ pour les migrations spontanées qui se distribuent en remontant vers le nord: Sumatra-Sud d'abord mais aussi Bengkulu et Jambi, deux provinces qui accusent depuis 1971 un accroissement important de leur population. Entre ces deux grandes régions, au centre de Sumatra, le mouvement

■ The signs of rural impoverishment

Recently, A. Booth (1991) reported a possible agricultural "involution" in the outer provinces. She stressed that the increase in the active farming population in the majority of the outer provinces has not always been followed by an at least equal increase in farm output. In some of the outer provinces, it resulted in a substantial increase, between 1980 and 1987, in the proportion of the population in rural areas living below the poverty line (Table 35.).

Overall, poverty has increased in all the outer receiving provinces. With the exception of the special case of Lampung, the most affected provinces are those which receive the greatest number of transmigrants in Sulawesi (Central and South-East) and in Kalimantan (East, West and Central) [7]. For these five provinces, the contribution to the rural population has fundamentally been made by the Transmigration. The transmigrants who settled between 1970 and 1985 account for more than 10% of the population in the rural *kabupaten* (administrative districts) of Kalimantan (Kutai and Berau in the east, Sambas in the west) and in Sulawesi (Banggai and Poso in the centre and Kendari on the south-east peninsula). In the province of Central Kalimantan where the programme has been of a reasonable size since the beginning of the 1980s, transmigrants already accounted for 11.5% of the total population in 1985 (World Bank, 1986 : 207).

This organized contribution to the population does not, however, explain everything, as other outer provinces have received a greater number of transmigrants without causing poverty to increase in a significant manner. The provinces where rural poverty is showing a sharp increase are those which are affected by other factors: farming which has little vitality and which gets little support from the small plantation sector, as well as an element of isolation. As opposed to this, those provinces which stand up best in spite of a significant flow of transmigrants are all located in Sumatra, all have an agricultural economy dominated by small family plantations, and receive a significant number of spontaneous settlers.

■ An unsuitable agricultural policy

The inflow of population to the rural areas is not only a potential cause of severe damage to the environment, but may also break up an economic equilibrium which was relatively healthy at the beginning. The main features of farming in Sumatra, Kalimantan and Sulawesi [8] can be broadly defined as extensive agricultural systems and a large range of produce. The traditional food crops supply their subsistence food needs plus a local market which is in most cases fairly limited. Crops on swidden fields predominate. Perennial commercial crops - rubber, coffee, pepper, cloves, rattan and fruit trees - form part of the cycle of long-term land fallowing and are thus planted on numerous lots.

This style of agriculture has remained ignored by the agricultural policy implemented since 1969, which is totally directed towards the intensification of rice growing. It was necessary for the government not only to reach national self-sufficiency in rice but also to improve the living conditions of the majority of farmers, namely those from Java. These two objectives were achieved during the 1980s. The intensification programme was completed as a result of the improvement in irrigation and of the setting up of loans for all inputs (new seeds, fertilizer and pesticides). These loans were repayable after the harvest and were available at a highly subsidized rate. This programme was implemented in all the large irrigated areas (called "technical" or "semi-technical") which cover almost all the ricefields of Java and Bali but which, in the outer provinces, only account for 21% of the 3.4 million hectares devoted to wet rice-growing (without including the *pasang surut*, the rice farming of the coastal marshes).

The large areas which were irrigated in the classical manner have been re-converted to "technical" systems in South Sulawesi, Aceh, and North and West Sumatra. Networks have been constructed from scratch for the Transmigration, and are in addition to those constructed during the *"kolonisatie"* period: the Dumoga valley in North Sulawesi, and the Luwu plain in South Sulawesi. In all these large irrigated zones, the intensification programme was put forward at the end of the 1970s. In general it was widely adopted, particularly in those areas where rice growing was carried out by Javanese and Balinese farmers, thus allowing the development of extremely dynamic agricultural regions. This programme, devised in the environment of a system where rice growing is predominant, had average results in the other regions where the rural economy is diversified (rice growing and cattle farming in Aceh, and commercial crops in the regions of Minahasa and Minangkabau).

Outside Java and Bali, ricefields irrigated by simple works termed "village irrigation" and rainwater ricefields are predominant (30% and 48% respectively). These small irrigated areas have remained as they were, and the farmers cultivate them only once a year, at most, using traditional seed and without the use of fertilizer. In 1986, Java and Bali added between 200 and 300 kilogrammes of urea per hectare of irrigated rice field compared with 150 kg/ha in two of the receiving provinces (Lampung and South-East Sulawesi) and less than 100 kg/ha in the others (Booth, 1991 : 50), including those where a fertilizer factory existed within their territories (Aceh and Southern Sumatra).

butte sur la province ouest, terre d'origine des Minangkabau qui, s'ils la quittent volontiers ne la cèdent encore guère aux étrangers.

Dans les autres îles, le fractionnement en provinces joue encore pleinement et l'on ne voit pas se dessiner un mouvement de propagation à partir d'un pôle.

Les facteurs favorisant ou faisant obstacle aux mouvements de colonisation agricole peuvent être constants mais aussi conjoncturels ou transitoires. L'état social et économique de la région source de migrants reste déterminant. A Bali, par exemple, où le flux d'émigration spontanée est relativement important, certaines régions retiennent leurs populations plus que d'autres. C'est le cas des départements du sud de l'île, Gianyar et Badung, où la diversification des emplois non-agricoles est forte, principalement avec le tourisme, l'artisanat d'art et la confection.

2. Développement des provinces extérieures

Les conditions prévalant dans les régions de départ soulignent l'importance des politiques mises en oeuvre au niveau national pour un développement équilibré entre les Indonésies intérieure et extérieure. La volonté politique de peuplement des provinces extérieures est manifeste dans le programme de la Transmigration, qui n'a cessé d'absorber une part importante du budget national. Cependant, les mesures d'accompagnement et de soutien au développement des campagnes et des régions d'accueil sont plus incertaines.

Les campagnes des provinces extérieures ne peuvent recevoir de nouveaux agriculteurs sans autre garantie que d'y trouver une terre libre. Les productions doivent trouver des débouchés au-delà de la petite région d'accueil et, pour être performante, l'agriculture doit trouver les intrants nécessaires pour compenser les problèmes liés à la qualité des sols. En d'autres mots, les régions d'accueil doivent avoir atteint un certain degré d'intégration économique.

■ Les signes d'une paupérisation rurale

Récemment A. Booth (1991) a fait état d'une possible "involution" agricole dans les provinces extérieures. Elle souligne que l'augmentation de la population active agricole dans la plupart des provinces extérieures n'a pas toujours été suivie d'une croissance au moins égale des productions agricoles. Il s'ensuit pour certaines une augmentation substantielle de la part de la population vivant en dessous du seuil de pauvreté dans les campagnes, entre 1980 et 1987 (Tab.35).

D'une façon générale la pauvreté a gagné dans toutes les provinces extérieures d'accueil. Hormis le cas particulier du Lampung, les provinces les plus touchées sont celles qui reçoivent le plus de transmigrants à Sulawesi (Centre et Sud-Est) et à Kalimantan (Est, Ouest et Centre) [7]. Pour ces cinq provinces l'apport de population rurale s'est fait essentiellement par la Transmigration. Les transmigrants installés entre 1970 et 1985 représentent plus de 10 % de la population des kabupaten *(départements) ruraux de Kalimantan (Kutai et Berau à l'Est, Sambas à l'ouest) et de Sulawesi (Banggai et Poso au centre et Kendari dans la péninsule sud-est). Dans la province de Kalimantan Centre, où le programme prend de l'ampleur dès le début des années 80, les transmigrants représentaient déjà 11,5% de la population totale en 1985 (World Bank, 1986: 207).*

Cependant, cet apport organisé de population n'explique pas tout, car d'autres provinces extérieures ont reçu plus de transmigrants sans que pour autant la pauvreté ait augmenté de façon significative. Les provinces où la pauvreté rurale est en forte augmentation sont celles qui cumulent d'autres facteurs: une agriculture peu dynamique, peu soutenue par le secteur des petites plantations, et un isolement certain. Au contraire, celles qui résistent mieux malgré un volume important de transmigrants, sont toutes situées à Sumatra, ont en commun une économie rurale dominée par les petites plantations familiales et reçoivent un bon nombre de colons spontanés.

■ Une politique agricole inadaptée

L'afflux de population sur les campagnes risque non seulement de provoquer des dégradations importantes sur l'environnement, mais encore de rompre un équilibre économique, au départ, relativement sain. L'agriculture à Sumatra, Kalimantan et Sulawesi [8] peut être grossièrement caractérisée par des systèmes extensifs et une diversité importante des productions. Le vivrier traditionnel alimente l'autosubsistance et un marché le plus souvent localement réduit. La culture sur essart domine. Les cultures pérennes commerciales - l'hévéa, le caféier, le poivrier, le giroflier, le cocotier, le rotin et les arbres fruitiers - sont intégrées au cycle de longue jachère et sont donc plantées en de nombreuses parcelles.

Ce type d'agriculture est resté à l'écart de la politique agricole mise en oeuvre depuis 1969, qui s'est entièrement focalisée sur l'intensification de la riziculture. Il s'agissait pour le gouvernement non seulement d'atteindre l'autosuffisance nationale en riz mais aussi d'améliorer les conditions de vie du plus grand nombre d'agriculteurs: ceux de Java. Ces deux objectifs ont été remplis dans le courant des années 80. Le programme d'intensification a été réalisé grâce à l'amélioration de l'irrigation et à la mise en place d'un crédit remboursable après la récolte pour tous les intrants (nouvelles semences, engrais et pesticides), disponibles à des prix fortement subventionnés. Ce programme a été appliqué sur tous les grands

In Java, the application of fertilizer to non-irrigated food crops was introduced in the wake of rice growing, without a suitable programme, at least up until very recently. In the outer provinces, the intensification of food crops cannot do without this supplement. The transmigrants settled in the dry zones have found this out to their own cost. Spontaneous settlers established on the fringes of the rice growing areas, on the other hand, obtain crop surpluses thanks to the inputs brought to the region by the intensification programme networks. To a lesser extent, those settlers located adjacent to the State plantations can also obtain supplies.

The provinces which have received large numbers of transmigrants but which have maintained a healthy rural economy are those where traditional farming is dominated by small commercial plantations: South Sumatra, Bengkulu, Jambi and Riau. This good performance is not the result of a policy of support for the sector either today or during the colonial period when the plantations were developed. Yields have barely increased. The benefit is that these plantations are integrated into the slash-and-burn system of farming and require little investment either in time or capital. They are extensive and make up for the poor returns by occupying a great deal of land and by having very low production costs. The marketing of produce presents hardly any problems as the commercial networks have already been established since the beginning of the century, and are often controlled by people of Chinese origin who have moved back to the urban centres.

Particularly with regard to coffee, the example of South Sumatra has demonstrated that the arrival of spontaneous settlers has enabled the area under cultivation to be expanded, the yields to be improved by the use of intensive care, and the effective life of plantations to be increased. This inflow of labour also freed up the native populations who devoted themselves to non-agricultural pursuits in support of the rural economy: construction, transport and trading.

The contribution of the migrants to rubber growing is still very minor but should become more significant. Latex prices have not undergone the very substantial increase which would have produced the impetus for a more speedy transfer of know-how as was the case for coffee. The fact remains that, to get started, new rubber planters must have available either large tracts of land, as do the indigenous people, or significant initial capital to purchase improved species of plants, which are still hard to get hold of, and be prepared to wait seven years before the plantations start producing.

The traditional farming of the receiving provinces is compatible with the natural conditions and the level of development. It uses up land in order to sustain its yields and produces no surplus except where trading networks have been set up. Migrants are not able to have as much land and their techniques are not suitable for the new environment. In numerous situations, spontaneous settlers have demonstrated their ability to adapt. They copy and modify the local techniques for perennial crops or, whenever food crops are involved, they play the key role in pushing back the farming limit to the periphery of the existing dynamic centres.

Prerequisites to a policy of support for agriculture in the outer provinces are assistance to small family plantations, which benefits both the native and non-native populations, and extension of the trading networks which are essential for the intensification of food crops, a field of excellence of the farmers from Inner Indonesia but which, up until now, has not been really promoted.

■ An alarming regional imbalance

The theory of involution put forward by C. Geertz (1963) was derived from the conditions of farmers in Java in the 1950s, following a long colonial presence and during the first difficult years following Independence. Today, it is understood that this situation arose out of certain economic conditions and was not structural as it was implied by the author. Since then, the Javanese society has demonstrated its capacity to adapt (Maurer, 1985). From the 1980s onward, both statistics and research workers were in agreement that a reduction in poverty was evident in the rural regions of Java. The improvement in living conditions is related not only to the advances in rice growing [9] and the reduction in the rural work force (due to both birth control and emigration), but above all to the breaking down of the isolation of the villages (as a result of the revolution in transport facilities) which allows commuting or seasonal migration to the urban centres which offer a much broader range of non-agricultural employment.

In the outer provinces, the growth of poverty is a process which could well be more difficult to curb due to the vastness of the territory involved, the accumulated deficiencies and the changed economic circumstances. As a result of the income produced from petroleum and forestry products, the years from 1973 to 1983 can be looked upon as the decade of construction and basic investment, a period which provided the infrastructure for regional development. On the other hand, the main features of the most recent decade are the disengagement of the Government, the termination of agricultural subsidies and the promotion of private enterprise: light export-based industries and agriculture-based industries. This new stimulation is naturally supported by the previously established structures. An analysis of development policies since 1965

périmètres irrigués (dits "techniques" ou "semi-techniques") qui concernent la presque totalité des rizières de Java et Bali mais qui, dans les provinces extérieures ne représentent que 21% des 3,4 millions d'hectares dédiés à la riziculture humide (sans compter la riziculture des marécages côtiers, classée pasang surut *).*

Les grands espaces irrigués de manière traditionnelle ont été réaménagés en systèmes "techniques" à Sulawesi-Sud, à Aceh, à Sumatra-Nord et Ouest. Des réseaux ont été créés de toutes pièces pour la Transmigration, venant s'ajouter à ceux créés pendant la période de "kolonisatie" *: la vallée de Dumoga à Sulawesi-Nord, la plaine de Luwu à Sulawesi-Sud. Sur tous ces grands périmètres irrigués, le programme d'intensification a été proposé à la fin des années 70. Il a été en général bien suivi, notamment là où la riziculture est dans les mains des paysans javanais et balinais, ce qui a permis la création de régions agricoles très dynamiques. Ce programme conçu dans le cadre d'un système où la riziculture domine a eu des résultats moyens dans les autres régions où l'économie rurale est diversifiée (riziculture et élevage en Aceh, cultures commerciales dans les pays Minahasa et Minangkabau).*

Hors de Java et Bali, les rizières irriguées par de simples ouvrages dit "villageois" et les rizières pluviales dominent (30 et 48% respectivement). Ces petits périmètres irrigués sont restés en l'état et les agriculteurs ne les plantent, au mieux, qu'une fois l'an, avec des semences traditionnelles et sans amendements. En 1986, Java et Bali appliquaient entre 2 et 3 quintaux d'urée à l'hectare de rizière irriguée contre 1,5 quintal dans deux provinces d'accueil (Lampung et Sulawesi-Sud-Est) et moins d'un quintal dans les autres (Booth, 1991: 50), y compris celles disposant d'une usine d'engrais sur leur territoire (Aceh et Sumatra-Sud).

A Java, l'utilisation d'engrais pour les cultures vivrières non-irriguées s'est faite dans la foulée de la riziculture, sans programme approprié, tout au moins jusqu'à très récemment. Dans les provinces extérieures l'intensification des cultures vivrières ne peut se passer de cet apport. Les transmigrants installés dans les zones non irrigables en font l'expérience à leurs dépens. Par contre, les colons spontanés installés à la périphérie des périmètres rizicoles dégagent des surplus grâce aux intrants amenés sur place par les circuits du programme d'intensification. Dans une moindre mesure, ceux situés à proximité des plantations d'Etat peuvent aussi s'y fournir.

Les provinces ayant reçu de nombreux transmigrants mais qui conservent une bonne économie rurale sont celles où l'agriculture traditionnelle est dominée par les petites plantations commerciales: Sumatra-Sud, Bengkulu, Jambi et Riau. Cette bonne tenue n'est pas due à une politique de soutien de ce secteur, ni aujourd'hui, ni pendant la période coloniale où elles se sont développées. Les rendements ont à peine augmenté. L'avantage est que ces plantations sont intégrées au système d'agriculture sur brûlis et demandent peu d'investissements en temps et en capital. Extensives, elles compensent les faibles rendements en utilisant beaucoup d'espace et en ayant de faibles coûts de production. L'écoulement des productions ne pose guère de problèmes car les circuits commerciaux sont déjà en place depuis le début du siècle et souvent dans les mains des populations d'origine chinoise, repliées dans les centres urbains.

L'exemple de Sumatra-Sud a montré que, surtout en ce qui concerne le café, l'arrivée de colons spontanés a permis d'augmenter les surfaces cultivées, d'améliorer les rendements par des soins plus intensifs et d'augmenter la longévité des plantations. Cet apport de main-d'oeuvre libère aussi les populations autochtones qui se consacrent à des activités non agricoles venant soutenir l'activité rurale: la construction, les transports, le commerce.

La participation des migrants à l'hévéaculture est encore très faible mais devrait prendre de l'importance. Les prix du latex n'ont pas connu la très forte augmentation qui aurait pu donner une impulsion pour un transfert plus rapide des savoir-faire, comme ce fut le cas pour le café. Il reste que, pour démarrer, les nouveaux planteurs d'hévéa doivent disposer soit de larges espaces, comme les locaux, soit d'un capital de départ important pour se procurer des plants améliorés, encore difficilement disponibles, et pour attendre sept ans avant l'entrée en production des plantations.

L'agriculture traditionnelle des provinces d'accueil est adaptée aux conditions naturelles et à l'état du développement. Elle consomme de l'espace pour maintenir ses rendements et ne produit de surplus que là où les réseaux d'échanges sont organisés. Les migrants ne peuvent disposer d'autant d'espace et leurs techniques ne sont pas appropriées au nouvel environnement. Les spontanés ont fait la preuve dans bien des cas de leur capacité d'adaptation. Ils copient et transforment les techniques locales pour les cultures pérennes ou, lorsqu'il s'agit de cultures vivrières, ils deviennent les acteurs principaux pour repousser la frontière agricole à la périphérie des pôles dynamiques existants.

Une politique de soutien à l'agriculture des provinces extérieures passe ainsi par l'aide aux petites plantations familiales, qui profitera aux populations autochtones et allogènes, et par l'extension des réseaux d'échange indispensables pour l'intensification des cultures vivrières, domaine d'excellence des agriculteurs de l'Indonésie intérieure mais qui, jusqu'à présent, n'a pas été encouragé.

■ *Un déséquilibre régional alarmant*

La théorie de l'involution de C. Geertz (1963) avait été concue à partir de la situation de la paysannerie à Java dans les années 50, après la longue présence coloniale et pendant les difficiles premières années suivant l'Indépendance. On sait aujourd'hui que cet état était conjoncturel et non pas structurel comme le laissait penser l'auteur. La société javanaise a depuis montré ses facultés d'adaptation (Maurer, 1985). A partir des années 80, les statistiques et les chercheurs s'accordent

demonstrates that, even if the outer provinces have provided the primary resources and have received the overflow of people from Inner Indonesia, their future was not planned with concern for the regional balance (Charras, 1993).

There is no question about the improvement in road and transport conditions within each of the outer provinces and the advances in primary social services. However, the widespread nature of the population has kept the villages or rural centres isolated to some degree from the higher level infrastructures (secondary schools for education [10], hospitals for health) whereas the ambitions and needs have increased as a result of the advance in information. These uncompleted networks, when combined with the lack of assistance to the agricultural sector, have led to a population drift from the rural regions. This rural exodus has been observed in South Sumatra. The shifting of the population from the hinterland of Kalimantan towards the coastal fringe where the provincial capitals are located is a phenomenon which has time and again been highlighted. The combined rate of urban population increase for all the outer receiving islands was exceptionally high from 1970 to 1980: between 5.92% (Kalimantan) and 4.25% (Sulawesi and Sumatra) compared to only 3.6% for Java.

The migratory process of the most dynamic of the native peoples does not stop at the provincial capital as it is too restricted in its economic activities. Investments in these areas in manufacturing industries (Table 35 domestic investments [11]), in service industries and related infrastructure (energy, harbours, trading, banking ...) have remained very low.

The mineral and forest resources of certain outer provinces certainly place them in a good position as regards the distribution of industrial value-added. Heavy industries are, however, state enterprises managed from Jakarta, which use little labour (often brought from elsewhere, except during the construction period) and whose output is handled by specialized national or foreign carriers. The ability of these companies to promote the establishment of other industries is extremely limited. Aceh, Riau and East Kalimantan are typical of these enclave-type structures.

The proliferation of plywood factories adjacent to forestry concessions has been a contributing factor in the increase in employment in Outer Indonesia. This activity is not, however, sustainable. The recent boom in light export-based industries, for which statistics are not yet available, is almost exclusively confined to Java. No stimulating measure has appeared to counteract this extremely strong concentration. Very much to the contrary, recent government regulations making it compulsory for rattan coming from the outer provinces to be processed mainly in Java clearly demonstrate this lack of willingness to decentralize. On the other hand, the condition of the maritime transport network and the customs system provides no encouragement to businessmen to manufacture in the outer provinces for a national or international market.

The situation in East Kalimantan illustrates the extreme case of the problem. It is one of the least densely populated provinces. For two decades it has been "statistically" the richest province in the nation based on gross regional revenue, but more than a third of its rural population, swollen by a massive influx of transmigrants during the 1980s, lives below the poverty line. Elsewhere, the province of North Sumatra, which has the largest major city and the best industrial structure in Outer Indonesia, registered a migratory deficit for the first time during the last decade.

Without an active regional centre, agricultural output can rely neither on a buoyant market, nor on transformation industries, nor on an organized exchange network which gives them access to the prime consumer group, the hundreds of millions of people who inhabit Java.

If on the one hand the native populations abandon their province for the cities of Java, principally Jakarta, to find employment there, to invest in a business and to allow their children to have access to better institutions of higher education, on the other hand, the settlement of transmigrants, whose economic development will remain limited for a long time, is undertaken. Under the new economic conditions of decentralization and promotion of private enterprise, we are witnessing an increase in the setting up of large private plantations in the area around the Transmigration sites which provide these plantations with labour that is both fairly cheap and weakened by too long an exposure to isolation. Thus they obtain the advantages of the settlement policy, by corrupting one of the major objectives of the programme which is to promote a farming community based on land ownership. These plantations withdraw large areas of land from the farming projects undertaken by the spontaneous settlers who, themselves, are granted no specific support at all today.

Hypercentralization and the lack of intermediate regional centres, the closing off of national territory and the deficiencies in the maritime network, and finally the underdevelopment of the farming potential, act together to generate centripetal forces, and to split up the territory. Economic integration remains ineffectual and the absorption of new land still remains unfinished. The development of Lampung can be used as an illustration of such conditions. The province has experienced 85 years of organized agricultural settlement and about thirty years (1950-1980) of an excessive inflow of spontaneous migrants begging for work (at any wage) and for land (even under unfavorable

pour indiquer une régression de la pauvreté dans les campagnes javanaises. L'amélioration des conditions de vie est due non seulement aux progrès de la riziculture [9] et à l'allégement de la masse rurale (par le contrôle des naissances et l'émigration), mais surtout par la rupture de l'isolement des villages (grâce à la révolution des transports) qui permet les migrations pendulaires ou saisonnières sur les centres urbains offrant un plus large éventail d'emplois non agricoles.

Dans les provinces extérieures, l'accroissement de la pauvreté est un processus qui risque d'être plus difficile à juguler en peu de temps en raison de l'immensité de l'espace concerné, des lacunes accumulées et de la nouvelle conjoncture économique. Grâce aux revenus tirés des produits pétroliers et forestiers, la décennie de 1973 à 1983 peut être considérée comme celle de la construction, des investissements de base pouvant donner l'armature de l'aménagement du territoire. La dernière décennie est plutôt caractérisée par un désengagement de l'Etat, l'arrêt des subventions à l'agriculture et l'encouragement aux initiatives privées: industries légères d'exportation et agro-industries. Cette nouvelle impulsion prend naturellement appui sur les structures mises en place auparavant. L'analyse des politiques de développement depuis 1965 montre que, si les provinces extérieures ont fourni les ressources primaires et accueilli le trop-plein des populations de l'intérieur, leur destin n'a pas été conçu dans un souci d'équilibre régional (Charras, 1993).

L'amélioration des conditions de circulation à l'intérieur des provinces extérieures et la progression des infrastructures sociales primaires ne font aucun doute. Cependant, la grande dispersion du peuplement a maintenu un certain isolement des villages ou des centres ruraux par rapport aux infrastructures de niveau supérieur (lycées pour l'éducation [10], hôpitaux pour la santé) alors que les aspirations et les besoins se sont accrus grâce au progrès de l'information. Ces réseaux inachevés, conjugués à l'absence de soutien au secteur agricole, ont provoqué une fuite des campagnes. L'exode rural a été constaté à Sumatra-Sud. La descente des populations de l'intérieur de Kalimantan vers la couronne côtière où sont situées les capitales provinciales est un phénomène maintes fois souligné. L'ensemble des îles extérieures d'accueil a connu un taux de croissance de la population urbaine particulièrement fort de 1970 et 80: entre 5,92 (Kalimantan) et 4,25% (Sulawesi et Sumatra) contre 3,6% seulement à Java.

Le processus migratoire des autochtones les plus actifs ne s'arrête pas à la capitale provinciale, car celle-ci reste limitée dans ses activités économiques. Les investissements dans les industries industrialisantes (tab. 35, les investissements domestiques [11]), dans les services et les infrastructures associées (énergétique, portuaire, commercial, bancaire ...) y sont restés très faibles.

Certes, les ressources minières et forestières de certaines provinces extérieures les placent en bonne situation quant à la répartition de la valeur ajoutée industrielle. Mais les industries lourdes sont des entreprises publiques gérées par Jakarta, qui utilisent peu de main-d'oeuvre (souvent venue d'ailleurs, sauf pour la période de construction) et dont les productions sont prises en charge par des transporteurs spécialisés nationaux ou étrangers. La capacité de ces entreprises à entraîner l'implantation d'autres industries est tout à fait limitée. Aceh, Riau et Kalimantan-Est sont typiques de ces structures enclavées.

L'essaimage d'usines de contreplaqué près des concessions forestières a contribué à l'augmentation de l'emploi, mais cette activité n'est pas durable. Le récent essor des industries légères pour l'exportation, qui n'est pas encore statistiquement documenté, est presqu'exclusivement localisé à Java. Aucune mesure incitative n'est venu contrecarrer cette très forte concentration. Bien au contraire, les dispositions gouvernementales récentes pour que le rotin, venant des provinces extérieures, soit obligatoirement travaillé à Java (à la rigueur aussi à Medan) marque bien ce manque de volonté de décentralisation. D'autre part, l'état du réseau des transports maritimes et le système douanier n'encouragent pas les industriels à produire dans les provinces extérieures pour un marché national ou international.

La situation de Kalimantan-Est illustre à l'extrême le problème. C'est l'une des provinces les moins peuplées de l'Indonésie, "statistiquement" la plus riche du pays par son revenu régional brut depuis deux décennies, mais plus du tiers de sa population rurale, alourdie par une arrivée massive de transmigrants dans les années 80, vit en-dessous du seuil de pauvreté. Ailleurs, la province de Sumatra-Nord, qui a la plus grande métropole et le meilleur tissu industriel de l'Indonésie extérieure, accuse pour la première fois un déficit migratoire pendant cette dernière décennie.

Sans un centre régional dynamique, les productions agricoles ne peuvent compter ni sur un marché actif, ni sur des industries de transformation, ni sur un réseau d'échanges organisés qui donne accès à la principale source de consommateurs, les cent millions de personnes qui peuplent Java.

Si d'un côté les populations autochtones désertent leur province pour les villes de Java, notamment Jakarta, pour y trouver un emploi, investir dans une entreprise et permettre à leurs enfants d'accéder aux meilleurs instituts d'enseignement supérieur, de l'autre, on entreprend l'installation de transmigrants qui resteront longtemps limités dans leur développement économique. Dans la nouvelle conjoncture de décentralisation et d'incitation aux initiatives privées, on assiste à la multiplication des créations de grandes plantations privées aux abords des sites de la transmigration qui leur fournissent une main-d'oeuvre peu chère et fragilisée par un trop long isolement. Elles récupèrent ainsi les bénéfices de la politique de peuplement, détournant l'un des objectifs important du programme qui est de promouvoir une

conditions : isolation, insecurity of tenure). Beside important investments on physical infrastructures and social services, they did not follow the huge demographic growth. The emergence of the towns was unquestionable but very slow, based on official statistical data. The continuous flow of migrants in the rural areas (at least until 1985) concealed the dynamism of the second ranking towns and kept the percentage of urban population stable between 1980 and 1990 (12 to 15%), one of the lowest in Indonesia (12).

On the other hand, rural poverty in Lampung remains one of the highest in the country, reaching in 1980 the level of East and Central Java. In 1990, rural poverty decreased slightly but still affected one third of the population, presently a level significantly higher than in Java. The last decade saw a significant slowdown in population growth. It is true that some areas have been emptied completely of their population and that some migrants moved on further north (to South Sumatra, Bengkulu and Jambi). But wouldn't the main reason for this slowdown of immigration be that the living and employment conditions are now better in Java, the migrants' region og origin ?

The incipient downward trend in the level of poverty in Lampung should be given attention, for all the other receiving provinces have been affected by a marked progress of rural poverty during the past decade. A better economic integration with the west Java, mainly in the south and central parts of the province (Pain, 1989 : 370), may be the main explanation for this regression. The outcome of this integration are a better accessibility, the extension of commercial networks, agricultural intensification, increase of agricultural production and, recently, the growth of agro-industrial investment. The province is now included in the regional planning of West Java, which has (counting Jakarta) the highest concentration of industrial investments. But it remains to be seen if measures are taken so that this newly gained accessibility does not become another means to just drain the Southern Sumatra productions directly towards the national capital, and that Lampung does not remain only a transit area. Finally, it should be noted that, in the integration process, despite the fact that Lampung has the advantage of being the outher province nearest to the Javanese core, the process there has been slow and remains largely uncompleted. One may wonder how much longer will take the integration of the remote receiving provinces.

In view of the current characteristics of the spontaneous movement, the best method of stimulating it is to restabilize the localisation of productive investments in the dynamic centres of Outer Indonesia and to implement all possible means to accelerate the economic integration of the outlying receiving areas. These two conditions are also necessary for maintaining the people from the outer areas in their region of origin.

Notes to the conclusion

1) *The demographic growth of the Transmigration villages appears to be underestimated in this calculation to the extent that it is young couples who transmigrate, and that initially these families feel the need to multiply to meet their future labour needs. The prospect of nearby available land also stimulates them to have more children. Moreover, it was only from 1975 on that the Javanese and Balinese transmigrants arrived sufficiently informed about birth control and often it is not easy for them to be able to apply it because of the inadequate infrastructure, personnel and stock (Charras 1982: 209-213 and A. Hameed,* Settlements in Sulawesi Tenggara, *1976, Directorate General of Transmigration).*

2) *Excluding the projects in Lampung which involve, in principle, people already settled in the province, 414,542 transmigrants were examined. The Transmigration's figures are difficult to manipulate on an annual basis, as different sources either include or exclude the projects in process.*

3) *The* swakarsa *group includes not only those arriving under planned migration from their region of origin but also those who arrive spontaneously to settle in the villages and who were not anticipated under the programme. In 1986, the World Bank (1988 : 171) advanced the combined figure of 149,411 families who had arrived spontaneously and settled in the areas still controlled by the Transmigration (for five years at least), a figure slightly higher than that for planned families since the beginning of the fourth plan (1984/1985).*

4) *This movement has been studied by Gloria Davis (1976) and by Muriel Charras (1979) as much from the point of view of its historical and social development as from its integration into the physical and human environment.*

5) *The voyage required several stages and several types of transport: the trip from Bali to Surabaya was by bus, to Ujung Pandang by boat or plane, to Palu by plane or to Donggala by boat, to Parigi by bus and finally to the plain by motor boat. Up until 1986, maritime links with Sulawesi were irregular and required families to stay at a hotel in Surabaya and in Ujung Pandang for an indeterminate period.*

6) *Certain reports speak of a spontaneous agricultural settlement spreading out from the former tracks of the forestry concessions in Kalimantan.*

7) *The figures relating to Irian Jaya and the Moluccas are difficult to explain. In the latter case, the situation may be influenced by the clove tree, which has a regular production cycle but one which varies considerably over three or four years, and by the drop in price since 1984. It would appear that the 1980 population census considerably underestimated the population in the interior of Irian Jaya, thus bringing into question the validity of the data relating to rural poverty.*

paysannerie fondée sur la propriété. Ces plantations soustraient de vastes espaces aux initiatives paysannes que représentent les colons spontanés qui, eux, ne bénéficient aujourd'hui d'aucun soutien spécifique.

L'hypercentralisation et l'absence de pôles régionaux de relais, la fermeture de l'espace national et la carence du réseau maritime, enfin la sous-exploitation des potentialités agricoles concurent au développement de forces centripètes, au fractionnement de l'espace. L'intégration économique reste faible et l'incorporation des terres neuves encore inachevée. L'évolution du Lampung peut illustrer les implications de telles données. La province a connu 85 années de colonisation agricole organisée et une trentaine d'années (1950-1980) d'un afflux très important de migrants spontanés quémandeurs de travail (à n'importe quel salaire) et de terres (même dans des conditions défavorables : isolement, insécurité foncière).

Malgré des investissements importants dans les infrastructures et les services sociaux, ceux-ci n'ont pas été à la mesure de l'exceptionnelle croissance de la population de la province au cours des dernières décennies. L'émergence des villes est indéniable bien que très lente au vu des statistiques disponibles. Le dynamisme des centres secondaires, révélé par les enquêtes de terrain, est sans doute oblitéré, sur le plan des chiffres, par le flot continu (du moins jusqu'en 1985) des migrants s'installant en majorité dans les zones rurales. C'est ainsi que les chiffres de population urbaine restent stables entre 1980 et 1990 (12 à 15% du total de la population de la province) et parmi les plus faibles d'Indonésie (12). La pauvreté rurale est l'une des plus fortes d'Indonésie en 1980, comme les provinces de Java Centre et Est. On constate une légère régression en 1990 mais la pauvreté concerne encore le tiers de la population, un niveau qui maintenant est bien supérieur à Java.

Parallèlement, cette dernière décennie a aussi connu un fort ralentissement de la croissance démographique à Lampung. Certes des zones y ont été vidées de toute population et certains migrants ont poussé plus au nord leur route migratoire (vers Sumatra-Sud, Bengkulu et Jambi). Mais l'explication principale de ce ralentissement de l'immigration ne serait-elle pas qu'aujourd'hui les conditions de vie et les possibilités d'emplois sont meilleures à Java, la région source de migrants ?

L'amorce d'un recul de la pauvreté dans le Lampung mérite d'être souligné au regard de l'évolution des autres provinces d'accueil qui, elles, ont vu la pauvreté s'accroître cette dernière décennie. Ce recul peut être attribué a une meilleure intégration économique, particulièrement du sud et de la partie centrale de la province (Pain, 1989 : 370), à l'ouest de Java qui se mesure à l'accessibilité, à l'extension des réseaux marchands, à l'augmentation des productions agricoles et, plus récemment, des investissements agro-industriels. Le Lampung est maintenant englobé dans la région de planification de Java-Ouest, la province de l'Indonésie qui, avec Jakarta, concentre l'essentiel des investissements industriels. Reste à savoir si les dispositions seront prises pour que cette nouvelle accessibilité ne serve pas uniquement à drainer les productions du Sud de Sumatra vers la capitale nationale, que Lampung ne soit pas simplement un lieu de transit.

Soulignons enfin que le Lampung a une situation privilégiée dans ce processus d'intégration grâce à sa proximité avec Java, mais que, malgré cet atout, l'intégration est été lente et reste inachevée. On peut, avec une certaine inquiétude, se poser la question du temps que prendra le processus d'intégration pour les autres provinces extérieures bien plus éloignées du centre.

Compte tenu des caractéristiques actuelles du mouvement spontané, la meilleure manière de l'encourager est de rééquilibrer la localisation des investissements productifs sur les points forts de l'Indonésie extérieure et de mettre tous les moyens en oeuvre pour accélérer l'intégration économique des périphéries d'accueil. Deux conditions qui sont aussi essentielles au maintien des populations de l'extérieur dans leur région d'origine.

Notes de la conclusion

1) La croissance démographique des villages de la transmigration semble sous-estimée dans ce calcul dans la mesure où ce sont des couples jeunes qui transmigrent et que dans un premier temps les familles ressentent le besoin d'augmenter leur force de travail pour l'avenir. La perspective de disponibilité foncière aux alentours les encourage aussi à avoir plus d'enfants. D'autre part, c'est seulement à partir de 1975 que les transmigrants Javanais et Balinais arrivent suffisamment informés sur le contrôle des naissances et il n'est souvent pas évident pour eux de pouvoir le suivre en raison du manque d'infrastructure, de personnel et de stock (Charras 1982:209-213 et A. Hameed, *Settlements in Sulawesi Tenggara*, 1976, Directorate General of Transmigration).

2) On a retenu 414 542 transmigrants sans compter les réalisations dans le Lampung qui concernent en principe des personnes déjà installées dans la province. Les chiffres de la Transmigration sont délicats à manier au niveau des années, les différentes sources prenant ou non les projets en cours de réalisation.

3) La catégorie swakarsa regroupent aussi bien ceux qui sont planifiés depuis la région de départ que ceux qui viennent spontanément rejoindre les villages et qui eux ne sont pas prévus par le programme. En 1986, la Banque Mondiale (1988: 171) donnait le chiffre cumulé de 149 411 familles

Notes to the conclusion (continued)

8) Farming in Irian Jaya has not been examined as it is a very specific situation.

9) The two, or even three, crops of rice brought about a higher return from the dry land which could have been planted with crops which are traditionally cultivated in dried up rice fields (corn, soya, peanuts and various beans) rather than cassava. Cattle raising has also become a specialty of those farmers who have no rice fields as well as those with no land (Edmuson W & S, "A decade of village development in East Java", BIES, 1983 (2): 46-59).

10) The province of South Sumatra maintains a high average of state secondary schools (SMP) per head of population (1 for each 28,000 inhabitants), but in the rural zones, however, each school serves an area of 500 km2.

11) Foreign investments primarily for large heavy industrial projects with little industrial spin-off have not been included in the table.

12) Based on census data, the annual rate of growth of the urban population in Lampung is one of the lowest between 1980 and 1990 (2,6% against 5,4% for Indonesia), after having been the highest between 1971 and 1980 (8,4%). For 1980, NUDSP gave a higher number of inhabitants for the provincial capital, including some urbain villages outside the administrative limits. These limits were officially extended in 1982.If used for regional comparison, official data should be taken with care; discrepancies have been noted in the ORSTOM study on Lampung (1989).

Notes de la conclusion (suite)

arrivées spontanément et installées sur les sites encore gérés par la Transmigration (au moins pendant cinq ans), soit légèrement plus que les familles planifiées depuis le début du quatrième plan (1984/1985).

4) Ce mouvement a été étudié par Gloria Davis (1976) et par Muriel Charras (1979) aussi bien dans son développement historique et social que dans son intégration à l'environnement physique et humain.

5) Le voyage comprenait plusieurs étapes et types de transports: de Bali à Surabaya en bus, Ujung Pandang en bateau ou en avion, Palu en avion ou Donggala en bateau, Parigi en bus et la plaine en barque à moteur. Jusqu'en 1986 les liaisons maritimes avec Sulawesi n'étaient pas régulières et obligeaient les familles à rester à l'hôtel un temps indéterminé à Surabaya et à Ujung Pandang.

6) Certaines informations font état d'une colonisation agricole spontanée à partir des anciennes pistes des concessions forestières à Kalimantan.

7) Les chiffres concernant l'Irian Jaya et les Moluques s'expliquent difficilement. Pour cette dernière la situation peut être influencée par le giroflier qui a un cycle de production régulier mais excessivement contrasté sur trois ou quatre ans et par la baisse des prix depuis 1984. Il semblerait que le recensement de la population en 1980 ait largement sous-estimé les habitants de l'intérieur de l'Irian Jaya et l'on peut se poser la question de la fiabilité des données concernant la pauvreté rurale.

8) L'agriculture en Irian Jaya n'est pas traitée car son cas est très particulier.

9) Les deux, voire trois, récoltes de riz ont entraîné une meilleure rentabilité des terres non irriguées qui pouvaient être plantées des cultures traditionnellement effectuées dans les rizières asséchées (maïs, soja, arachides et haricots divers) plutôt que de manioc. L'élevage bovin est devenu aussi une spécialité de ces agriculteurs sans rizières ainsi que des villageois sans terres (Edmunson W & S, "A decade of village development in East Java", *BIES*, 1983 (2): 46-59).

10) La province de Sumatra-Sud maintient une bonne moyenne de collèges publics par rapport à la population (1 pour 28000 habitants) mais par contre un collège dessert 500 km2 en moyenne dans les zones rurales.

11) Dans le tableau, nous n'avons pas retenu les investissements étrangers où dominent les grands projets d'industries lourdes peu industrialisantes.

12) D'après les recensements nationaux, le taux d'accroissement de la population urbaine est l'un des plus faible entre 1980 et 1990 (2,6% contre 5,4% pour l'Indonésie), après avoir été le plus fort pendant la décennie précédente. En 1980, le NUSDP avait corrigé à la hausse la population de la capitale provinciale en incluant la population de certains villages de la périphérie. Les limites administratives de la ville ont ensuite été étendues (1982). Indispensables pour des comparaisons régionales, les données officielles doivent cependant être utilisées avec précaution, les résultats issus des études menées par l'ORSTOM ayant montré certaines divergences (1989).

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Bibliographic research on the little-known topic of spontaneous migration began at the outset of the study. The step by step search for relevant documents began with a general survey of definitions and typologies of migratory movements and extended to include data on the regions studied. References were sought in the various documentation centers in Jakarta. The scarcity of first-hand information on spontaneous migration and settlements in rural areas required that we sift through a mass of documents, many of which turned out to be of marginal interest for the study. Out of the 830 documents consulted and entered into the original database, only 440 have been selected for an annotated bibliography (with location and reference numbers provided) which will be published elsewhere (with the PPT/LIPI).

The present reference bibliography has been shortened : all short press releases have been deleted as well as many official reports. Some of the documents concerning the Swakarsa Transmigration Program without direct link to the study have nevertheless been retained to provide the definition and objectives of this program.

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Cartographic documents and thematic maps

Marc Pain

Documents used

1 . Basic maps

Indonesia has several cartographic coverings. Some regions have been systematically inventoried during the colonial period. At the very beginning of the century, highly precise maps were made of Java and Madura at the scale of 1:50,000. Later, practically all of Sumatra was covered at 1:100,000 during the 1930's. These documents were redone at 1:250,000 and partially updated in the HIND Series, published by the War Office in 1945. Most of these maps are available at the Record Office, at the following address: Arsip Nasional, Jl. Ampera Raya, Cilandak Timur, Pasar Minggu Jakarta 12560.

Since the Second World War, cartographic work has continued with the goal of drawing up basic maps of vast and little-known areas of Kalimantan, the Indonesian part of Borneo, and more recently, Irian Jaya, which has become a priority. The documents now available can be consulted and acquired, under certain conditions, at BAKOSURTANAL (National Geographical Institute), Jalan Jakarta-Bogor km 46, Cibinong-Bogor.

■ Older topographical maps

- SUMATRA, *Topographische Dients,* 1:100,000, maps drawn from 1915 to 1938

- *Overzichtskaart van Sumatra,* 1:250,000, 1924-1932

- *GSGS 4278* (1st ed.); *HIND 1042 (AMS T 511)* 2nd ed. Published by the War Office, 1945 - Survey Directorate HQ. ALFSEA 1946
Maps used: Djambi, Nipahpandjang, Sarolangoen, Sekajoe, Palembang, Muntok, Benkoelen, Lahat, Praboemoelih, Simpangtiga, Mana, Bintoehan, Menggala, Kotaagoeng, Teloekbetoeng

Indications as to land relief (equidistant contours of 100 or 50 m), administrative boundaries, lines of communication (roads, trails, rivers), partial information on agricultural crops, forests, location of villages.

- *Joint Operations Graphic - Ground* 1:250,000, series SB 48 D. Survey, Ministry of Defense - United Kingdom 1969
General maps that may be used at the regional level, giving indications concerning relief and lines of communication. Representation of habitat is summary and clearly outdated in some cases.

■ Recent topographical maps

MAPS AT 1:50,000

The island of Sumatra, where the study takes place, benefits from almost complete topographical coverage at the scale of 1:50,000. These maps were drawn up with aid from Australia and under the responsibility of the Army, JAWATAN TOPOGRAFI TNI - AD (JANTOP) which since 1986 has become DIREKTORAT TOPOGRAFI - AD (DITOP). Their acquisition is dependent on an official security clearance which must be requested at the BAIS ABRI, JALAN DR SAHARJO, No. 268, Jakarta, with a copy sent to the Kepala ASPAM KASAD, Jalan Veteran, No. 5, Jakarta, and to the Direktorat DI. TOP. - AD, Jalan Gunung Sahari, No. 90, Jakarta.

The maps are of satisfactory quality and they give good indications of relief and hydrography, habitat, road network and the main types of land use (forests, rice fields, etc.). Their precision was often verified in the field.
Unfortunately, these maps are not yet available for all areas in the printed paper form, thus one sometimes has to consult blueprints or temporary documents. Thus for the provinces of Lampung, Sumatra Selatan and the southern half of Bengkulu where the studies were centered in 1990 we used:

- printed maps:	125
- maps available in ozalid print form:	26
- maps available in temporary sketch form:	31
- unavailable maps:	5
- lack of information:	23

(refer to the detailed list and location sketch of topographical maps used Fig. 53).

Maps were also drawn up based on aerial photography in 1969 and 1976. The data are therefore old, and unfortunately outdated in many cases due to the great changes caused by migratory movement in a region where the population figure has gone from less than 5 million inhabitants in 1961 to more than 12 million in 1990 (the provinces of Lampung, Sumatra Selatan and Bengkulu). The photographs are available at BAKOSURTANAL. The coverage is complete for 1976, but the quality of the documents sometimes leaves much to be desired. Some photographs are unusable.

MAPS AT 1:250,000
Digital Database of Sumatra 1:250,000 (project LREP- BAKOSURTANAL) Bogor, 1989

A vast enterprise of digitalization and updating of the basic map at 1:250,000 was undertaken in the mid-1980's (LREP-BAKOSURTANAL Project). Digitalization is based on existing 1:50,000 maps which are reduced and assembled in groups of 24, resulting in a rectangle of 1°Latitude and 1°30' Longitude. This basic map can be acquired at BAKOSURTANAL on paper print or on a stable support. Contours, hydrographic network and roads can be found on each print. A major drawback of these maps, however, is that habitat and forests are not represented.

Names of maps covering the study area: Fig. 54

1014 Jambi		
0913 Bangka	1013 Palembang	1113 Pangkalpinang
0912 Bengkulu	1012 Lahat	1112 Tg Selapan
0911 Manna	1011 Baturaja	1111 Menggala
1010 Kotaagung	1110 Tanjungkarang	

Adjustments, necessary because the joints between maps are not always perfect, and updating are currently being carried out. Updating is a real problem because the digitalized data are from 1969 and 1976. The only way to obtain recent information at the regional level was to refer to satellite and radar images where available.

2. Satellite and radar imagery

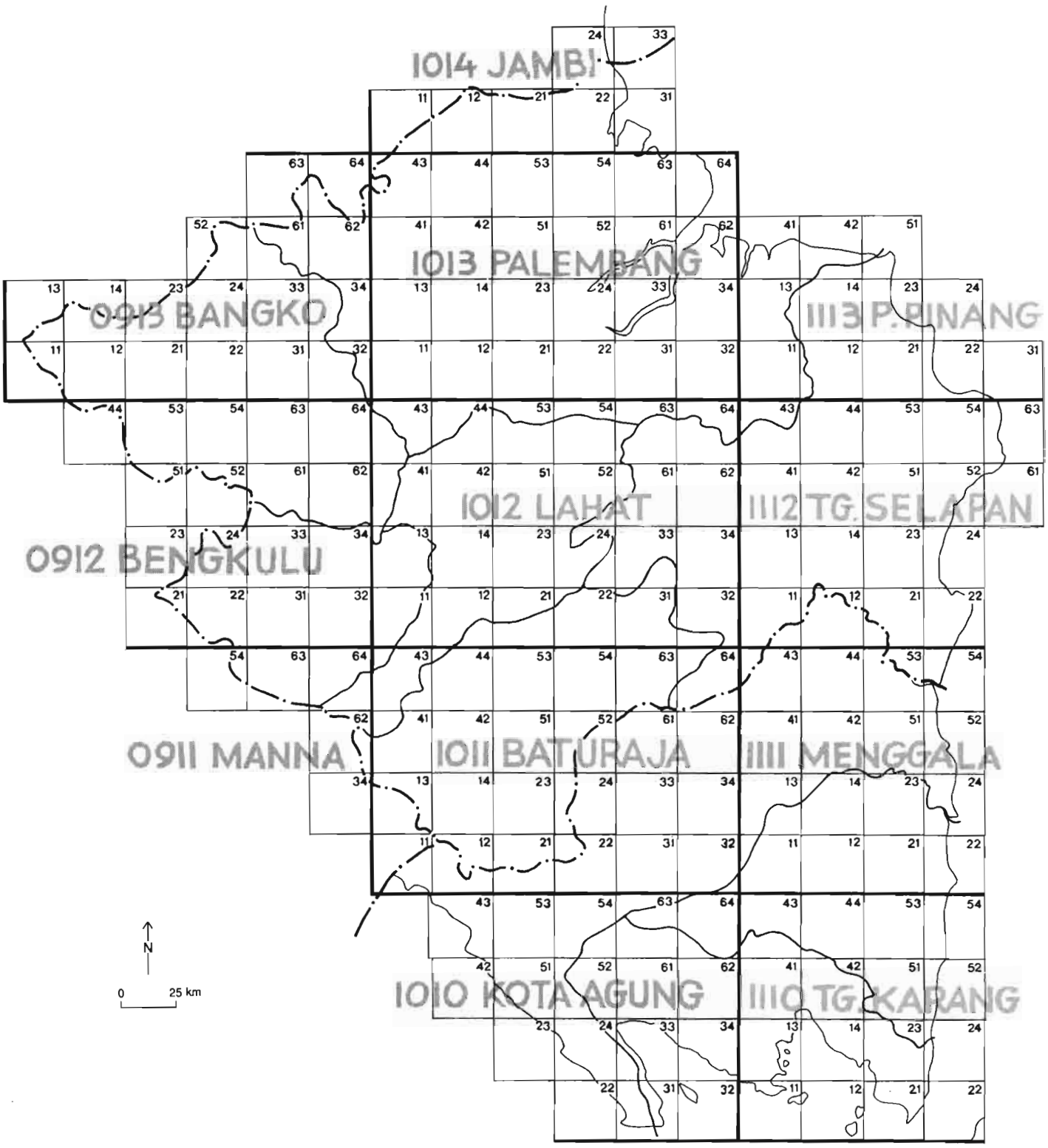
Satellite and radar images distributed by the BAKOSURTANAL can only be acquired following a security clearance, a rather long process that is similar to the clearance that is now necessary for acquiring topographical maps.

■ SPOT images

Recently, BAKOSURTANAL has begun collecting SPOT images covering Indonesia's territory. The documents are available in prints using false color at the scale of 1:250,000 and they can be enlarged to 1:100,000. The *Spontaneous Transmigration Project* benefitted from the existence of an almost complete covering of South Sumatra province, good legibility on the whole (Fig. 55). Many of the images are excellent. Remarkable for a region so close to the equator, cloud cover is totally absent on a large number of the photos.

In order to dispose of recent data over a significant portion of the study region, the project acquired 12 prints at 1:250,000. The images provide a diagonal strip one photo wide (65 km), from south to north covering the mountainous regions of Danau Ranau to the Musi Delta, downriver from Palembang, and from east to west, the swamp areas bordering on the Sea of Java and the mouth of the Mesuji to the hills overlooking the town of Lahat, situated at the foot of the Barisan Range.

Fig. 53
INDEX OF TOPOGRAPHIC MAPS (1 : 50 000)
INDEX DES CARTES TOPOGRAPHIQUES (1 : 50 000)



Sources - *Sources*
Bakosurtanal 1990

M P / y w 1990

INDEX : 0911 MANNA

32 Bintuhan (1976) ***
34 Tanjung Iman (1976) *
63 Pajar Bulan (1976) *
64 Kota Agung (1976) *
62 Sukarami (o)

INDEX : 0912 BENGKULU

11 & 12 Bengkulu (1977) ***
21 Simpang Perigi (1977) ***
22 Tanjung Raya (1977) ***
23 Kepahiang (1977) ***
24 Talang Padang (1977) ***
31 Muara Pinang (1976) *
32 Air Dingin (1976) ***
33 Tebing Tinggi (1976) **
34 Muara Mandras (1976) *
44 Ujung Tanjung (1976) **
51 Curup (1977) ***
52 Lubuk Linggau (1977) ***
53 Nepa Melintang (1976) **
54 Terawas (1976) **
61 Marga Tunggal (1977) ***
62 Pangkalan Tarum (1976) *
63 Muara Kelingi (1976) **
64 Mambang (1977) ***

INDEX : 0913 BANGKO

11 G. Seblat (1976) *
12 G. Hijau (1976) *
13 Tanjung Benuang (1976) **
14 Napal Melintang (1976) **
21 Sukaraja (1976) **
22 Tanjung Bringin (1976) **
23 Rantai (1976) **
24 Surulangun (1976) **
31 Muara Megang (1976) **
33 Renah Halai (1976) *
34 Kemang (1976) *
52 S. Klumpang (1976) **
61 B. Harileko (1976) **
62 Lubuk Bancala (1976) **
63 Tanah Abang (1981) ***
64 Kota Tengah (1981) ***

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53 Liwa (1976) *
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63 Air Naningan (1976)*
64 Padang Ratu (1969) ***
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23 U. Sigin (-) (-)
24 Bengkunat (-) (-)
31 Tampang (-) (-)
32 P. Tabuan (-) (-)
33 Kagungan (-) (-)
34 Putihdoh (-) (-)
42 Ujung Tapuan (-) (-)
51 Banjarnegara (-) (-)
52 Sanggi (-) (-)
61 Kota Agung (-) (-)
62 Pringsewu (-) (-)

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12 Banding Agung (1969) ***
13 Pulau Beringin (1976) ***
14 Teluk Agung (1969) ***
21 Kenali (1969) ***
22 Pasar Banjit (o)
23 Muara Dua (1969) ***
24 Kasui (1969) ***
31 Bukit Kemuning (1969) ***
32 Kota Bumi (1969) ***
33 Baradatu (1969) ***
34 Pakuan Agung (1969) ***
41 Tanjung Beringin (1976) ***
42 Blambangan (1976) *
43 Muara Dua (1976) ***
44 Pengandonan (1969) ***
51 Simpang (1969) ***
52 Martapura (1969) ***
53 Baturaja (1969) ***
54 Kurungan Nyawa (1969) ***
61 Pakuan Ratu (1969) ***
62 Negeri Besar (1969) ***
63 Gumawang (1969) ***
64 Sribantolo (1969) ***

INDEX : 1012 LAHAT

11 Lahat (1976) ***
12 Tanjung Enim (1976) ***
13 Banjarsari (1976) *
14 Muara Enim (1976) *
21 Gunung Meraksa (1976) ***
22 Peninjauan (1969) ***
23 Sugihan (1976) *
24 Kota Baru (1976) *
31 Betung (1969) ***
32 Cahya Maju (1969) ***
33 Muara Kuang (1969) ***
34 Tanjung Lubuk (1969) ***
41 Sungai Baung (1976) *
42 Gunung Megang (1976) *
43 Jirak (1976) *
44 Tebing Bulang (1976) *
51 Prabumulih (1976) *
52 Lembak (1969) ***
53 Air Hitam (1976) *
54 Siban (1976) *
61 Tanjung Batu (1969) ***
62 Kayu Agung (1969) ***
63 Kertapati (1969) ***
64 Plaju Darat (1969) ***

INDEX : 1013 PALEMBANG

11 Mangun Jaya (1977) ***
12 Sekayu (1977) ***
13 Babat (o)
14 Keluang (1977) ***
21 Babat (1976) *
22 Pangkalan Balai (1976) *
23 Sungai Lilin (1976) *
24 Teluk Tenggulang (1976) *
31 Palembang (1969) ***
32 Boom Baru (1969) ***
33 Kuala Puntian 1969) ***
34 Muara Telang (1969) ***
41 Hulu Sungai Bayat (o)
42 Peninggalan (1976) **
43 Bayung Lencir (1976) **
44 Muara Mendak (1976) **
51 Bentayan (1976) *
52 Teluk Kubu (1976) **
53 Muara Merang (1976) **
54 Tanah Abang (1977) ***
61 Penuguan (1977) ***
62 Sungsang (1969) ***
63 Sungai Sembilang (1977) ***
64 Sungai Bingin (1977) ***

INDEX : 1110 TANJUNG KARANG

11 Kiluan (-)
13 Padang Cermin (-)
12 Pulau Legundi (1969) ***
14 Tanjung Agung (1969) ***
21 Penengahan (1969) ***
22 Bakauheni (1969) ***
23 Kalianda (1969) ***
24 Ketapang (1969) ***
41 Gedongtataan (1969) ***
42 Tanjung Karang (1969) ***
43 Bangunrejo (1969) ***
44 Metro (1969) ***
51 Jabung (1969) ***
52 Labuhan Maringgai (1969) ***
53 Sukadana (1969) ***
54 Brajaluhur (1969) ***

INDEX : 1111 MENGGALA

11 Bandar Jaya (1969) ***
12 Seputih Raman (1969) ***
13 Gunung Batin (1969) ***
14 Darma Agung (1969) ***
21 Rumbia (1969) ***
22 Tanjung Pulau Sekopong (1969) ***
23 Seputih Surabaya (1969) ***
24 Cabang (1969) ***
41 Panaragan (1969) ***
42 Bakung Udik (1969) ***
43 Labuan Bati (1969) ***
44 Talang Batu (1969) ***
51 Gunung Besar (1969) ***
52 Kuala Tulang Bawang (1969) ***
53 Sungai Sidang (1969) ***
54 Bagan Kuala Mesuji (1969) ***

INDEX : 1112 TULUNG SELAPAN

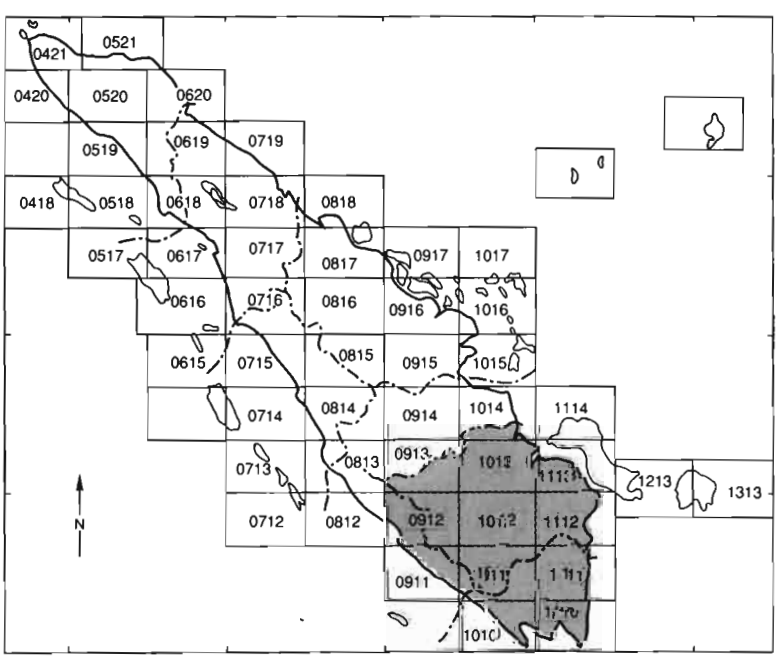
11 Pematang Panggang (1969) ***
12 Wiralaga (1969) ***
13 Pulau Geronggang (1969) ***
14 Sungai Menang (1969) ***
21 Gajah Mati (1969) ***
22 Tanjung Lumut (1976) *
23 Sungai Jeruju (1969) ***
24 Bagan Kuala Sungai P. (1969) ***
41 Sungai Bungin (1969) ***
42 Simpang Tiga (1969) ***
43 Pampangan (1969) ***
44 Tulung Selapan (1969) ***
51 Muara Tangkalesa (1969) ***
52 Sungai Lumpur (1976) *
53 Buntuan (1969) ***
54 Bagan Tengah (1969) ***
63 Tg. Jatigombol (1969) ***

INDEX : 1113 PANGKAL PINANG

11 Sebokor (1969) ***
12 Simpang Sungai B. (1969) ***
13 Karang Anyar (1969) ***
14 Dusun Pak Biban (1969) ***
21 Sungai Riding (1969) ***
23 Tanjung Tiram (1969) ***
24 Tanjung Tapah (1969) ***
31 Batu Betumpang (1969) ***
41 Senang (1969) ***
42 Dusun Serdang (1969) ***
51 Kuala Sugihan (1969) ***

***	printed map
**	map avalaible in ozalid print form
*	map avalaible in temporary sketch form
(o)	unavalaible map
(1976)	map editing
(-)	lack of information

Fig. 54 INDEX OF BASIC MAPS - *INDEX DES CARTES DE BASE (1 : 250 000)*



studied maps - *cartes étudiées*

0911 MANNA
0912 BENGKULU
0913 BANGKO
1012 LAHAT
1010 KOTA AGUNG
1011 BATURAJA
1013 PALEMBANG
1014 JAMBI
1110 TANJUNG KARANG
1111 MENGGALA
1112 TG. SELAPAN
1113 PULAU PINANG

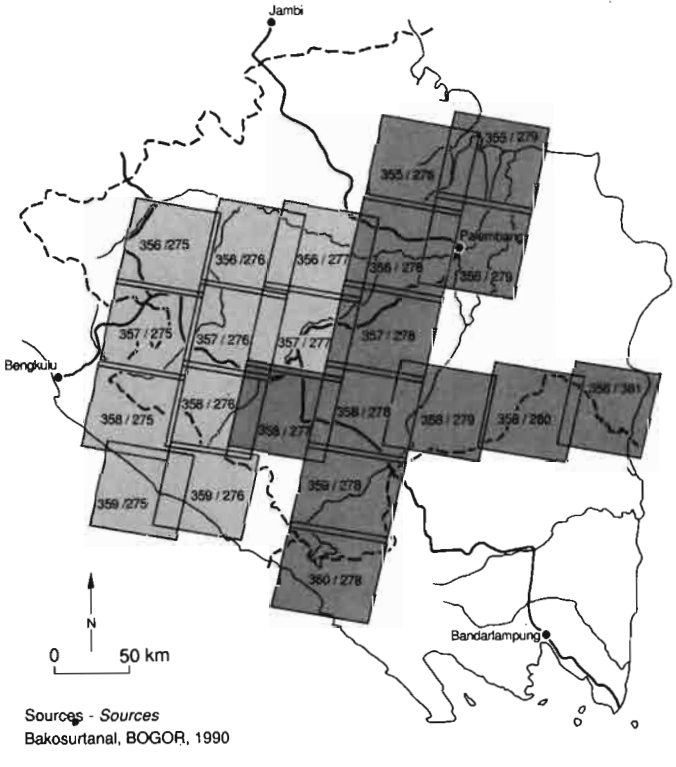
Sources - *Sources*
Bakosurtanal 1990

Subsequently, circumstances fortunately enabled us to consult recently available images covering a vast portion of southeastern Sumatra, in a solid block over 200 km on each side. This was of special interest due to the extensive agricultural settlement taking place. In the following list are noted the references and principal characteristics of the images used (false color paper print):

E	excellent, no cloud cover, no veil, perfect legibility
B	good, but having a minor defect (some cloud cover, an illegible portion)
M	average, partially usable (much cloud cover, large veil)
NO	unusable

Ref.	date	remarks
275/359	21.06.88	**E**, excellent
275/358	21.11.87	**B**, cloud cover in the west
275/357	21.11.87	**M**, cloud cover on most of the photo
275/356	26.11.87	**B**, veil and sparse cloud cover
275/355	-	**M**, some excellent parts
276/359	09.07.87	**B**, cloud cover in the northwest
276/358	21.11.87	**M**, cloud cover in the southeast and north
276/357	16.11.87	**B**, veil
276/356	26.11.87	**B**, sprinkling of clouds, northwest corner unusable in parts
277/358	20.08.86	**E**, excellent
277/357	20.08.86	**E**, excellent
277/356	20.08.86	**E**, excellent
278/360	21.07.86	**E**, excellent
278/359	21.07.86	**E**, excellent
278/358	21.07.86	**E**, excellent
278/357	21.07.86	**E**, excellent
278/356	21.07.86	**E**, excellent
278/355	-	**E**, excellent
279/358	21.11.87	**B**, cloud cover on the north edge
279/357	-	**B**, cloud cover, veil
279/356	21.11.87	**B**, cloud cover in the southeast
279/355	21.11.87	**M**, partially usable, some excellent parts
280/358	01.05.88	**M**, cloud cover
280/357	-	**M**
281/359	-	**M**, west excellent, east unusable
281/358	26.07.86	**M**, north unusable

Fig. 55
INDEX OF SPOT SATELLITE IMAGERY
INDEX DES IMAGES SATELLITE SPOT



Sources - *Sources*
Bakosurtanal, BOGOR, 1990

SPOT satellite imagery purchased for the project
images acquises pour l'étude

SPOT satellite imagery for what a possibility of consultation was allowed
images disponibles qui ont pu être consultées

■ Radar images

The images distributed by BAKOSURTANAL, produced in 1988 by PT. INTERA TECHNOLOGIES, Star-1 Synthetic Aperture Radar System, cover the entire island of Sumatra. They are available at the scale of 1:250,000 in the form of film of variable length and 18 cm large. These documents can also be found at PT Indo Georeka Nusantara, Kuningan Plaza, South Tower, Room 200, Jl. H.R. Rasuna Said, Jakarta 12940.

Recent images are useful for the study of relief, vegetation and land use. Roads, villages and towns are difficult to make out.

3. Thematic documents

In order to bring the data contained in the topographical maps up to date and put together the thematic documentation on the provinces studied, a systematic collection was made of all available maps. The documents collected are of varying quality. Some are unusable due to their approximate nature and their use of inaccurate source maps. Nevertheless, many are based on field studies or on accurate data. Despite slight errors, they are often the only sources available and they have information which, after checking, can be of great value.

■ Administrative maps

Each province has general maps, in color at the scale of 1:250,000 or 1:500,000, using a simple base where the contour is represented in the classical manner using shades of color for different altitudes. Administrative boundaries and the names of main towns are marked. A recent map (1990) at 1: ,000 shows the four provinces of the south of Sumatra, *Sumatra Bagian Selatan* (Lampung, Sumatra Selatan, Bengkulu and Jambi). These very general documents are inaccurate and contain major errors (for example, spelling errors, misplaced districts or even the representation of inexistent districts as can be seen in the south of Bengkulu province). All the same, below the map they contain a useful list of the district *(kabupaten)*, sub-district *(kecamatan)* and town names classified according to their administrative status.

One can also find in the regional development services (BAPPEDA) or the Ministry of the Interior agricultural section (AGRARIA, renamed Badan Pertanahàn Nasional, Departemen Dalam Negeri) ozalid prints of the administrative maps drawn up at the same scale as those just mentioned. These documents, though put together and drawn with care, do not always have the precision hoped for. From these sources, the "Administrative Boundaries" map was published in 1989 by the Ministry of Public Works (Departemen Pekerjaan Umum) for the provinces of Sumatra Selatan and Bengkulu (Musi River Basin Study, color map at 1:500,000, offering information on boundaries and human settlement, transport-infrastructures, industrial and electrical facilities, and protected forest).

In fact, these regions suffer from a serious absence of accurate documents of medium and large scale, for defining administrative boundaries. Detailed maps drawn up by *kecamatan* by AGRARIA enable more precise analysis. The JANTOP and DITOP topographical maps are also helpful, but they remain imprecise where the boundaries are not based on physical features such as rivers or a water parting. Boundary lines on these maps are most often approximate and rarely is any indication given where information is lacking.

Under these conditions, it is understandable that major variations are encountered in the planimetry results for the provinces. The area of the province of Lampung varies depending on the sources from 33 000 km^2 to 35 000 km^2. To remedy this situation, a special program to draw up new administrative maps for the whole of Sumatra should be launched by BAKOSURTANAL.

■ Soil maps

- H. Jahja, Suhadi, R. Dudal, *Peta Tanah Eksplorasi, Sumatera Bagian Selatan,* Lembaga Penelitian Tanah dan Pemupukan, 1:1,000,000, 1964.

Soil map covering the south of Sumatra, from the Sunda Strait (6_ S) to the equator. The major soil types are indicated as a function

of the geological nature of the substratum. The classification, in English and Indonesian, follows the old FAO terminology.

- Center for Soil Research, *Land Resource Evaluation and Planning Project (LREP), Soil Data Base Management*, maps at 1:250,000, 1989.
Printed sheets: Tangjungkarang, Kota agung, Menggala, Toboali
Temporary ozalid prints were kindly offered by the research center: Manna, Bengkulu, Lahat, Baturaja, Palembang.

The maps, together with guides, give the location of landscape and pedological formations. They take into account the model, slope and nature of the soil along with its geological nature. At the scale of 1:250,000, they furnish a comprehensive picture of the physical environment. They are among the achievements of the geographical information system set up by the LREP Project, finished in 1990 for the island of Sumatra. Based on American Soil Taxonomy, the maps are good investigative documents that permit the recognition of the principal pedological characteristics of the region.

■ Land use and vegetation maps

- *Peta Liputan Tanah*, 1:250,000, 1985, BAKOSURTANAL, Bogor.

The most recent information comes from land use maps drawn up at 1:250,000 by the BAKOSURTANAL. These maps are based on the analysis of Landsat data from the beginning of the 1980's. The boundaries of each vegetational formation is marked by perimeters and the formation is given a letter. Though the maps are not easy to read and contain certain approximations, the document gives an acceptable picture of the forest and the main types of land use. Nevertheless, the maps must be compared with those drawn up before 1980 and with field studies to be used properly.

- *RePPProT* maps maps at 1:250,000 (see the atlas section)

- maps from *Badan Pertanahan Nasional* (formerly *AGRARIA)*

The soil use maps drawn up by the agricultural services generally use a scale of 1:50,000, or more recently, 1:25,000. They are based on field checks and aerial photography. They contain much precise and useful information on administrative boundaries, the number and location of villages, the location of secondary roads and trails and, of course, the main types of soil use classified as follows: rice fields *(sawah)* with the number of harvests per year, dry field cultivation *(tegalan, perladangan)*, plantations with the type of plantation *(perkebunan, kebun campuran)*, forests *(hutan)* by category, and fallow land covered by *Imperata cylindrica (padang rumput alang-alang)*.

The maps are on squared paper (squares measure 1 cm on each side) in order to be used by various departments for planimetry of land use by type. Detail maps are then generalized, reduced and assembled at the scale of 1:125,000 or 1:250,000.

Good investigative tools, these maps are often the only documents easily found in government offices in the field. Unfortunately, the quality varies widely from map to map. Though some are obviously the product of serious data collection, others are imprecise or even give totally false information. One example is where the maps show primary forest in the place of cultivated land, an error which conceivably could be understandable for small parcels but certainly not for vast areas.

- *Carte Internationale du Tapis Vegetal - International Map of the Vegetation*
Sud de Sumatra - Southern Sumatra, SEAMEO-BIOTROP, Y. Laumonier *et al.*, 1983

Map having a scale of 1:1,000,000 representing vegetational formations by regional groups determined by altitude. These groups are: lower montane forest (>1000 m), the same of average altitude (300-1000 m), or of low altitude (<300 m); semi-deciduous forest of the central plains and coastal peat swamp forest. Secondary formations, mainly arborescent, are grouped under the label "mosaic of derived types."
The main map is accompanied by a series of maps offering indications of the physical environment (geology, soils, climate), agriculture and natural environment, along with zoogeographic barriers and units.

■ Forest maps

MAPS OF FOREST CLASSIFICATION:

- General maps covering all provinces at 1:250,000 and 1:500,000:

Departemen Kehutanan (Jakarta), Kantor Wilayah Kehutanan (Bandarlampung, Palembang, Bengkulu), Peta Dasar Propinsi

Dati Lampung, Sumatra Selatan, Bengkulu

- Maps per district (kabupaten) mainly for the province of Sumatra Selatan: Peta Rencana Pengukuhan dan Penatagunaan Hutan, 1986/1987, Musi Rawas, Muara Enim, Dati II Lahat, 1:250,000

- Detail maps based on topographical maps (South Sumatra):

Ninety-eight (98) maps giving the classification or status of forested land, generally using a scale of 1:100,000. In addition, since most of these maps are based on colonial-era topographical maps, they give an idea of the extent of the forests in the years 1930-1940 as well as an additional reference for locating villages existing at the beginning of the century.

The maps contain the following information concerning forest classification:

- Hutan Suaka Alam dan Hutan Wisata / natural reserve and recreational forest
- Hutan Lindung / protected forest
- Hutan Produksi Tetap / production forest
- Hutan Produksi Terbatas / limited production forest
- Hutan Produksi yang dapat dikonversi / forest to be reconverted following exploitation
- Area in hectares and in percentage of the total land area of the province for each of the various categories of forest

MAPS OF FOREST CONCESSIONS AND FOREST CLAIMS

Peta "Perkembangan Pengukuran" Prop. Dati I Lampung, Peta Propinsi Dati I Bengkulu, Peta Prop. Dati I Sumsel, 1:500,000 including a list of concessions printed on the map or on a separate sheet

THEMATIC MAPS

Thematic maps representing the forests according to their classification and areas reserved for transmigration, agro-industrial plantations and forest concessions: *Kantor Wilayah Kehutanan, Propinsi Sumatra Selatan, Peta Kawasan Hutan, Percadangan Tanah Lokasi Perkebunan dan Transmigrasi,* 1:500,000, 1986.

■ Plantation maps

LAMPUNG PROVINCE :

The study is based on the work already completed in the Atlas of Lampung (ORSTOM-DEPARTEMEN TRANSMIGRASI) and on field research carried out between 1986 and 1988.

SOUTH SUMATRA PROVINCE :

1) *Peta Proyek Perkebunan di daerah Sumatra Selatan,* Kanwil Perkebunan Palembang, 1:500,000, undated document. Information given:

- Lokasi Proyek PRPTE dan realisasinya
- Pencadangan Lokasi Proyek PKKRI (SRDPI)
- Proyek PIR Berbantuan/PIR Khusus
- Pencadangan Lokasi (Calon Lokasi) PIR
- PT Perkebunan (PTP) dan Perkebunan Besar Swasta (PBS)
- Proyek Transmigrasi
- Proyek Transmigrasi yang telah diserahkan ke Pemda TK I Sumsel.

2) *Kantor Wilayah Kehutanan, Propinsi Sumatra Selatan, Peta Kawasan Hutan, Percadangan Tanah Lokasi Perkebunan dan Transmigrasi,* 1:500,000, 1986

BENGKULU PROVINCE :

Peta Penggunaan Lahan Tanah Produksi Konversi dan Peruntukan Lain, Kanwi Perkebunan Bengkulu, 1:500,000, undated document also indicating the location of Transmigration centers, mines, forest concessions and a list of the names of plantations with their area.

■ Maps prepared by the Ministry of Public Works

Technical maps of roads and irrigation and drainage canals, etc.

The maps available at Public Works *(Pekerjaan Umum)* are of variable quality. The maps range from very large-scale maps to small-scale regional maps. They constitute, however, one of the most important sources, being easy of access and regularly updated by departments having the best engineers in Indonesia.

■ Maps prepared by the Ministry of Transmigration

LAMPUNG PROVINCE :

The study is based on the work already completed in the Atlas of Lampung and on field research carried out between 1986 and 1988.

SOUTH SUMATRA PROVINCE :

- *Peta Lokasi Pemukiman Transmigrasi,* Kanwil Transmigrasi, Palembang, 1:500,000, undated document updated with the state of Transmigration centers (Laporan Bulanan Kependudukan, seksi sosial budaya) as of April 1990.
- Maps of individual projects are drawn up using various scales; the available maps, outside of detailed large scale maps, are most often sketches or reduced prints which are not always precise. While the information concerning the number of family heads that are to be settled in each project are more or less comparable to the figures given by other available sources, settlement location is rather vague in many cases. The scales are often in error.

BENGKULU PROVINCE :

Penempatan Transmigran di Propinsi Bengkulu, 1:500,000, Kanwil Departemen Transmigrasi, Bengkulu, 1989-1990. State of Transmigration in the province, with a list of the names of each project, the year of creation and the number of family heads settled.

■ Thematic works and atlases

ATLAS VAN TROPISCH NEDERLAND (1938)

Magnificent reference work, printed with high quality techniques in the Dutch tradition, edited in 1938 (Koninklijk Nederlandsch Aardrijkskuding Genootschap, Amsterdam), Southern Sumatra Bl.14, 1: 1,500,000

ATLAS EDITED BY UGM (1978)

Compiled by: National Coordination Agency for Surveys and Mapping in cooperation with the Faculty of Geography, Gajah Mada University, Yogyakarta

Themes treated in the maps at 1:2,500,000, with English and Indonesian legends:

- Administrative divisions - *Administrasi*
- Vegetation - *Vegetasi*
- Geology - *Geologi*
- Roads - *Jaringan Jalan*
- Exploration land - *Tanah Explorasi*
- Production of main food crops outside of paddy / *Produksi Tanaman Bahan Makanan Pokok selain padi*
- Population distribution - *Penyebaran Penduduk*
- Geomorphology - *Ikhtisar Geomorfologi*
- *Penyebaran Bahan Galian*

- Paddy: harvested area and production /
  Luas Panen dan Produksi Padi
- Topography - *Topografi*
- Land cover - *Liputan Lahan*

ATLAS AGRARIA

The Palembang agricultural department put together an atlas which reproduces in a more general format the land use maps by *kecamatan* and various information concerning agricultural development in the region. This document, produced on the provincial and the *kabupatan* scale, gives a good overall view. It remains inaccurate, however, despite the considerable effort spent on the project.

It is difficult to comment more because only a few maps were consulted. Despite the official letters authorizing the consultation of these documents available in the Government bureaus, access to the documents was denied. The researchers tried several times but the head of the provincial office repeatedly refused to provide the documents.

MUSI RIVER BASIN STUDY

This document established by the consultants of the BCEOM, DOXIADIS and KAMPAX in 1989 is no doubt the most recent complete document available. It is the result of a major study using SPOT images available for the region and field surveys for the whole of the Musi River basin, which covers practically the whole of South Sumatra province.

The work adopts a scale of 1:750,000. It is not available on the market.

List of plates consulted for the research program:
Color:
- Present Land Use
- Land Resources
- Evaluation Map
- Soil Association
- Geological Map

Blueprint:
- Master plan of irrigation and drainage projects; proposed development
- Hydrometric Network
- Cyclodiagram Map
- Hydrochemical Map
- Geohydrological Regimes
- Location Map of: Shallow well, drilled well, spring and resistivity sounding
- Location of domestic and industrial water supply facilities
- Parent Material
- Land Forms
- Aquaculture: Present situation 1988
- Aquaculture: Future situation 2008
- Location Map of river training and flood control works
- Flight index map of aerial photos
- Cross-section and river training location
- Location of existing bench marks and triangulation points.

ATLAS OF THE PROVINCE OF LAMPUNG

Transmigration et migrations spontanées - Transmigration and Spontaneous Migrations, Propinsi Lampung, Sumatera, ORSTOM-DEPARTEMEN TRANSMIGRASI, Paris-Jakarta ,1989

This is a collective work accompanied by twenty thematic plates at various scales dealing with the province of Lampung with legends in French, English and Indonesian.

List of plates:

1. Carte de localisation
Reference Map
2. Données climatiques
Climatic Data
3. Avant la Transmigration
Before Transmigration
4. Peuplement et occupation de l'espace
Settlement and Land Use
5. Répartition de la population
Population Distribution
6. Evolution de la population
Evolution of the population
7. Population: density and structures
Density and Structures
8-9. Groupes humains
Human Groups
10-11. Occupation du sol
Land Use 1969 1980/1985
12-13. Systèmes de production
Farming Systems
Pringsewu Way Jepara
14. Systèmes de production et de revenus familiaux
Farming Systems and Household Incomes
15. Terroirs et habitat villageois
Rural Settlement
16. Villes relais
Secondary Urban Centres
17. Bourgs et petites villes
Market Towns and Secondary Urban Centres
18. Réseau d'irrigation et de drainage
Irrigation and Drainage Networks
19. Voies de communication et accessibilité
Communication Network and Accessibility
20. Propositions d'aménagement régional
Proposals for Regional Development

REGIONAL PHYSICAL PLANNING PROGRAMME FOR TRANSMIGRATION (RePPProt)

The regional maps

This is an enormous work of compilation covering the whole of Indonesia following a request from the Direktorat Bina Program, Direktorat Jenderal Penyiapan Pemukiman, Departemen Transmigrasi, to the Land Resources Department of the Overseas Development Natural Resources Institute, Overseas Development Administration, United Kingdom. The maps use a scale of 1:250,000. They are based on existing official documents and deal with several major subjects, among them land use, land systems and land status at the end of the 1980's. The documents were updated through field surveys and compiled from satellite and radar imagery and from aerial photography.

Drawn using a rudimentary foundation (including main roads, towns and some settlements), the thematic data are presented using a very simple system of colored bands or boundaries and letters (HSA for Hutan Suaka Alam dan Hutan Wisata, for example). Each island is presented through a series of general maps which deal with climatic conditions, hydrographic network and watershed boundaries, thus enabling an evaluation of irrigation potential. Three series of maps then follow :

- Land Status / Recommended Development Areas
- Present Land Use and Forest Status
- Land Systems and Land Suitability

Very detailed legends in English and Indonesian give information on the land system, area in km^2 for each type, land form (general

description, parameters, cross section), lithology, soil association, climatic range, land suitability, reliability (land system limitations).

RePPProt has often been criticized for its lack of precision and errors, but the enterprise was a vast one. Quite often the errors came from the documents available to the authors. The main advantage of the maps is their uniformity, comparable for all of Indonesia. Of course the maps might appear incomplete or partial. They are however a foundation that could be completed, rectified and enriched in the future.

The Land Resources of Indonesia, A National Overview (1990)

These RePPProT maps were brought together in a national atlas. Due to its size the atlas is somewhat difficult to handle. The scale is 1:2,500,000. This is the first atlas of its size (14 maps, unfolded size: 220 X 90 cm, available at BAKOSURTANAL).

List of atlas plates:

1. Geology
2. Mineral and Energy Resources
3. Mean Annual Rainfall
4. Agro-Climatic Zones
5. Groundwater potential
6. Physiographic Types
7. Physiographic regions and potential development areas
8. Soils
9. Land cover and suggested revised forest zoning
10. Land use and 1982 forest classification
11. Environmental hazard
12. Transmigration sites settled before end of Pelita IV (April 1989)
13. Population distribution
14. Regional Development

Carrying out of Southern Sumatra thematic maps

1. Drawing up the basic map

Prints of the digitalized maps of Sumatra at 1:250,000 can be ordered on paper or on stable plastic support. They served as the basis for the map foundation used for research on South Sumatra province. These prints provide the coastline, hydrographic network, roads and contour lines, each bit of information represented by a different color. The documents were reduced to 1:500,000, the scale used for the thematic maps that were to illustrate the study, assembled and mounted on squared paper with the latitudes, longitudes and boundaries of the topographical maps at 1:50,000.

Topographical maps, themselves reduced to 1:500,000, are used to improve digitalized maps in two ways. First of all, they serve as the reference to correct errors contained in prints resulting from digitalization, for the most part roads or waterways which do not always fit well from one map to another. Second, they filled in one important lacunae, the absence of any representation of habitat. Even dated, the data from 1969 and 1976 allows us to see the overall population distribution and settlement patterns. Thus, following interpretation and simplification, towns, villages and hamlets could be represented. Dispersed habitat, unconsolidated or in the process of being built in 1969 and 1976, was generalized and drawn as dashes placed in the approximate locations. In this way, 144 maps were interpreted, giving a vision of the provinces that is much richer than what was generally available. This extremely simple method could be used throughout Indonesia where there is good topographical coverage by the BAKOSURTANAL. In a sense, it enables an updating of the Joint Operations Graphic Air at 1:250,000 edited in 1969 by D Survey, Ministry of Defense, United Kingdom. These maps are still widely used even though for settlement and road network reference is made to data that is much older than the date of edition. Only a few copies of a more recent edition show an updating of settlement data.

For the Lampung Atlas, it was possible to design a basic map consisting of an updating of the road network and administrative boundaries. This was not possible for South Sumatra province due to lack of time and the size of the province, three times larger than its southern neighbor. Aside from the correction of some details and the verification of place names, the work was based on existing documents, used only after verification against others. The road classification is based on the work of the Musi River Study, but one must keep in mind that changes in the state of the network can be extremely rapid. Administrative boundaries posed more problems, and it must be admitted that until the existing source documents have been improved on, the limits used in this study remain approximate.

The foundation obtained was then extended to cover the southern part of Bengkulu province. Drawn up at the same scale as the one used in the Lampung Atlas, this gave us a cartographic foundation at 1:500,000 that was correct for the south of the island of Sumatra, the part most directly concerned by the influx of migrants from Java.

2. Conception and design of the thematic maps

Five thematic maps accompany the text. They were designed using the documents presented above and field research carried out from 1986 to 1989 in the province of Lampung and from 1989 to 1990 in the provinces of Sumatra Selatan and Bengkulu.

Map 1. The south of Sumatra - General presentation

Le sud de Sumatra - Données générales

It was, of course, necessary to present the region that was the object of the study. To give the reader an easily accessible tool, the scale of 1:1,000,000 was chosen as it allows the whole of the south of Sumatra to be represented in an acceptable format (46.5 X 59 cm), both in terms of the folding necessary to fit into a book format (21 X 29.7 cm) and in terms of the standard dimensions of printing

presses. This latter point is worth mentioning due to the sharply increased costs of using a large format press.

The map foundation was based on the assembly of films of the RePPProt maps initially drawn at 1:250,000 and reduced to 1:1,000,000 (these films were kindly provided by RePPProt program officials). The assembly obtained was verified and completed based on existing topographical maps.

The following data was marked on this foundation: administrative framework, road network and physical environment. For the administrative framework in Lampung, data from the Lampung Atlas was used. For the other provinces, available official documents were used, though it was not possible to verify them in all cases. The road network was simplified. Only the main roads were retained, with the most important local feeder roads. This was done in order to insure a certain degree of homogeneity due to the absence of reliable information and the fact that in many areas the data could not be verified. This is why some narrow asphalt roads are not identified despite the important role they might play at the local level.

The physical environment is represented in a classical manner by a system of colored bands corresponding to the altitudes. The contour lines were taken from the Joint Operations Graphic-Ground/Maps. The 50 meter contour line, which allows for a distinction being made between raised interfluvial plains and low plateaus, was drawn based on Dutch maps edited in 1945. Essential climatic data includes the amount of precipitation and pluviometric frequency showing the sharp drop in rainfall from west to east, at the local level, the relatively slight rainfall in certain basins, and 20_ isotherm which characterizes the summits of the Barisan mountain range above about 1000 meters.

One of the major themes of this Project, deforestation, logical consequence of agricultural settlement, has been brought to the forefront in a region of Indonesia which has been particularly transformed by population movements. Two dates have been noted: 1920-1930 for the beginning of the century and 1980. Dutch maps furnished the documentation for the first period, and the international vegetation map enabled us to determine the extent of primary forests for the second period.

Map 2. Human settlement and land use in 1920-1930

Peuplement et utilisation du sol en 1920-1930

In order to show the magnitude of the changes taking place in a region where the population went from a little more than 1.5 million in 1930 to nearly 15 million in 1985, it was necessary to provide an overall view of settlement and land use at the beginning of the century. Topographical maps and general maps from the period were used for this. The fourth edition of the maps published in 1945 for the island of Sumatra, based on older topographical maps, provides a uniform picture.

All villages and lines of communication are mentioned as can be noted for the province of Lampung where verification was systematically carried out. Forests are represented with the warning "only jungle is confirmed," which could represent an important bit of information for these maps designed for military use. One might wonder about the true age of the data concerning forest cover. It would seem that the forest cover corresponds to a period before the Second World War, more likely in the 1930's, period when most of the region's maps were drawn up, rather than in the years 1940-1945. The argument might be made that the great land clearing undertaken in 1935 to set up the "kolonisatie" villages in the regions of Metro and Belitang are not found on the maps, nor are the new forms of habitat created from scratch around that time within forested areas, along with a few plantations.

The 16 maps covering the region were interpreted so as to retain only those elements essential to agricultural development, resulting in an contrast between cleared areas and forests. Villages and administrative centers where the colonial power was based were also characterized. The drafts obtained were reduced to 1:1,000,000 and then, after generalization, were assembled on the map foundation made earlier at the same scale. The areas without data on the original documents, though obviously covered with swamp forest, were left blank on the map in accordance with the sources used.

To this map was added a small map of the principal human groups identified at the turn of the century. The documents concerning the Lampung districts are accurate and give remarkable cartography of the *Marga* in 1930. The sources drawn up during the same period for the Palembang and Benkoelan residencies are less directly usable. Therefore, the data presented for these two provinces result from the compilation of Dutch documents available at the museum of the National Library in Jakarta and a thesis presented at an Australian university (Jaspan, M.A., 1964).

Map 3. Agricultural settlement and deforestation

Colonisation agricole et recul de la forêt

Three ideas have guided the design of this map. The first idea was to demonstrate that simple and immediate use of SPOT satellite images is feasible, provided the interpreter has experience in the field. The second was to shed light on the various causes of agricultural settlement, and by extension deforestation, and deal with the important question of locating "fronts" of agricultural settlement,

following a sweep of a vast region of some 45,000 km_ that was impossible to cover in its entirety. The third idea was that this map, not planned at the outset of the study, must be one that could be drawn up rapidly using simple cartographic techniques.

As was noted earlier, the opportunity of consulting an additional group of SPOT images presented itself during the research program. This was an opportunity that had to be seized; the interest of the documents compensated for the short time allowed for their consultation.

The location of the images was possible using obvious physical features, such as major waterways, almost all of which were perfectly visible on the false color prints at 1:250,000, and portions of roads, more difficult to discern. The images were then analyzed using very simple criteria.

Only four classifications were used to express the extent of land use, the first theme to be treated. They were the following:

- spaces entirely occupied or cleared, only making a distinction between village and agro-industrial domain cultivation, the latter easily identifiable by the large area of cultivated parcels. Of course, the spaces identified give the approximate boundaries of entirely cultivated land and do not indicate the exact property lines for the domains. A flat yellow tint represents this first category.

- spaces where family fields and plantations still dominate the wooded areas, represented by a system of blue bands on a yellow background. These bands become green when the yellow and blue are superimposed for printing.

- spaces where forest is preponderant on the landscape but where traces of settlement are visible everywhere, indicating traditional modes of settlement in largely secondary forest. This category was represented by light blue on a yellow background, giving a light green color when printed.

- forests having no traces of human occupation and which, given their location on the highest summits or in the heart of little-penetrated plains regions, are no doubt residual expanses of primary forest. The international map of vegetation does not contradict this interpretation. The forests were drawn with a medium blue on a yellow background which became an medium green when printed.

The second theme analyzed put the spotlight on the actors themselves in these new agricultural settlements. This study is based on images and field research, and is confirmed by administrative documents at least for the Transmigration centers. A red shade represents settlement phenomena; hachures represent the Transmigration settlement programs already established or in the process of being established, arrows mark the land clearing "fronts" that are active at the time of the photo, sparse dashes are used to show where clearings are visible on the photos showing scattered occupation of secondary forest. Blue dots on a yellow field indicate industrial plantations, important factors for agricultural development but not for causing population influx and settlement, contrary to the preceeding factors.

The data collected was then applied to the existing basic map at 1:500,000. Collecting the information and putting together the draft took about one month. Drawing the plate limited to four colors (black, blue, yellow, red), one of which did not have to be separated (the yellow background covered the whole sheet), took another month.

Map 4. Development of recent settlements - mountains and plains

La conquête de terres nouvelles - Plaines et montagnes

The objective of this map is to show the forms of settlement and the systems of production in the plains and in the neighboring mountains which are located to the west of Sumatra and which for decades have been receiving spontaneous migrants, some of which came from agricultural settlement programs in the plains. The region studied covers the *kabupaten* of Ogan Komering Ulu (OKU) where most of the field research was carried out. It stretches from east to west from the plains of the Mesuji River and the colonial Belitang program to Lahat situated at the foot of the Barisan mountain range, and from the Batumarta Transmigration program in the north to the piedmont area of Muaradua and the highlands of Danau Ranau in the south.

The space represented occupies two 60 km wide strips, stretching 225 km from east to west and 150 km from the north to south. They are covered by excellent SPOT images. From this case study and the experience acquired beforehand in the province of Lampung, an overview of the types of settlement observed and the types of population growth was made for the entire southern part of Sumatra.

Settlement progression and the opening of new land in the southwest of Sumatra Selatan (OKU district) was analyzed over a period of about 20 years. The starting point for this study was 1969, reference date for most of the topographical maps which were compared with the SPOT images from 1986-1987.

Due to financial considerations, it was not possible to acquire magnetic tapes of the satellite images, the analysis of which could have been done at the center for remote sensing at Noumea. Interpretation is therefore limited to a close examination with magnifying glass and many field verifications. First the 1969 and 1976 topographical maps were used to create land use maps for that period; the latter were then tested for land-true. Test zones were chosen and the older data was compared with recent data, both on the photos and in the field.

It was impossible to cover the whole region in detail, due to the time and money that would have been necessary. Nevertheless, a good knowledge of the region and the use of an average scale (1:250,000 for the first draft made using the same scale as the SPOT images, reduced and generalized at 1:500,000 for the final map) permitted us to correct errors.

Despite the difficulties encountered, the uncertain interpretations, which could not always be verified in the field, and the inevitable errors at the local level, the pragmatic method chosen allowed us to focus on several basic phenomena chosen for the study:

- The evolution of forest cover and settlement progression, divided into totally occupied spaces and spaces in the process of being occupied
- the principal forms of land use: primary and secondary forest, rice fields, small plantations and agro-industrial domains, fallows.
- the principal forms of settlement, distinguishing between dispersed habitat, characteristic of highland spontaneous settlement, the forms identified in 1969 and the precarious settlement pattern that generally is found with land clearings on the 1986-1987 photos. Dispersed habitat is marked by dashes, a suggestive and handy symbol that allows flexible representation. The frequency of the dashes is more or less proportional to the frequency of land clearings visible on the 1986-1987 SPOT images.

The following difficulties must however be noted:

- The first has to do with the difference of three or four years between the SPOT images available and the facts observed in the field in 1990. In a region where changes are as rapid as they are in the south of Sumatra, this difference, as little as it is, is sometimes disturbing.

- The second is the absence of information on the criteria used by the interpreters of the 1969 aerial photographs which served as the basis for drawing up the topographical maps (types of forest, for example) and the imperfections of these same maps (errors in joining maps, errors or absence of information for certain portions of the mapped area).

- The third is the difficulty of interpreting, without any kind of computer treatment, the false color paper prints we had. It was difficult to differentiate between the various types of forest, between dry land cultivation and fallows, between swamp and certain rice fields, between recent forest clearings and rice fields depending on whether or not they had been harvested. This point will be developed further in the commentary to the plate entitled "Constraints on and evolution of land use" where the detailed study of the evolution of land use for the same region and the same reference dates is presented.

The slice that was chosen, analyzed at a scale of 1:500,000, was placed in the regional context at scales of 1:2,000,000 and 1:3,000,000 for the analysis and location of settlement and demographic regions in the south of Sumatra.

In order to make the necessarily complex map of settlement in South Sumatra easier to read, the use of tints and symbols in the detailed map and the general map permit immediate understanding of the phenomena. The detailed study, interpreted and situated within a larger area, facilitates both comparison and extrapolation.

With the same concern for clarity, the various demographic regions were represented by colored bands depending on the type of growth experienced, despite the risk of simplification that is liable to result. This method was preferable to a detailed study by administrative unit *(kecamatan)*. Such a study was not neglected, however, since a map and chapter in the book are devoted to it.

The settlement of the Musi river delta - *L'aménagement du delta de la Musi*

(Map inserted in the book p. 188)

Swampy regions which have long remained free of mass settlement today appear as vast free spaces with unexploited potential and vacant land to be developed through settlement programs, despite failed attempts in the southeast of Kalimantan. After studying the complementary environments of the plains and mountains, one could not ignore the great development projects in the Musi River delta. They are recent counterparts in the regularly-flooded swamp areas to the upland programs of the central plains.

A presentation map of the delta, downriver from Palembang, show at the scale of 1:500,00 the magnitude of systematic settlement of the swampy areas. As in the previous map, the reference point is 1969. The updating was done using a Landsat image from June 1978 and SPOT images from July 1986 and November 1987 (278 / 355-356, 279 / 355-356; three of them are extremely clear). Land use maps from the Badan Pertanian National and the Ministry of Public Works were used to complete the analysis. Data concerning the programs themselves were gathered on the spot, at the Transmigration office.

A SPOT image that was both representative and exceptionally legible was selected for the detailed study of various forms of land use. It is centered on two delta estuaries, Air Calik and Air Banyuasin, which appear as the elongated body of a frog, a well-known natural formation for those familiar with aerial photography. Several field checks, carried out under the responsibility of W.L. Collier, enabled the location of the various types of food and cash crop cultivation sponsored by the State for Javanese settlers, the production systems of indigenous people located in a large old Malay village located along the banks of the Muara Telang and the Karanganyar, and those of the recent spontaneous migrants. Among the latter, not only do Bugis and Banjar inhabit the coastal regions and use tidal action to develop land that was until then left alone, but Javanese who have not succeeded in the Transmigration centers adopt local farming systems.

Intent on using corresponding scales for the studies, the interpretation of this rich environment was first done at the scale of the SPOT images, 1:250,000, and then at the local scale. This last analysis was based on the Muara Telang topographical map (1969) and on several field surveys. Though it was not possible to precisely map the types of land use, the investigations allowed us to locate the various human groups in an environment where control over water and non-river tansportation are essential problems. Despite repeated field trips, the data are not always perfectly in place and is sometimes based on unverified interpretations. Nevertheless, they give a coherent view of the situation.

Map 5. Constraints on and evolution of land use

Dynamique de l'occupation de l'espace

The guiding idea of this map is the put the evolution of land use back into the framework of institutional constraints which govern the province and natural factors which affect the agricultural settlement process. Shown on the same map, constraints on land use at the regional level and a detailed study of a band going from mountainous areas to the lower parts of the bordering plains provide a demonstration of landscape evolution as influenced by the State or determined by natural conditions.

The reader can make the direct comparison between the mapped constraints for the entire south of Sumatra and those which were reproduced at the local level for the year 1986. They can also make the correlation between, on the one hand, land status as it is defined by the legislation, and on the other, the magnitude of land clearing and the observance of administrative constraints in actuality.

INSTITUTIONAL CONSTRAINTS AND LAND STATUS (MAP No. 1)

Major constraints can be grouped into two categories:

- development and settlement constraints imposed by the administration: protection of nature and forest management, military practice areas, transmigration
- constraints on agricultural development: agro-industrial plantations and forest concessions which, given their size and the capital they infuse into regional development, cannot be ignored.

The data result from surveys carried out by the provincial administration, systematic data comparison and field research. The documents gathered were generalized and transformed to the scale of 1:2,000,000. The rather frequent occurrence of jurisdictional overlap or doubling were expressly limited on the map which took into account recent regulations.

Estimates as to the observance of constraints are based on observations made in the region since 1986 and on observed practices. In certain cases, the notion is colored with subjectivity and depends more on what one considers a ban or the observance of a rule. In other cases, custom and the local situation are determinants. In order not to confuse the reader, the number of situations were limited to three: very strict constraint, strict constraint, and constraint often ignored.

MAJOR NATURAL FACTORS (MAP No. 2)

This map is more the result of bibliographical analysis than field observations. Sources are many on the subject but they are not always in agreement. Thus, the boundaries of climatic phenomena vary widely from one publication to another. The data are sometimes too general or are limited to small areas.

Three factors have been identified: 1) conjunction of steep slopes and fertile soils; 2) risk of hydraulic shortfall, a real problem in the southeast of the island; and 3) constraint imposed by the presence of vast flooded and swampy areas that are sensitive to tidal action, which can be considered an advantage.

MAPS CHARTING THE EVOLUTION OF LAND USE (MAPS No. 3 and 4)
commentary by F. Durand, author of the maps

Selection of documents and the study zone

Without a doubt, the south of the island of Sumatra is one of the Indonesian region that since the beginning of this century and

especially over the last few decades has seen the most profound changes in land use and forest cover.

Many recent documents demonstrate the extent of the transformations. It was therefore decided to compare land use at two relatively close time intervals with the help of JANTOP topographical maps (1969-1976) and SPOT imagery (1986-1987).

Three series of maps were also available to represent the situation in the 1980's:
- the vegetation map of Laumonier et. al., 1983 at 1:1,000,000;
- the BAKOSURTANAL land use maps, 1985 at 1:250,000;
- the RePPProT maps, 1988 at 1:250,000.

The origin and the quality of the documents used varied greatly. Air photos, satellite imagery and existing maps were sometimes compiled and assembled though an interval of up to ten or more years separated them. It was impossible to differentiate with precision these sources and tell, for a given map, what year it represented. In addition, these maps sometimes exhibited significant differences that made them difficult to use to show an evolution over a short period of time.

A comparison of the four most recent sources for the Gunung Raya region can demonstrate these differences (Fig. 56).

Of the four maps, the reduction of primary forest is clear, but it is much greater in the SPOT and RePPProT documents than in the BAKOSURTANAL and Laumonier maps. In the latter case, it must be noted that this is an enlargement of a 1:1,000,000 map which cannot have the same precision as the others, which were reduced.

These differences correspond in part to actual changes in forest cover between the end of the 1970's and the beginning of the 1980's, but this is not enough to explain all the discrepancies, some of which reflect problems of interpretation.

Thus, for the region situated to the northwest of Lake Lebak Datuk we note one serious discrepancy (Fig. 57). The RePPProT map, which bears closest resemblance to the SPOT images in the example above, indicates a vast stretch of climactic forest to the west of the Ogan River while the BAKOSURTANAL map only represents a few scattered clumps. This is actually a zone of secondary forest associated with small rubber plantations found on the 1969 JANTOP map which the RePPProT cartographers mistakenly took for primary forest. On the other hand, the forest to the east of the Ogan River still remained at the beginning of the 1980's as the BAKOSURTANAL map shows, but by the time the 1986 SPOT images were taken it had been cleared to make way for agro-industrial plantations.

Full SPOT coverage of the south of Sumatra was not available, so this study had to limit itself to a zone falling between 3°50' and 5°10' Latitude South and 103°40' and 104°30' Longitude East.

The zone covers three provinces, the southwest of South Sumatra, the western part of Lampung and the eastern extremity of Bengkulu, an area which includes most forest types present in the region with the exception of the swamp and mangrove forests of the eastern coast.

Twenty-one JANTOP topographical maps at 1:50,000 and three SPOT images from 1986 at 1:250,000 were thus prepared according to a common classification showing the major patterns of land use divided into three main categories, formations of primary vegetation, degraded formations and areas cultivated or under the process of being settled. An attempt was also made to account for the forest areas where clearing was most active. These preparations were then reduced to 1:500,000.

Elaboration of the 1969-1976 land use map

The precision of the JANTOP maps could be appreciated in the field, especially concerning the toponymy, roads, waterways as well as the extent of rice fields. Edited in Indonesia with the collaboration of the Australian Government, the maps unfortunately were drawn up based on two series of air photos in 1969 and 1976 and do not cover the whole of the island of Sumatra.

In the region chosen for this study, this problem is relatively limited because more than 75% of the surface was mapped in 1969, and only one map is missing ("Pasar Banjit" no. 1011-22, left blank), situated to the east of Lake Ranau.

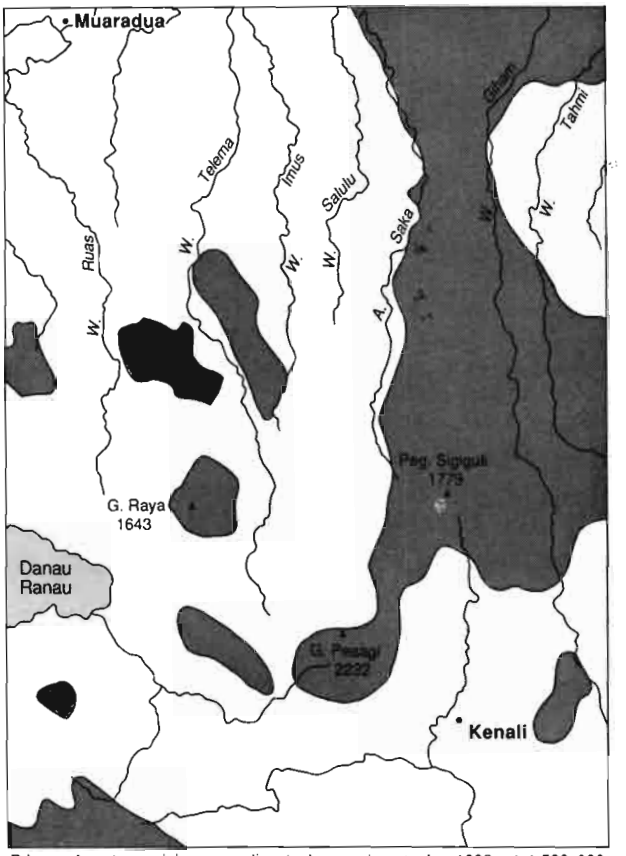
When the maps were assembled, it was impossible to join two important zones, one to the southwest of Lake Ranau and the other to the northeast of Baturaja; this is marked by transitional hachures. In the first case, it is the juxtaposition of a 1969 map with a 1976 map which might have caused the problem, though in the second case the maps were from the same period.

Elaboration of the 1986 land use map

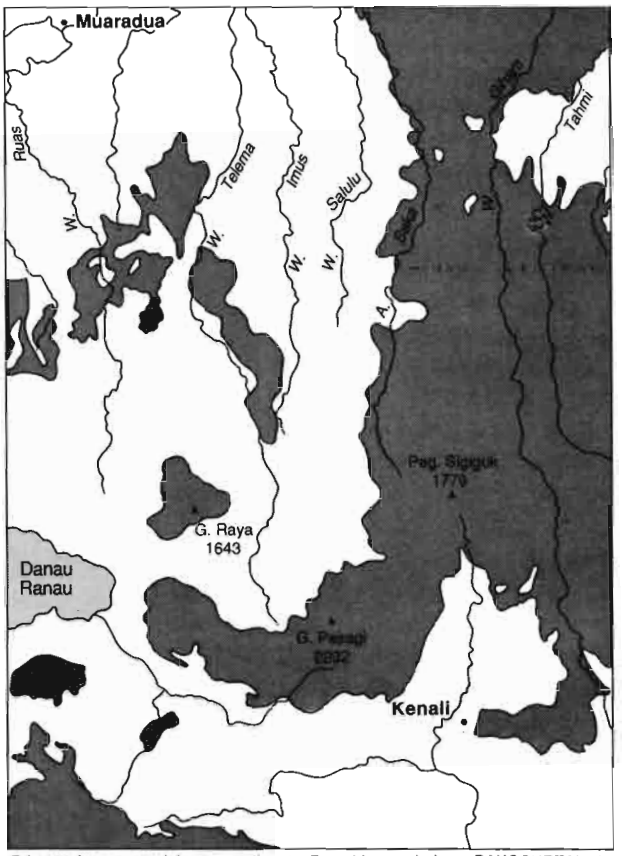
Three SPOT images of remarkable quality, were taken the same date (21 July 1986), which gives a homogeneous view of the region. This period of the year, in the middle of the dry season, also presents the advantage of corresponding to the moment when tree-clearing is the most intense and when seasonal crops differentiate themselves most clearly from the natural vegetation. As the region's crops are mostly perennials, this last advantage remains slight.

Also used were four other images offering overlapping zones with the 3 above images. Taken on different dates, they provided a firm basis for analysis.

Fig. 56 COMPARAISON OF EXISTING SOURCES FOR THE FOREST STUDY
COMPARAISON DES SOURCES EXISTANTES POUR L'ETUDE DU COUVERT FORESTIER

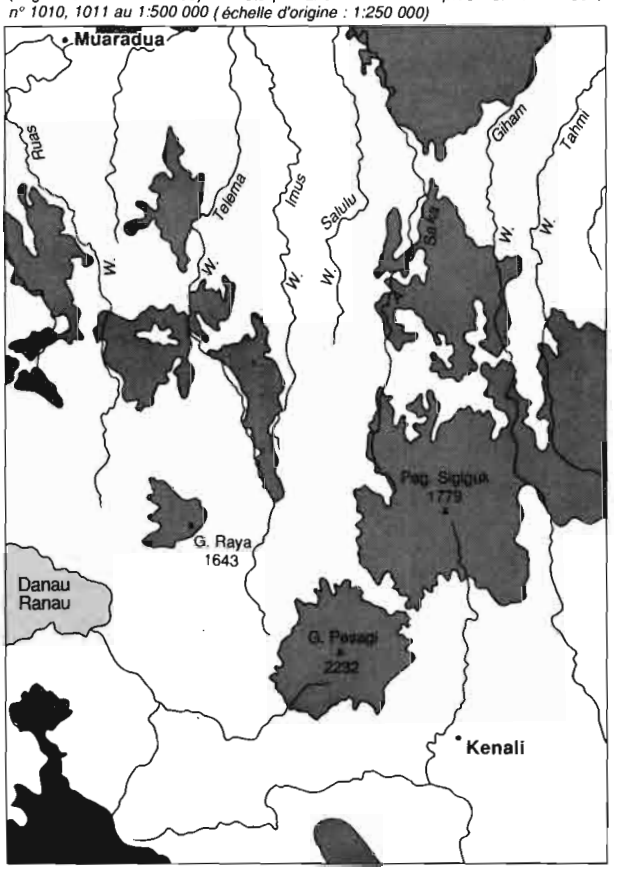


Primary forest remaining according to Laumonier et al , 1983, at 1:500 000 (original scale 1: 1 000 000) - *Forêts primaires restantes d'après LAUMONIER et al, 1983, au 1:500 000 (échelle d'origine: 1:1 000 000)*

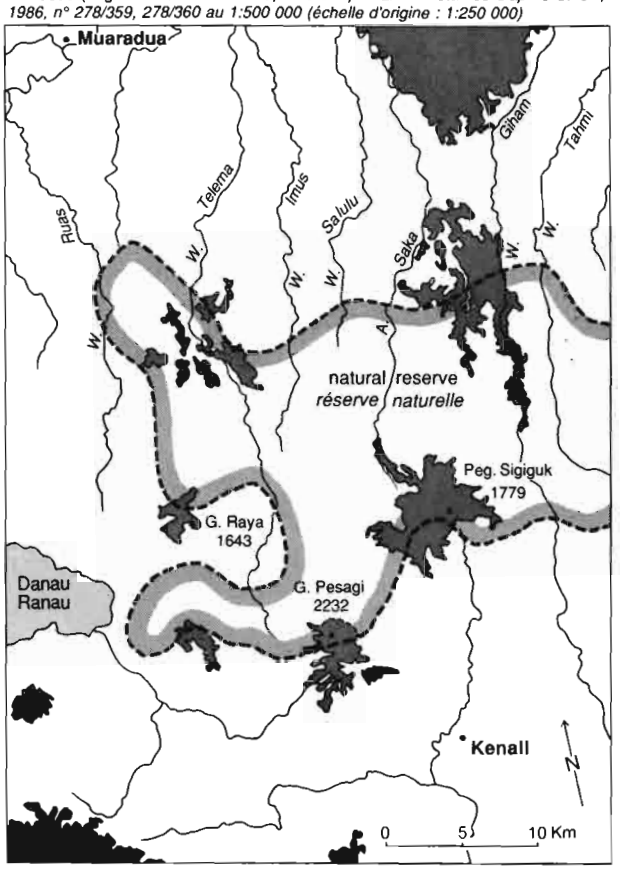


Primary forest remaining according to Peta Liputan Lahan, BAKOSURTANAL, 1985, n° 1010, 1011 au 1:500 000 (original scale : 1:250 000) - *Forêts primaires restantes d'après Peta Liputan Lahan, BAKOSURTANAL, 1985, n° 1010, 1011 au 1:500 000 (échelle d'origine : 1:250 000)*

Primary forest remaining according to RePPProT 1988, n° 1010, 1011 at 1:500 000 (original scale : 1:250 000) - *Forêts primaires restantes d'après RePPProT 1988, n° 1010, 1011 au 1:500 000 (échelle d'origine : 1:250 000)*

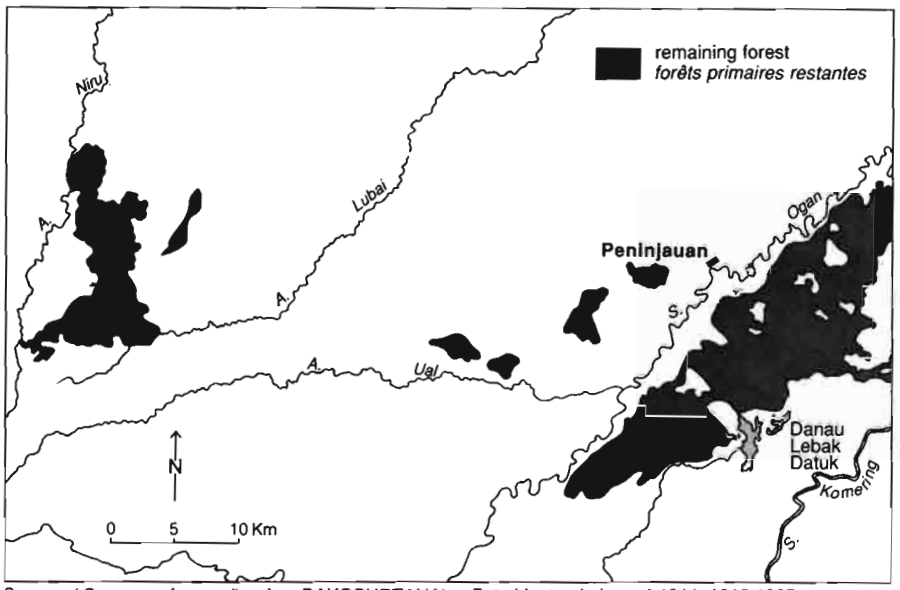


Primary forest remaining according to SPOT, 1986, n° 278/359, 278/360 at 1:500000 (original scale : 1:250 000) - *Forêts primaires restantes d'après SPOT, 1986, n° 278/359, 278/360 au 1:500 000 (échelle d'origine : 1:250 000)*

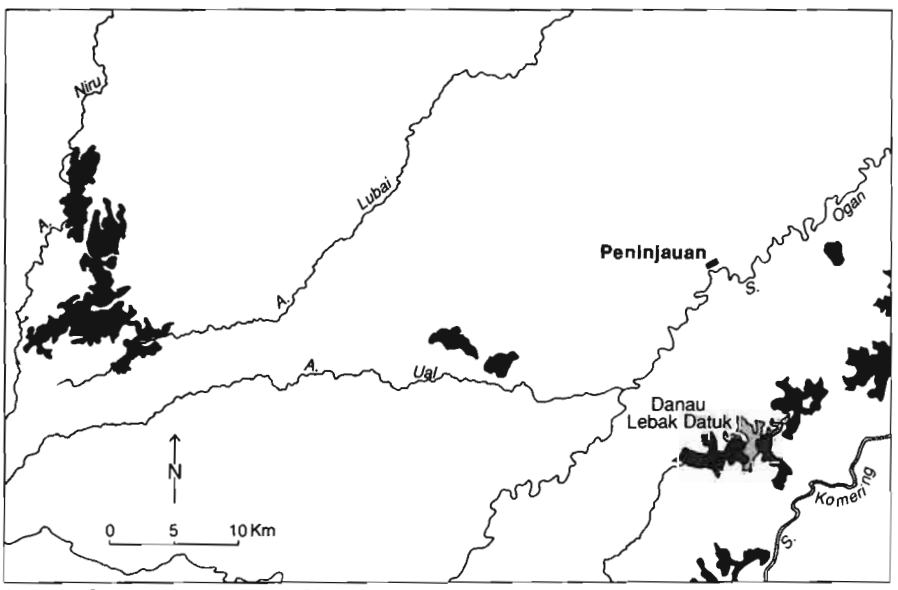


F D/yw-1991

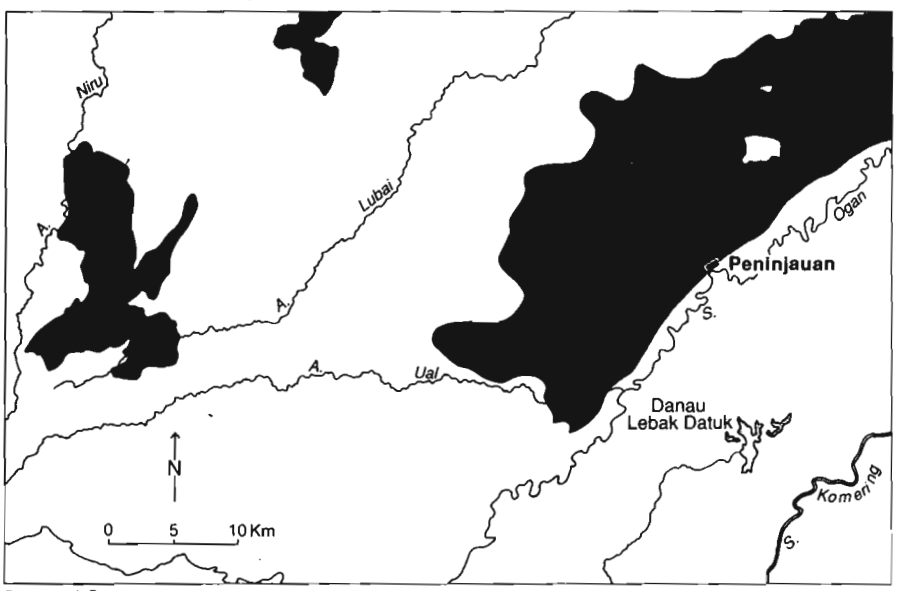
Fig.57 CONFLICTING INTERPRETATIONS OF THE SAME PHENOMENON FROM DIFFERENT SOURCES / *DIVERGENCES D'INTERPRETATION POUR LE MEME - PHENOMENE ENTRE SOURCES D'ORIGINE DIFFERENTE*



Sources / *Sources :* from - *d'après* : BAKOSURTANAL, Peta Liputan Lahan n° 1011, 1012,1985



Sources / *Sources :* from - *d'après* : SPOT, 1986



Sources / *Sources :*
from - *d'après* : RePPProT,maps/*cartes* 1011 et 1012, Land use / forest Status1988 F D/yw - 1991.

The interpretation was made based on the established classification on compositions colored with false color at the scale of 1:250,000. It was not possible to obtain 1:100,000 prints or magnetic tapes for computer analysis.

Several difficulties arose during the course of the analysis:

- the limit between "primary" and "secondary" forest was sometimes difficult to discern with certainty and generally corresponds in the field with a more or less large strip.
- it is often nearly impossible, without computer analysis, to differentiate "pure" secondary forest from secondary forests associated with bush or tree-crop plantations, especially rubber, in the northern part of the zone.
- new clearings in the forest present the same appearance of more or less dense blue dots on a red background as the slash-and-burn zones for the regeneration of old rubber plantations, for example.
- on the contrary, rice fields might appear under different shades of blue or red depending on the maturity of the plants and can be confused with flooded areas.

These problems of interpretation were resolved by taking into account the JANTOP data (especially for the regeneration of plantations) and through field checks in the month of June 1990. This of course presented a new difficulty because the SPOT images were taken more than four years earlier. It was therefore necessary to take into account possible modifications coming about during this time lapse.

Finally, the boundaries of swampy and flooded forests according to JANTOP did not exactly correspond with that of SPOT. For this last point, the apparent extent of each of these documents was retained, the differences likely corresponding to different criteria as well as actual changes (drainage or extension of flooded zones).

On Map No. 4, the data from the SPOT images were added to the boundaries of protected forest as shown on the 1988 RePPProT map which was chosen out of concern for homogeneity, even though these boundaries did not always coincide perfectly with those from other sources.

The vast military practice area situated to the southeast of Baturaja and the Batumarta Transmigration center was also represented. With these we have a complete picture of the development constraints affecting the region and the settlement patterns of spontaneous migrants.

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July - *juillet* 1993

From the colonial era, under the title "kolonisatie", then following Independence, under the title "Transmigrasi", Indonesia undertook the most significant programme of population transfer and agricultural settlement ever attempted to date in tropical regions. Since 1969, 4.7 million people have been settled, within the framework of voluntary and state-organized migrations, in the islands of Sumatra, Borneo or Sulawesi. There was abundant free land available for agriculture on these islands whereas the over-populated islands of Java and Bali had a drastic shortage of land for their farmers.

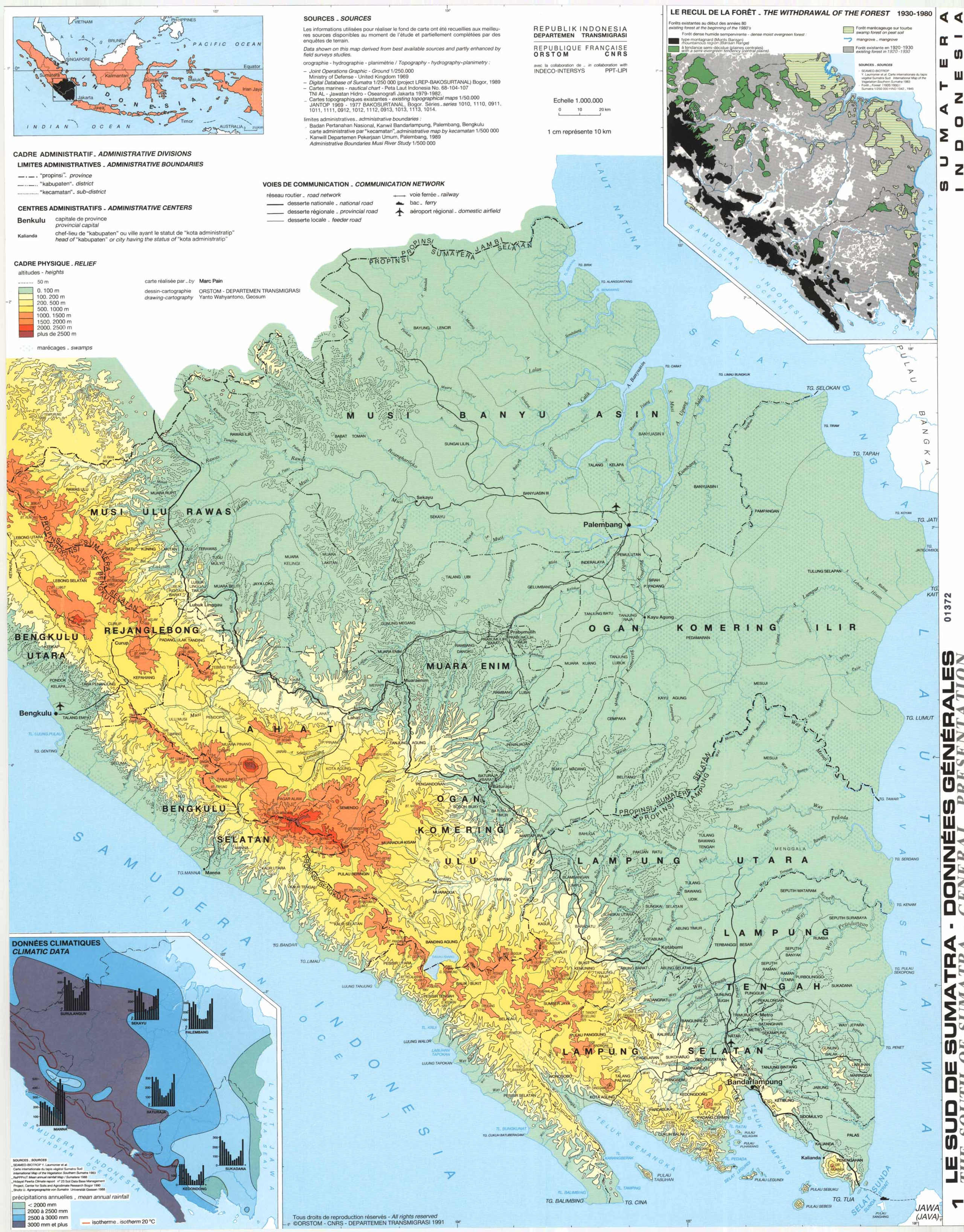
In the wake of this substantial movement, which without doubt has not allowed, as it was hoped, the absorption of the demographic overflow from the centre but which has encouraged the process of national integration in an archipelago which stretches over 5,000 kilometres, spontaneous migrations of an exceptional magnitude have sprung up. Initially, they affected the provinces which were both close to Java and central to the policy of Transmigration. The entire southern portion of Sumatra thus underwent an exceptional immigration : the population rose from 2.2 million in 1930, to a combined level close to 20 million today. The most sensational example is provided by the province of Lampung, where transmigrants and their descendants account for a quarter of the population, spontaneous migrants 60%, and native people 15%.

Spontaneous migrations in the rural environment, which for a long time have been underestimated, have taken a key role in the rapid transformations in the South-East Asian region, drastically changing the countryside and the economy. Although often criticised because they seem to be unmanaged, when analysed they are found to be a fully-fledged factor in the development, and should be recognized as such.

L'Indonésie a engagé depuis l'époque coloniale, sous le nom de "kolonisatie", puis après l'Indépendance , sous le terme de "Transmigrasi", le programme de transfert de population et de colonisation agricole le plus important jamais entrepris à ce jour dans le monde tropical. Depuis 1969, 4,7 millions de personnes ont été installées, dans le cadre de migrations volontaires et organisées par l'Etat, dans les îles de Sumatra, Bornéo ou Sulawesi qui offraient en abondance des terres libres pour l'agriculture alors que Java et Bali, surpeuplées, manquaient dramatiquement de place pour leurs paysans.

Dans le sillage de ce vaste mouvement, qui n'a sans doute pas permis comme on l'espérait d'absorber le trop-plein démographique du centre mais qui a favorisé les processus d'intégration nationale d'un archipel étiré sur 5 000 km, des migrations spontanées d'une rare ampleur se sont développées. Elles ont touché en premier lieu les provinces qui accueillaient l'essentiel des transmigrants officiels et qui étaient proches de Java. Le sud de Sumatra a ainsi connu une immigration exceptionnelle: peuplé de 2,2 millions d'habitants en 1930, il rassemble aujourd'hui près de 20 millions d'habitants. L'exemple le plus spectaculaire est fourni par la province de Lampung où les transmigrants et leurs descendants représentent le quart de la population, les migrants spontanés, 60%, les autochtones, 15 %.

Longtemps sous-estimées, les migrations spontanées en milieu rural participent pleinement aux transformations accélérées du Sud-Est asiatique, bouleversant les paysages et l'économie. Souvent critiquées parce qu'elles apparaissent incontrôlées, elles se révèlent à l'analyse comme un facteur à part entière du développement et doivent être reconnues comme tel.


SUMATERA
INDONESIA
1 LE SUD DE SUMATRA - DONNÉES GÉNÉRALES
THE SOUTH OF SUMATRA - GENERAL PRESENTATION
01372
SOURCES - SOURCES
Les informations utilisées pour réaliser le fond de carte ont été recueillies aux meilleures sources disponibles au moment de l'étude et partiellement complétées par des enquêtes de terrain.
Data shown on this map derived from best available sources and partly enhanced by field surveys studies.
orographie - hydrographie - planimétrie / Topography - hydrography-planimetry :
- Joint Operations Graphic - Ground 1/250.000 Ministry of Defense - United Kingdom 1969
- Digital Database of Sumatra 1/250 000 (project LREP-BAKOSURTANAL) Bogor, 1989
- Cartes marines - nautical chart - Peta Laut Indonesia No. 68-104-107 TNI AL - Jawatan Hidro - Oseanografi Jakarta 1979-1982.
- Cartes topographiques existantes - existing topographical maps 1/50.000 JANTOP 1969 - 1977 BAKOSURTANAL, Bogor. Séries - series 1010, 1110, 0911, 1011, 1111, 0912, 1012, 1112, 0913, 1013, 1113, 1014.
limites administratives - administrative boundaries :
- Badan Pertanahan Nasional, Kanwil Bandarlampung, Palembang, Bengkulu carte administrative par "kecamatan" - administrative map by kecamatan 1/500 000
- Kanwill Departemen Pekerjaan Umum, Palembang, 1989 Administrative Boundaries Musi River Study 1/500 000
REPUBLIK INDONESIA
DEPARTEMEN TRANSMIGRASI
REPUBLIQUE FRANÇAISE
ORSTOM CNRS
avec la collaboration de - in collaboration with
INDECO-INTERSYS PPT-LIPI
Echelle 1.000.000
0 10 20 km
1 cm représente 10 km
CADRE ADMINISTRATIF - ADMINISTRATIVE DIVISIONS
LIMITES ADMINISTRATIVES - ADMINISTRATIVE BOUNDARIES
"propinsi" - province
"kabupaten" - district
"kecamatan" - sub-district
CENTRES ADMINISTRATIFS - ADMINISTRATIVE CENTERS
Benkulu capitale de province provincial capital
Kalianda chef-lieu de "kabupaten" ou ville ayant le statut de "kota administratip" head of "kabupaten" or city having the status of "kota administratip"
CADRE PHYSIQUE - RELIEF
altitudes - heights
50 m
0. 100 m
100. 200 m
200. 500 m
500. 1000 m
1000. 1500 m
1500. 2000 m
2000. 2500 m
plus de 2500 m
marécages - swamps
carte réalisée par - by Marc Pain
dessin-cartographie ORSTOM - DEPARTEMEN TRANSMIGRASI
drawing-cartography Yanto Wahyantono, Geosum
VOIES DE COMMUNICATION - COMMUNICATION NETWORK
réseau routier - road network
desserte nationale - national road
desserte régionale - provincial road
desserte locale - feeder road
voie ferrée - railway
bac - ferry
aéroport régional - domestic airfield
LE RECUL DE LA FORÊT - THE WITHDRAWAL OF THE FOREST 1930-1980
Forêts existantes au début des années 80
existing forest at the beginning of the 1980's
Forêt dense humide sempervirente - dense moist evergreen forest :
type montagnard (Monts Barisan) mountainous region (Barisan Range)
à tendance semi-décidue (plaines centrales) with a semi-evergreen tendency (central plains).
Forêt marécageuse sur tourbe swamp forest on peat soil
mangrove - mangrove
Forêt existante en 1920-1930 existing forest in 1920-1930
SOURCES - SOURCES
- SEAMEO-BIOTROP Y. Laumonier et al. Carte internationale du tapis végétal Sumatra Sud International Map of the Vegetation Southern Sumatra 1983
- Forêt - Forest (1920-1930) : Sumatra 1/250 000 HIND 1042, 1945
DONNÉES CLIMATIQUES
CLIMATIC DATA
SURULANGUN
SEKAYU
PALEMBANG
BATURAJA
MANNA
KEDONDONG
SUKADANA
SOURCES - SOURCES
- SEAMEO-BIOTROP Y. Laumonier et al. Carte internationale du tapis végétal Sumatra Sud International Map of the Vegetation Southern Sumatra 1983
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- Hidayat Pawita Climate report n° 23 Soil Data Base Management Project, Center for Soils and Agrodimate Research Bogor 1990
- Sholtz U. Agrargeographie von Sumatra Universität Giessen 1988
précipitations annuelles - mean annual rainfall
< 2000 mm
2000 à 2500 mm
2500 à 3000 mm
3000 mm et plus
isotherme - isotherm 20 °C
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MALAYSIA
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INDIAN OCEAN
AUSTRALIA
Equator
Sumatera
Kalimantan
Sulawesi
Maluku
Irian Jaya
Jakarta
Jawa
Timor
LAUT NATUNA
SELAT BANGKA
PULAU BANGKA
SAMUDERA (INDIAN OCEAN)
INDONESIA
LAUT JAWA (JAVA SEA)
JAWA (JAVA)
PROPINSI SUMATERA SELATAN
PROPINSI JAMBI
PROPINSI BENGKULU
PROPINSI LAMPUNG
MUSI BANYUASIN
MUSI ULU RAWAS
BENGKULU UTARA
REJANGLEBONG
BENGKULU SELATAN
LAHAT
MUARA ENIM
OGAN KOMERING ILIR
OGAN KOMERING ULU
LAMPUNG UTARA
LAMPUNG TENGAH
LAMPUNG SELATAN
Palembang
Bengkulu
Lahat
Muaraenim
Prabumulih
Baturaja
Kayu Agung
Kotabumi
Metro
Bandarlampung
Manna
Kalianda
Curup
Lubuk Linggau
Sekayu
TELUK SEMANGKA
TELUK LAMPUNG
PULAU SEBESI
PULAU LEGUNDI
PULAU SEBUKU
TG. TUA
TG. CINA
TG. BALIMBING
TG. LUMUT
TG. SELOKAN
TG. TAPAH
TG. JATI
TG. KAIT
TG. TAWAR
TG. SERDANG
TG. KENAM
TG. PENET
TG. PULAU SEKOPONG
TG. MANNA
TG. BANDAR
TG. LIMAU
TG. GENTING
TG. BIRIK
TG. ALANGGANTANG
TG. CARAT
TG. LIMAU BUNGKUK
TG. TIRAM
TG. KOYAN
TG. JATIGOMBOL
TG. SERDANG

2 PEUPLEMENT ET UTILISATION DU SOL EN 1920-1930
HUMAN SETTLEMENT AND LAND USE IN 1920 - 1930

01373

PEUPLEMENT ET OCCUPATION DU SOL
HUMAN SETTLEMENT AND LAND USE

- villages existants au début du siècle (1920-1930) *existing villages at the beginning of the 20th Century*
- premiers villages de colonisation agricole ("Kolonisatie") *first agricultural colonization settlements*
- espaces défrichés *cultivated or cleared land areas*
- forêts *forest*
- rizières *ricefields*
- plantations *tree plantations*
- mine *mine*

CADRE ADMINISTRATIF _ *ADMINISTRATIVE DIVISIONS*

LIMITES ADMINISTRATIVES _ *ADMINISTRATIVE BOUNDARIES*

- "residentie" _ *residency*
- "afdeeling" _ *division*
- "onderafdeeling" _ *sub - division*

POSTE ADMINISTRATIF _ *ADMINISTRATIVE POST*

- "resident standplaats" _ *station of resident*
- "assistent standplaats resident" _ *station of assistant resident*
- "controleur standplaats" _ *station of district officer*

VOIES DE COMMUNICATION _ *COMMUNICATION NETWORK*

- routes principales _ *main roads*
- voie ferrée _ *railway*

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SOURCES - *SOURCES*

SUMATRA 1/100.000 Topografische Dients, 1909 - 1929
Overzichskaart van Sumatra 1/250.000 - 1924 - 1927
Overzichskaart van Sumatra 1/750.000 - 1934

SUMATRA 1/250.000 4° édition - *fourth edition* - 1945
Geographical Section, General Staff no. 4550 (Hind 1042, A.M.S.T. 511 , Djambi, Nipahpandjang, Sarolangoen, Sekajoe, Palembang, Muntok, Benkoelen, Lahat, Praboemoelih, Simpangtiga, Mana, Bintoehan, Menggala, Kotaagoeng, Teloekbetoeng, Moearatebo).

GROUPES HUMAINS IDENTIFIES AU DEBUT DU SIECLE
HUMAN GROUPS IDENTIFIED AT THE TURN OF THE CENTURY

- Melayu
- Redjang
- Pasemah
- région pratiquement inhabitée *area almost uninhabited*
- Komering/Mesuji
- Lampung

LOCALISATION _ *GEOGRAPHIC LOCATION*

plaines et grandes vallées _ *plains and major valleys :*

- Rawas, Musi Ilir
- Lematang Ilir
- Ogan Ilir
- Komeri
- Way Kanan, Mesuji
- Menggala, Tulang Bawang
- Abung

contact plaine-montagne, piémont _ *transition area, piedmont :*

- Musi Ulu
- Kikim
- Lematang Ulu
- Ogan Ulu
- Komering Ulu
- Aji, Daya
- Sungkai
- Pubian

montagne _ *mountainous region :*

- Redjang
- Ampat Lawang
- Pasemah
- Semendo, Kisam, Makakau
- Ranau, Belalau

versant occidental des Monts Barisan, côtes de l'océan Indien et du Détroit de la Sonde
western side of Barisan Range, Indian Ocean coast and Sunda Strait :

- Serawai
- Krui
- Teloeh, Meninting, Melinting

migrations des Ogan et des Semendo au Lampung
Ogan and Semendo migration to Lampung districts

SOURCES _ *SOURCES*

- ROYEN W. van, *Nota over de Lampongsche Marga's*, serie B n° 7 ;
  TIDEMAN J., *De Inlandsche landbouw, veetelt en visscherij in Palembang*, serie B n° 5, *Mededeelingen van de Afdeeeling Besturszaken der Buitengewestern van het Departement van Binnelandsch Bestuur*, Landsdruckkerij Weltevreden, 1930.
- JASPAN M.A., *From Patriliny to Matriliny, Structural Change among the Redjang of Southwest Sumatra*, Ph. D. thesis, Australian National University 1964.

GROUPES HUMAINS
HUMAN GROUPS

carte réalisée par *by* Marc Pain
dessin - cartographie *drawing - cartography* Jalizar - Geosum

Echelle _ *scale* 1 : 1.000.000
0 10 20 30 km
1 cm représente 10 km

absence d'information sur les documents étudiés
information lacking on maps used as sources

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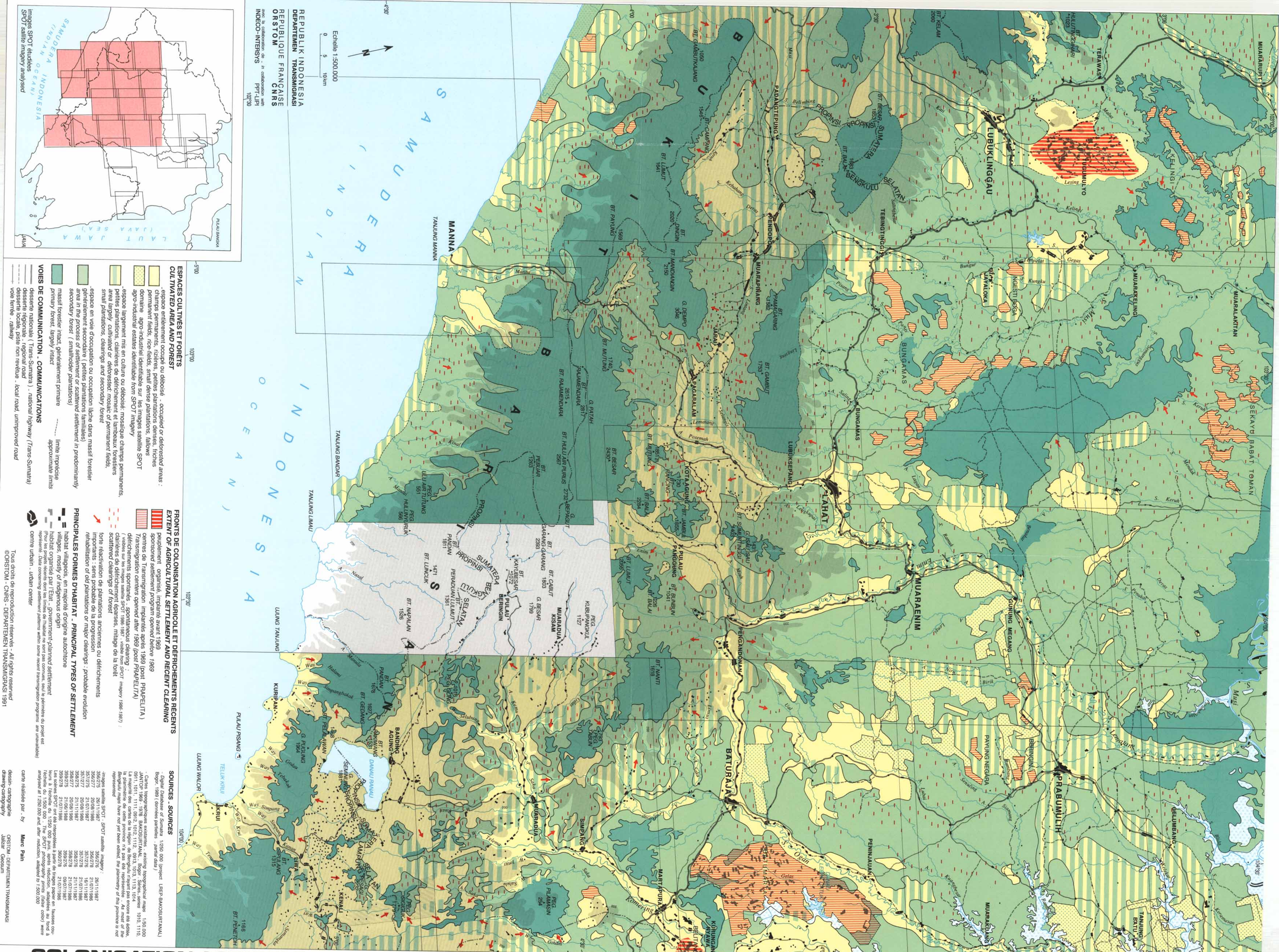


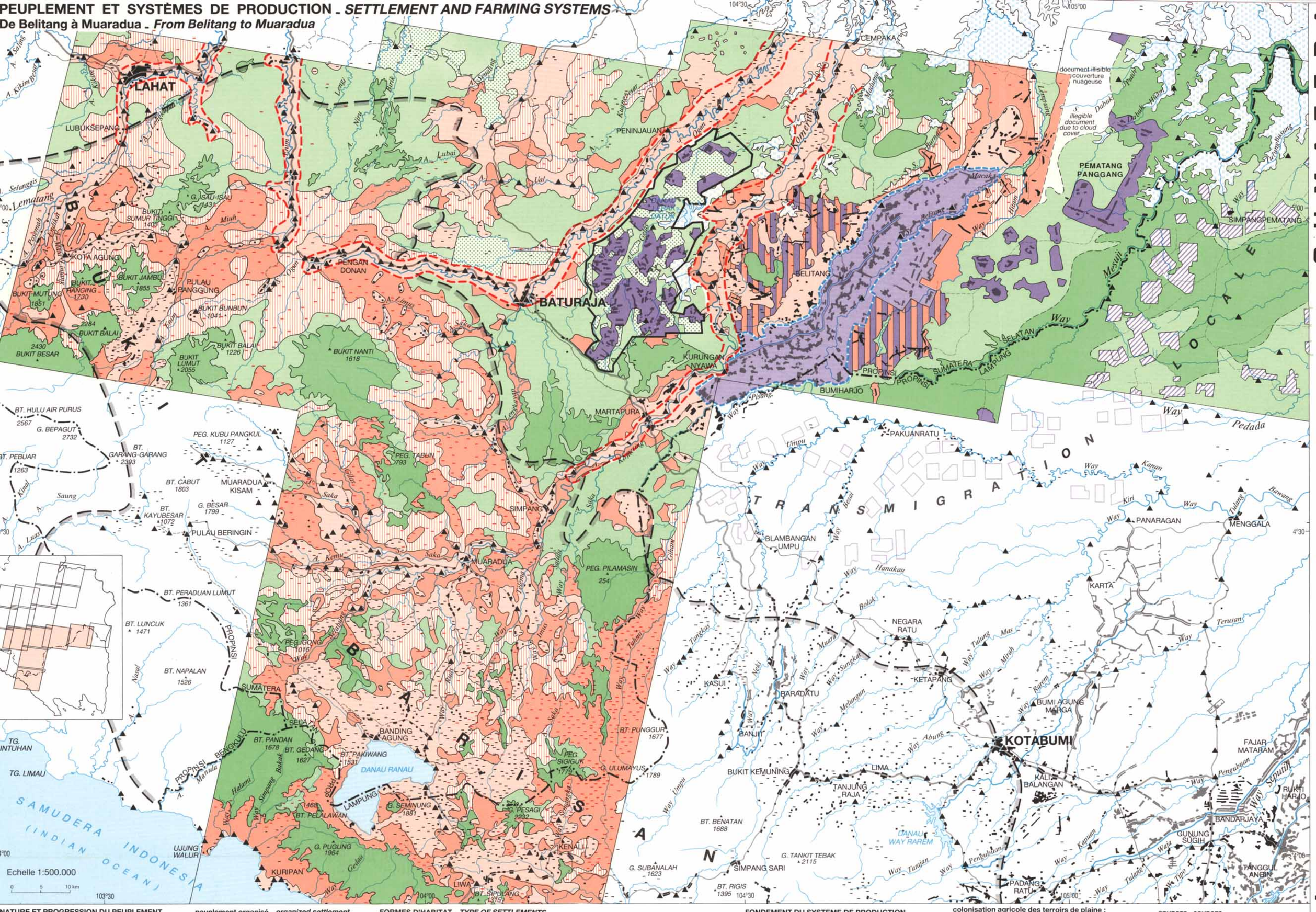
3 COLONISATION AGRICOLE ET RECUL DE LA FORÊT
AGRICULTURAL SETTLEMENT AND DEFORESTATION

01374

SUMATERA
INDONESIA

PEUPLEMENT ET SYSTÈMES DE PRODUCTION _ *SETTLEMENT AND FARMING SYSTEMS*

De Belitang à Muaradua _ *From Belitang to Muaradua*



NATURE ET PROGRESSION DU PEUPLEMENT
TYPES AND PROGRESSION OF SETTLEMENTS

peuplement spontané _ *spontaneous settlements*

- espace occupé en 1969 (d'après cartes topographiques de l'époque) _ *area occupied in 1969 (according to topographical maps)*
- progression entre 1969 et 1986-87 (d'après SPOT) :
- espace totalement occupé _ *densely occupied area*
- espace en voie d'occupation _ *area in process of being settled*

peuplement organisé _ *organized settlement*

- programmes existants en 1969 *programs existing in 1969*
- programmes réalisés entre 1969 et 1988 *programs carried out between 1969 and 1988 :*
- Transmigration _ *Transmigration programs*
- Transmigration locale _ *Local transmigration*
- imbrication de formes de peuplement spontané et organisé _ *coexistence of spontaneous and organized settlements*

FORMES D'HABITAT _ *TYPE OF SETTLEMENTS*

- **centres urbains _ *urban center***
- **habitat rural _ *rural settlement***
- village _ *village :*
- village autochtone en place au début du siècle *indigenous settlements existing at the turn of the century*
- village des programmes officiels de peuplement *sponsored settlement program*
- village non caractérisé _ *unspecified village*
- habitat dispersé _ *scattered settlement :*
- habitat dispersé, signalé en 1969 et généralement consolidé depuis *scattered farms identifiable in 1969 and often consolidated since*
- habitat précaire sur les clairières de défrichement récentes 1986/88 *rudimentary housing on recent clearings (1986/88)*

FONDEMENT DU SYSTEME DE PRODUCTION
BASIS OF FARMING SYSTEMS

(Les cernes délimitent les systèmes de production remarquables. Les cultures vivrières en sec n'ont pas été représentées _ *The outline indicates notable farming systems. Dry food-crops are not represented)*

systèmes traditionnels _ *traditional systems :*

- petites plantations sur bons sols d'origine volcanique _ *smallholdings on fertile soils of volcanic origin*
- (limite approximative des latosols et des andosols *approximate limit of latosols and andosols)*
- rizières et plantations dans terroirs de vallée alluviale *valley rice-fields and smallholdings*

colonisation agricole des terroirs de plaine :
agricultural colonization on the plains

- riziculture irriguée _ *irrigated rice-fields*
- plantations et cultures vivrières (système P.I.R.) *plantations and food-crops (P.I.R. system)*
- plantation agro-industrielle _ *agro-industrial estates.*

lambeaux forestiers _ *remaining forest*

- forêt primaire _ *primary forest*
- forêts secondaires, recrus, friches ne portant pas de trace d'occupation humaine *uninhabited secondary forest, shrub and fallows*

SOURCES _ *SOURCES*

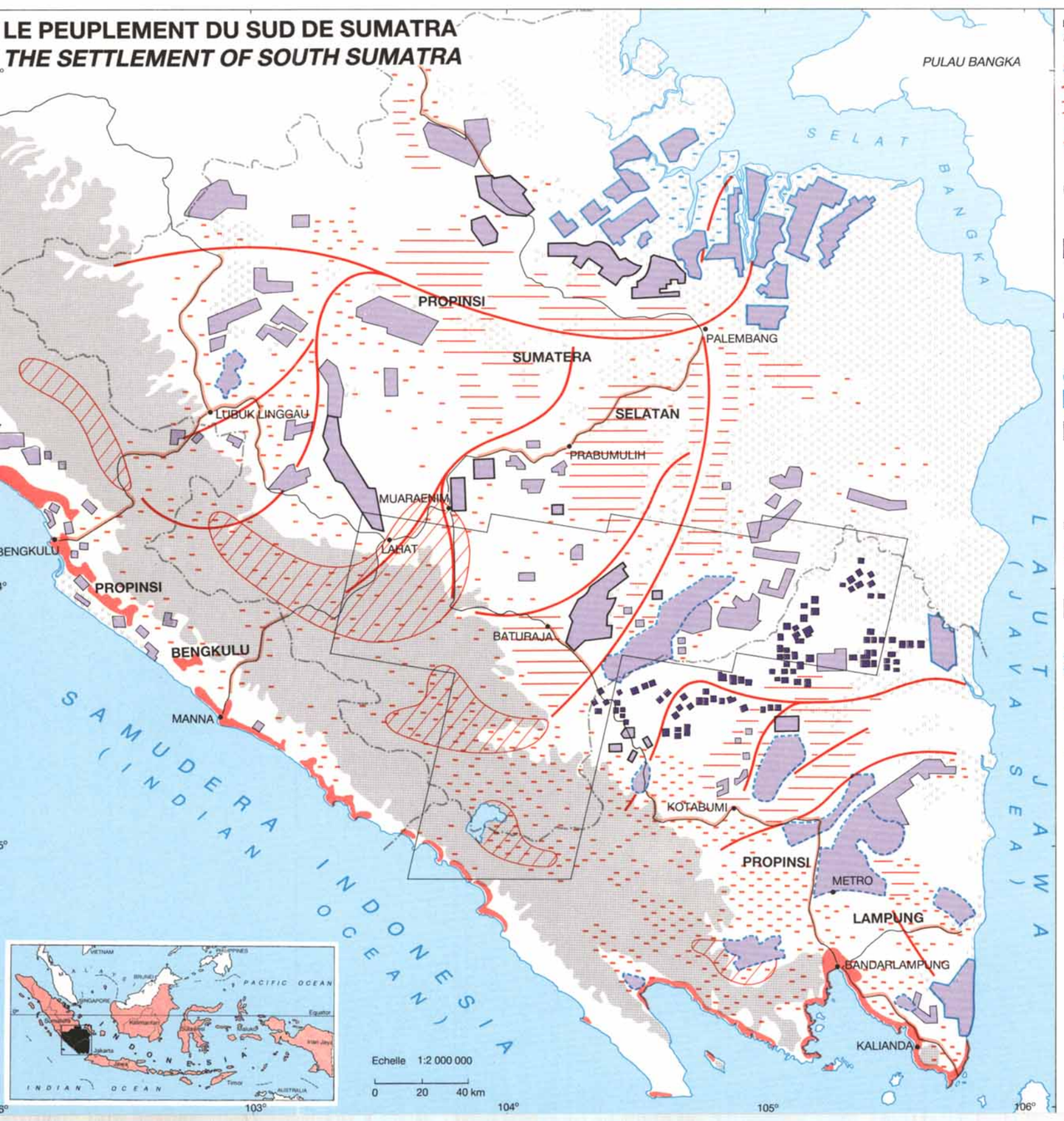
- cartes topographiques _ *topographical maps* 1/50 000 JANTOP 1969 - 1976 – BAKOSURTANAL, Bogor, séries _ *series* 1010-1011-1012-1112-1111

- images satellite SPOT _ *SPOT satellite images*

358/277	20/08/1986	358/278	21/07/1986
358/279	27/11/1987	358/280	01/05/1988
359/278	21/07/1986	360/278	21/07/1986

les scènes SPOT ont été interprétées à partir de tirages papier en fausses couleurs à l'échelle du 1/250 000 puis, après réduction, adaptées au fond à l'échelle du 1/500 000 *the SPOT photography prints (false color) were analysed at 1:250.000 and, after reduction, adapted to 1:500.000*

LE PEUPLEMENT DU SUD DE SUMATRA
THE SETTLEMENT OF SOUTH SUMATRA



PEUPLEMENT AUTOCHTONE EN PLACE AU DÉBUT DU SIÈCLE
INDIGENOUS PEOPLES AT THE BEGINNING OF THE CENTURY

- le long des côtes _ *along the coasts*
- le long des fleuves _ *along the rivers*
- occupation des interfluves *settlements of inter-river uplands*
- occupation des bassins intra-montagnards *settlement of mountain basins*

PEUPLEMENT ORGANISÉ _ *PLANNED SETTLEMENT*

transfert de population inter-îles
inter-island migration

- programme de peuplement à partir de Java, Bali, Lombok _ *settlement program sending from Java, Bali, Lombok*

transfert de population interne à la province
population resettlement within the province

- transmigration locale _ *local transmigration* (province de Lampung _ *province of Lampung - 1980-1990)*

système fondé sur _ system based on :

- la maîtrise de l'eau _ *water control*
- riziculture irriguée _ *irrigated rice fields*
- aménagement des marais _ *swampland reclamation*
- l'association plantations familiales et cultures vivrières (P.I.R.). _ *combination of family plantations and food crops (P.I.R.)*

(l'absence de cerne indique que le système est fondé sur les cultures vivrières en sec _ *lack of outline indicates system based on dry food-crops)*

PEUPLEMENT SPONTANÉ _ *SPONTANEOUS SETTLEMENT*

- habitat et défrichements récents *settlements and recent clearings*

cas remarquables _ *notable cases :*

- mitage de la forêt sur les versants montagneux _ *forest clearing on upland slopes* (le grisé indique les altitudes supérieures à 200 m _ *grey indicates altitude in excess of 200 m)*
- utilisation du battement de la marée *(pasang surut)* *use of tidal swamps* (pasang surut)
- occupation linéaire le long des routes principales *linear settlement along major roads*

SOURCES _ *SOURCES*

- SUMATRA 1/250.000 4e édition _ *fourth edition* _ 1945 Geographical Section, General Staff no. 4550 (Hind 1042, A.M.S.T. 511)
- Kantor Wilayah Departemen Transmigrasi Prop. Bengkulu, Lampung, Sumatra Selatan, *Peta lokasi pemukiman transmigrasi* (cartes de localisation des programmes Transmigration _ *location map of Transmigration settlements* _ différentes échelles _ *several scales)*
- Transmigration et migrations spontanées _ *Transmigration and spontaneous migrations*, Propinsi Lampung, Sumatera. ORSTOM - DEPARTEMEN TRANSMIGRASI, Jakarta-Paris 1989.
- enquêtes de terrain _ *field surveys* 1986-1990

carte réalisée par _ *by* Marc Pain

dessin-cartographie / *drawing-cartography* ORSTOM - DEP TRANSMIGRASI Yanto Wahyantono, Geosum

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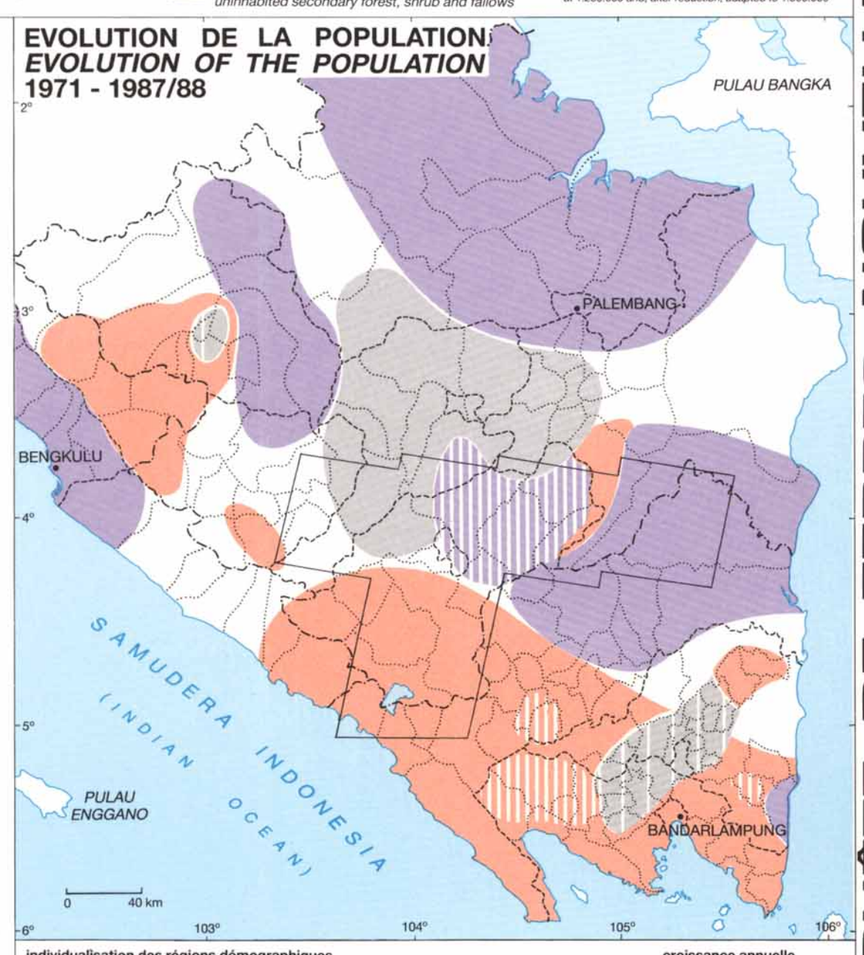
EVOLUTION DE LA POPULATION
EVOLUTION OF THE POPULATION
1971 - 1987/88



individualisation des régions démographiques
localization of demographic regions

(en dehors des cas voisins de la moyenne nationale 2,2% _ *except where rate approaches national average of 2,2%)*

	croissance annuelle *yearly growth* 1970-1987/88
très forte croissance ou forte croissance liée aux programmes de transmigration ou à l'aménagement des marais _ *very high or high growth rates linked to transmigration or swamp reclamation programs*	5 à 10%, voire plus *5 to 10% or more*
croissance soutenue ou forte croissance liée aux mouvements migratoires spontanés *steady or high growth rates linked to spontaneous migratory movements*	3 à 7% *3 to 7%*
croissance modérée malgré les apports de la transmigration *moderate growth rates despite influx caused by transmigration*	2 à 5% *2 to 5%*
croissance modérée malgré les apports migratoires spontanés en raison des ponctions de la transmigration locale _ *moderate growth rates despite spontaneous migrant influx due to the removal effect of local transmigration*	
faible croissance _ *low growth rates :* régions déprimées des plaines centrales _ *depressed regions at the central plains*	0,5 à 2,5% *0,5 to 2,5%*
saturation des vieilles régions de transmigration (très fortes densités rurales) *saturation of the old transmigration regions (very high rural densities)*	

SOURCES - *SOURCES*

- Departemen Transmigrasi, Jakarta:Kanwil Transmigrasi Bandarlampug, Bengkulu, Palembang
- Recensement de la population *Population census :* Sensus Penduduk 1971, 1980 BPS, Jakarta ; Penduduk Propinsi Lampung, Bengkulu, Sumatra Selatan, Kantor Statistik 1987/88 (projections et statistiques annuelles _ *annual projections and statistics)*

SUMATERA INDONESIA

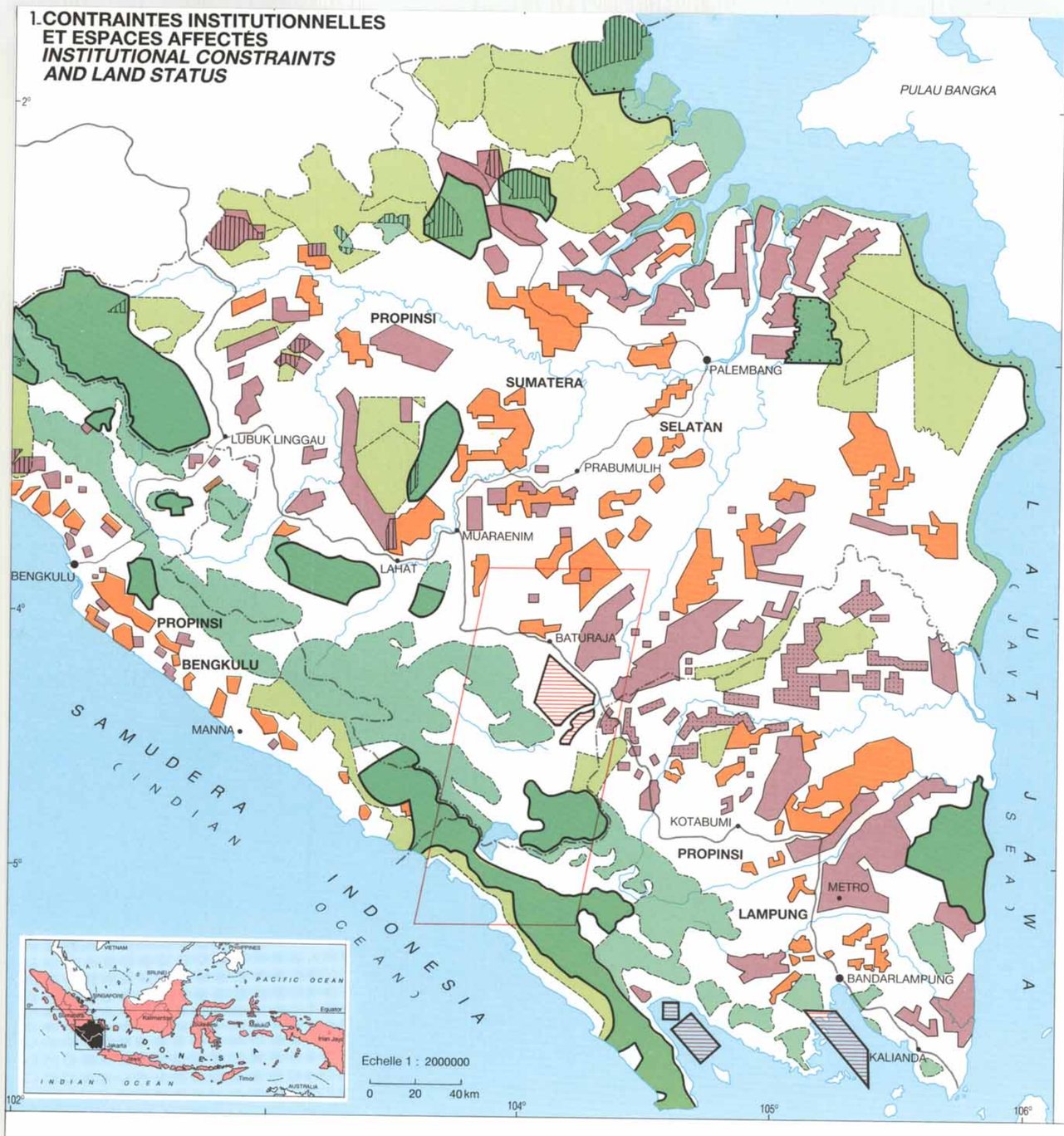
4 LA CONQUÊTE DE TERRES NOUVELLES Plaines et montagnes
DEVELOPMENT OF RECENT SETTLEMENTS Mountains and plains

01375

5 DYNAMIQUE DE L'OCCUPATION DE L'ESPACE
CONSTRAINTS ON AND EVOLUTION OF LAND USE

SUMATERA
INDONESIA

1. CONTRAINTES INSTITUTIONNELLES ET ESPACES AFFECTÉS
INSTITUTIONAL CONSTRAINTS AND LAND STATUS



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NATURE DES CONTRAINTES
TYPE OF CONSTRAINTS :

- parc national, réserve naturelle *natural park, reserve*
- réserve forestière et protection des bassins-versants *protected forest and conservation of catchment areas*
- domaine militaire, terrain de manœuvre *military area*
- lotissements de la Transmigration *Transmigration settlements*
- Transmigration Locale *"Translok" program*

contraintes agro-économiques *agro-economic constraints :*

- concession forestière - *forest claim*
- principales plantations agro-industrielles *main agro-industrial estates*

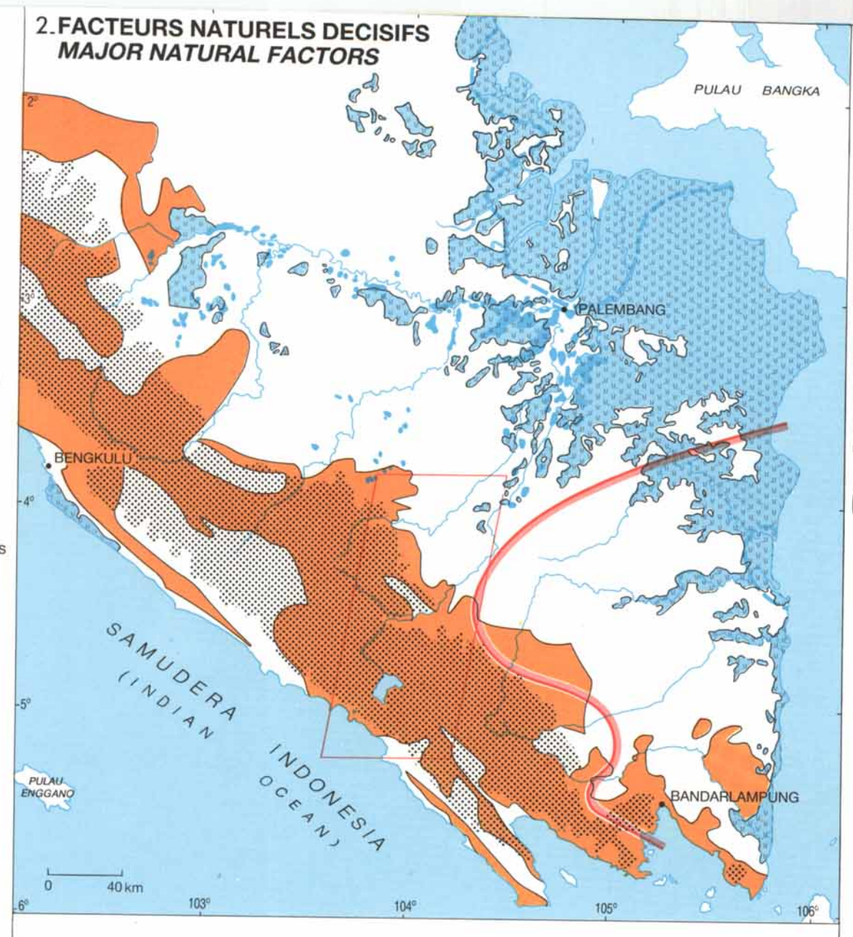
POIDS DES CONTRAINTES
DEGREE OF CONTRAINTS :

- contrainte très dure, généralement respectée *very strict constraint, usually respected*
- contrainte dure (terrain cadastré ou clôturé) *strict constraint (cadastral or enclosed area)*
- contrainte souvent contournée (bornage généralement absent) *constraint often circumvented (boundaries generally unmarked)*
- espaces litigieux, recouvrement de terrains de nature juridique différente *contested area, overlaping claims on land with unclear legal status.*
- terrain borné - *marked boundaries*

SOURCES - *SOURCES*

- Departemen Kehutanan (Jakarta), Kantor Wilayah Kehutanan (Bandarlampung, Bengkulu, Palembang) *Peta Dasar, Propinsi Dati / Bengkulu, Lampung, Sumatera Selatan* (statut des forêts - *forest status*, derniers doc. disponibles - *last doc. available*) 1/500.000
- Government of Republic of Indonesia, Ministry of Transmigration. Directorate general of settlement preparation, *SUMATRA - Series Land Use/Forest Status* - 1/250.000 - RePPProT - 1988.
- Pemerintah Daerah Tingkat 1, Bengkulu, Lampung, Sumatera Selatan *Peta Proyek Perkebunan D.I.* (plantations agro industrielles - *estates*) 1/500.000
- Kantor Wilayah Kehutanan, Palembang *Peta Kawasan Hutan* 1/500 000 *Peta Percadangan Tanah Lokasi Perkebunan dan Transmigrasi* - non daté - *no date*
- Kantor Wilayah Departemen Transmigrasi Prop. Bengkulu, Lampung, Sumatra Selatan, *Peta lokasi pemukiman transmigrasi* (cartes de localisation des programmes Transmigration - *location map of Transmigration settlements*) différentes échelles - *several scales*, 1989.
- Transmigration et migrations spontanées - *Transmigration and spontaneous migrations*, Propinsi Lampung, Sumatera. ORSTOM - DEPARTEMEN TRANSMIGRASI, Jakarta-Paris 1989
- Angkatan Bersenjata Republik Indonesia, Markas besar - Tentara Nasional Indonesia - Angkatan Laut, *Lokasi Daerah Latihan TNI A.L. di Propinsi Lampung*, 1989.
- enquêtes de terrain - *field surveys* 1989-1990

2. FACTEURS NATURELS DECISIFS
MAJOR NATURAL FACTORS

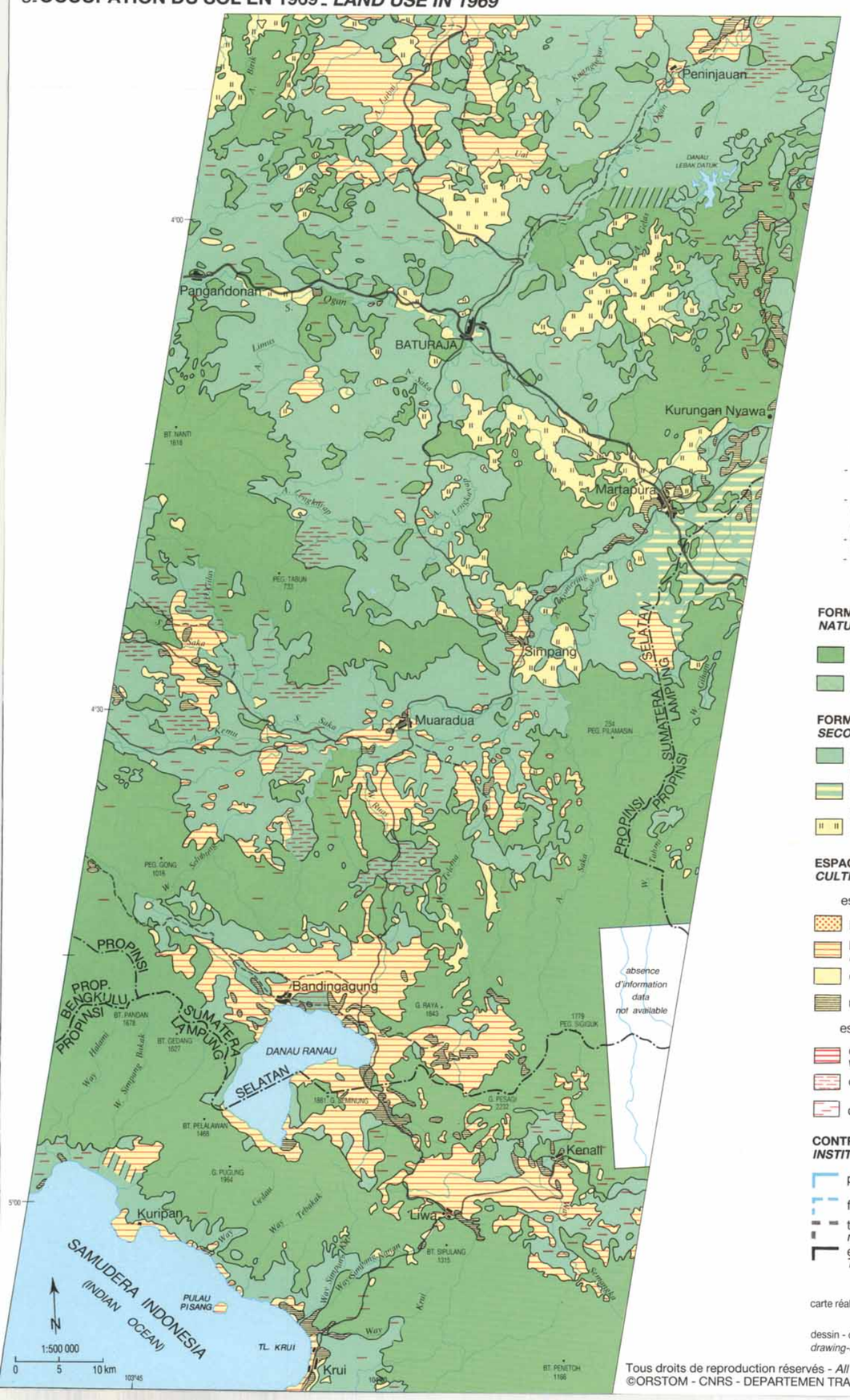


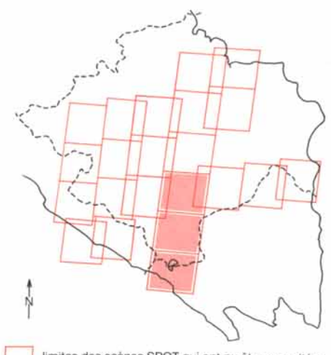
- bonnes terres d'origine volcanique (latosols et andosols) *fertile land of volcanic origin (latosols and andosols)*
- région de fortes pentes, risque d'érosion si forte occupation du sol sans aménagements - *steep slopes, risk of erosion if densely occupied without appropriate environmental precautions*
- région à risque de déficit hydrique (saison sèche pouvant excéder deux mois) *area subject to drought (risk of dry season exceeding two months)*
- région marécageuse - *swampy area*
- limite de l'influence de la marée *limit of tidal influence* (pasang surut)
- terres régulièrement inondées (rivière Musi et affluents) *regularly flooded areas (Musi river and tributaries)*

SOURCES - *SOURCES*

- Sholtz U., *Agrargeographie von Sumatra*. Universität Giessen, 1988
- Laumonier et *al.*, Carte Internationale du tapis végétal, Sumatra Sud, *International map of the vegetation, South Sumatra* SEAMEO - BIOTROP, Toulouse, 1983
- Jahah H., Suhadi, Dudal R., *Peta tanah explorasi*, Sumatera bagian selatan 1, 1:1.000.000, Departemen Pertanian, Jakarta 1964
- Soil Research Bureau (P.P.T.), *Explanatory Booklet of the Land Unit and Soil Map, Sumatra*, Bogor, 1989
- Republic of Indonesia, Ministry of Public Works, *Musi River Basin study, thematic map : location map of river training and flood control works 1989.* (feuilles *sheets = Menggala, TanjungKarang, Kotaagung, Toboali et/and* Lahat, Baturaja : impression en cours *printing under process*)
- Cartes topographiques - *topographical maps* 1/50 000 JANTOP 1969 - 1976 BAKOSURTANAL Bogor,

3. OCCUPATION DU SOL EN 1969 - *LAND USE IN 1969*





- limites des scènes SPOT qui ont pu être consultées *boundaries of SPOT satellite photos available for the study*
- scènes SPOT interprétées pour la carte : "occupation du sol en 1986" *SPOT satellite photos interpreted for the map : "land use in 1986"*

SOURCES - *SOURCES*

- cartes topographiques - *topographical maps* 1/50 000 JANTOP 1969 - 1976 BAKOSURTANAL, Bogor, séries - *series* 1010 - 1011 - 1012
- Government of Republic of Indonesia, Ministry of Transmigration. Directorate general of settlement preparation, *SUMATRA - Series Land Use/Forest Status* - 1/250.000 - RePPProT - 1988. Séries 1010, 1011, 1012
- scènes SPOT - *SPOT* satellite photos, 278/358 - 359 - 360 - 21/07/1986
- enquêtes de terrain - *field surveys* 1990

FORMATIONS VEGETALES SPONTANEES
NATURAL DENSE VEGETATION TYPES

- forêt dense humide sempervirente *dense moist evergreen forest*
- forêt inondée ou marécageuse *swamp or riparian forest*

FORMATIONS DEGRADEES
SECONDARY AND SHRUBBY VEGETATION

- forêt secondaire - *secondary forest*
- mosaïque de type dérivé : recru forestier, friches à *Imperata cylindrica* *secondary and derived type mosaic : secondary forest and shrub savanna*
- friches à *Imperata cylindrica* *shrub savanna with* Imperata cylindrica

ESPACES CULTIVES OU EN VOIE D'OCCUPATION
CULTIVATED OR PIONEER AREA

espaces cultivés - *cultivated area :*

- plantations agro-industrielles - *estates*
- petites plantations dominantes *predominantly smallholdings*
- cultures en sec *(palawija)* - *dry food crops* (palawija)
- rizières - *paddy fields*

espaces en voie d'occupation - *pioneer area :*

- défrichements très importants *very extensive clearings*
- défrichements importants - *clearings extensive*
- défrichements épars - *scattered clearings*

CONTRAINTES INSTITUTIONNELLES
INSTITUTIONAL CONSTRAINTS ON SETTLEMENT

- parc naturel - *natural park* (RePPProT 1988)
- forêt protégée - *protected forest* (RePPProT 1988)
- terrain de manœuvre militaire *military practice area*
- espace affecté à la Transmigration *Transmigration project area.*

carte réalisée par - *by* **1.2 Marc Pain** **3.4 Frédéric Durand**

dessin - cartographie *drawing-cartography* ORSTOM - DEP. TRANSMIGRASI Jalizar, Geosum

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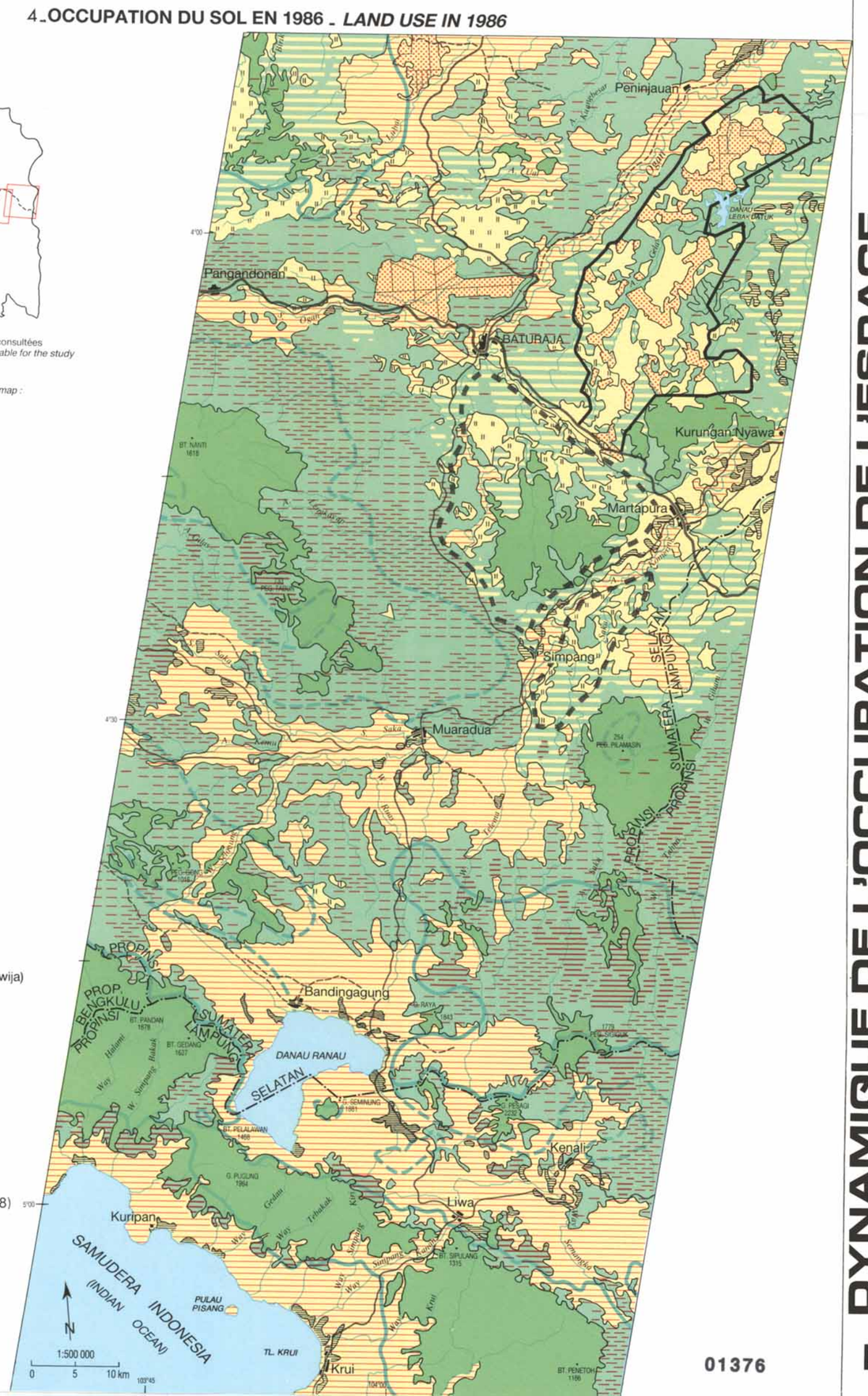
4. OCCUPATION DU SOL EN 1986 - *LAND USE IN 1986*



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