

Impact of accessibility on the range of livelihood options available to farm households in mountainous areas of northern Viet Nam

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Abstract

The comparison of two sets of rural villages in the province of *Bac Kan* that differ in accessibility allowed the examination of the influence of roads on livelihood systems of farming households. Villages far from roads still depend heavily on agriculture. With little influence from outside, the farmers in these villages must develop their own initiatives to secure their livelihoods. In contrast, farmers in villages that are close to roads can more easily take advantage of non-farm opportunities for income generation. Ease of transport and access to the marketplace are the most important assets of these villages in the view of the inhabitants. Government and non-government agencies adapt their activities in rural development according to the accessibility of the target populations. However, farmers are critical of most projects that were not based on their perceived needs. To smooth the transition to accessibility, government services need to support participatory locally-driven initiatives.

Keywords: accessibility, rural development, development projects, household economy, local initiatives, northern Viet Nam

1. Introduction

Bac Kan is one of the poorest provinces in *Viet Nam* (General Statistical Office, 1999). More than 30% of its 122 communes are registered as poor or very poor¹ and 21% of its households live on less than 5 USD per person per month. Their critical situation arises largely from the agro-ecological and socioeconomic constraints specific to mountainous environments (Donovan, 1997; Jamieson et al., 1998). The biophysical limitations to agricultural productivity in *Viet Nam*'s mountains are well documented. They include (i) the limited availability of flatland area suitable for intensive rice-based cropping systems, and (ii) the unsustainability of shifting cultivation systems on the hillsides due to increasing population pressure and environmental degradation (Hill, 1985; Hirsch, 1997; Pandey and Dang Van Minh, 1998). There are also socioeconomic constraints common to most mountainous areas, including: (i) cultural differences among ethnic groups; (ii) limited formal education; (iii) high rates of population growth, particularly in remote areas; and (iv) varied interpretations of national policies resulting, for example, in unclear land-use rights (Kerkvliet 1995). State policies are developed on a national level but administered locally, and subject to numerous re-interpretations along the way.

Throughout this paper, by "accessibility", we mean the speed and reliability of transportation for people and goods. In general, areas with paved roads are most accessible (because rapid transport even by truck is reliable even during the rainy season), whereas areas with only footpaths are least accessible. We define social accessibility as openness of a village and its inhabitants towards people from outside and the ability of villagers to communicate with self-confidence with people from outside. Economic accessibility is defined as the degree of monetary relations as well as the degree of market economy established in a village. It is generally agreed that accessibility is a key factor by which the biophysical constraints interact with the socioeconomic aspects of development in mountainous areas (Prescott and Litvac, 1995; Fforde and Sénèque, 1995). However, the mechanisms that link accessibility, livelihood strategies, and poverty are not well documented. In this paper, we hope to fill this gap by examining villages in three communes that were subject to the same nationally-administered policies but found themselves with dramatically different opportunities because of their differences in accessibility.

By contrasting villages that differ in terms of their accessibility while having comparable resource endowments, we will analyze the various dimensions of

¹In rural areas, the government classifies a commune as poor if more than 30% of the households have a monthly income lower than 80,000VND per person and very poor if lower than 45,000VND per person. In urban areas the poverty threshold is 120,000VND per person per month. The exchange rate in 2002 is 1US\$ = 15,000VND.

accessibility (i.e., spatial, social, and economic) that are intricately interwoven and show their effects on farmers' livelihood strategies. Then, we will examine how improving accessibility can increase the range of income-generating options available to farm households and therefore achieve the objective of poverty alleviation.

2. Methodology

2.1. Site selection

This chapter draws on two studies of farmers' livelihood strategies that were conducted independently from each other but used the same guiding principles and methods. As shown in Table 1, the four sites within these studies represent all four of the possible combinations between two levels of accessibility (high or low) and two agricultural systems (paddy rice or shifting hillside cultivation).

The first field study was conducted from 1996 to 1999 in two villages of *Van Tung* and *Thinh Vuong* communes. Both villages are characterized by high accessibility because they are located close to either paved roads or district administrative centers. However, the two villages differ in their major agricultural systems (paddy rice in *Van Tung* versus shifting hillside cultivation in *Thinh Vuong*). The second field study was conducted in 2000 in *Nghien Loan*, a commune of *Ba Be* District in the north of *Bac Kan* Province, that is characterized by low accessibility. Within this commune, as in the first study, we focused on two villages that differ in their agricultural systems. Specifically, *Ban Dinh* village (like *Van Tung*) is organized around a large flatland area cultivated with paddy rice

Table 1: *Main characteristics of the four study sites*

Study sites	Accessibility	Dominant agricultural system	Population density (persons / km ²)	Dominant ethnic group
<i>Van Tung</i> village of <i>Van Tung</i> Commune	+	Paddy rice on flatlands	55	<i>Tày</i>
<i>Thinh Vuong</i> village of <i>Thinh Vuong</i> Commune	+	Shifting cultivation on hillsides	11	<i>Dao</i>
<i>Ban Dinh</i> village of <i>Nghien Loan</i> Commune	-	Paddy rice on flatlands	68	<i>Tày</i>
<i>Khuoi Un</i> village of <i>Nghien Loan</i> Commune	-	Shifting cultivation on hillsides	112	<i>Dao</i>

by farmers from the *Tày* ethnic group, whereas the *Dao* farmers of *Khuoi Un* village (like those in *Thinh Vuong*) rely on shifting cultivation on sloping land for their staple food production. Table 1 summarizes the human and natural environments of the studied villages.

The hypothesis underlying our site selection procedure is that the diversity of local development patterns, and of farmers' capacities to seize upon income-generation opportunities, is caused by two factors:

- (i) the accessibility of the open market economy to inhabitants of a region, and
- (ii) the impacts of government policies and development projects.

These two factors in turn depend on the constraints to their effective implementation: accessibility, primarily in its spatial and social dimensions.

2.2. Survey method and data analysis

Each study consisted of (i) an analysis of land use changes based on aerial photographs from 1952 and 1998; (ii) participatory observations, with the researcher living in the village and developing a relationship of trust with the interviewed people; (iii) in-depth interviews of key informants; and (iv) household surveys to elicit quantitative and qualitative information through semi-structured interviews with the help of a translator.

We selected villages that were representative of the commune diversity in terms of wealth and livelihood strategies. In the first study, we surveyed 54 households in *Van Tung* Commune, and 65 households in *Thinh Vuong* Commune. In the second study, we surveyed 51 households in *Nghien Loan* Commune (25 and 26 households for *Ban Dinh* village and *Khuoi Un* village respectively). The survey methods are described in more detail in Alther (1999; 2000) and Rousseau and Gevraise (2000). We analyzed land-use changes over the last 50 years in an effort to identify their main driving forces. The land-use and land-use-change maps were used to quantify the impact of land-use changes on agricultural landscapes and assess the natural resource base on which today's households must base their livelihood strategies. We then categorized farm households according to their livelihood strategies and identified the specific constraints to improving their welfare. This led us to the identification of intervention points to assist these farmers in adapting their livelihood strategies to their changing environment.

3. The case studies

3.1. *Van Tung and Thinh Vuong - a case study in accessibility*

Van Tung research site is situated in a broad river valley bordered by rolling hills covered with shrubs and grasses. During the summer season, the river provides

enough water to irrigate rice fields and most terraces, but in winter there is only enough water for domestic use. *Van Tung* village is linked to the district capital town of *Ngan Son* only by a three-kilometer footpath that is not passable by any wheeled vehicle. However, *Ngan Son* itself is highly accessible, because it is located along the paved national highway No. 3 that runs from *Ha Noi* to the provincial capitals of *Bac Kan* and *Cao Bang*. Therefore, the nearby villages (including *Van Tung*) are considered to have good accessibility. *Van Tung* is often visited by extension officers, and benefits from frequent Government and foreign-sponsored rural development projects.

The wide river valley in *Van Tung* allows farmers to base their production systems upon paddy rice. However, most households are highly diversified. For example, 53% of households have some non-farm sources of income, such as wages from formal and informal employment, income from trade (buying and then re-selling goods produced by others), or sale of forest products. Some participate in development projects for farm sources of income such as sales of upland crops, vegetables, livestock, and poultry in the *Ngan Son* marketplace. Farmers in *Van Tung* attain a high degree of food self-sufficiency of 90%. Historically, slash-and-burn cultivation was practiced on the surrounding hillsides, but these have been deforested for over one hundred years (Doudoux, 1891). The hillsides have regenerated substantially, mainly in the form of shrubs and small trees, likely permitted by farmers' focus on the lowland areas (Figure 1-A). However, the trees' regrowth remains checked by extensive livestock grazing.

Van Tung is inhabited primarily by the *Tày-Nùng* ethnic groups (54%), followed by the *Dao* (36%) and the *Kinh* (10%). *Van Tung* shows remarkably good relations among ethnic groups; for example, 30% of households are ethnically mixed. All groups have similar production strategies and have the possibility of serving in the local administration.

Population movements have played a major role in the recent development of *Van Tung*, though official data on this delicate subject is not easily obtained. *Van Tung* Commune exhibits a substantially lower population density (55 people/km²) than most mountainous regions of *Viet Nam* (Tran Thi Que et al., 1996), largely because of mass emigrations to the New Economic Zones in the south of the country (personal communication from the head of *Van Tung* Commune). The low population density has reduced land scarcity and improved farmers' prospects in the commune.

To widen the scope of our study, we also investigated the case of *Thinh Vuong*, a highly accessible village with minimal access to flatland fields in *Cao Bang* Province. *Thinh Vuong* is a predominantly *Dao* village stretched out on a mountain ridge along the paved national highway No. 3 midway between *Ngan Son* and *Cao Bang* Province. Inhabitants of *Thinh Vuong* rely on a small number of terraces, most of which cannot be irrigated, to grow most of their staple crops. They

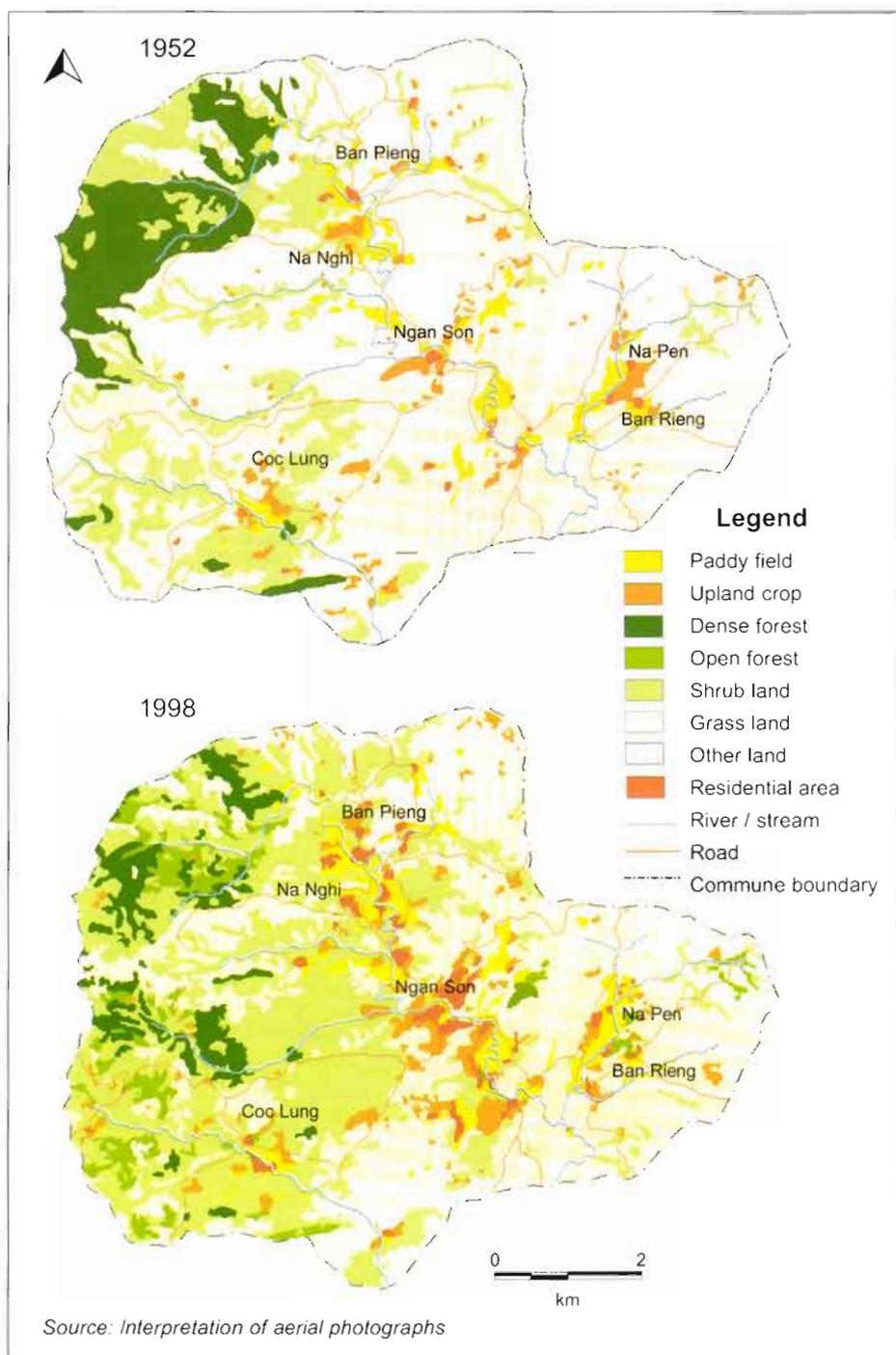


Figure 1-A: Land use maps of Van Tung Commune, 1952 and 1998.

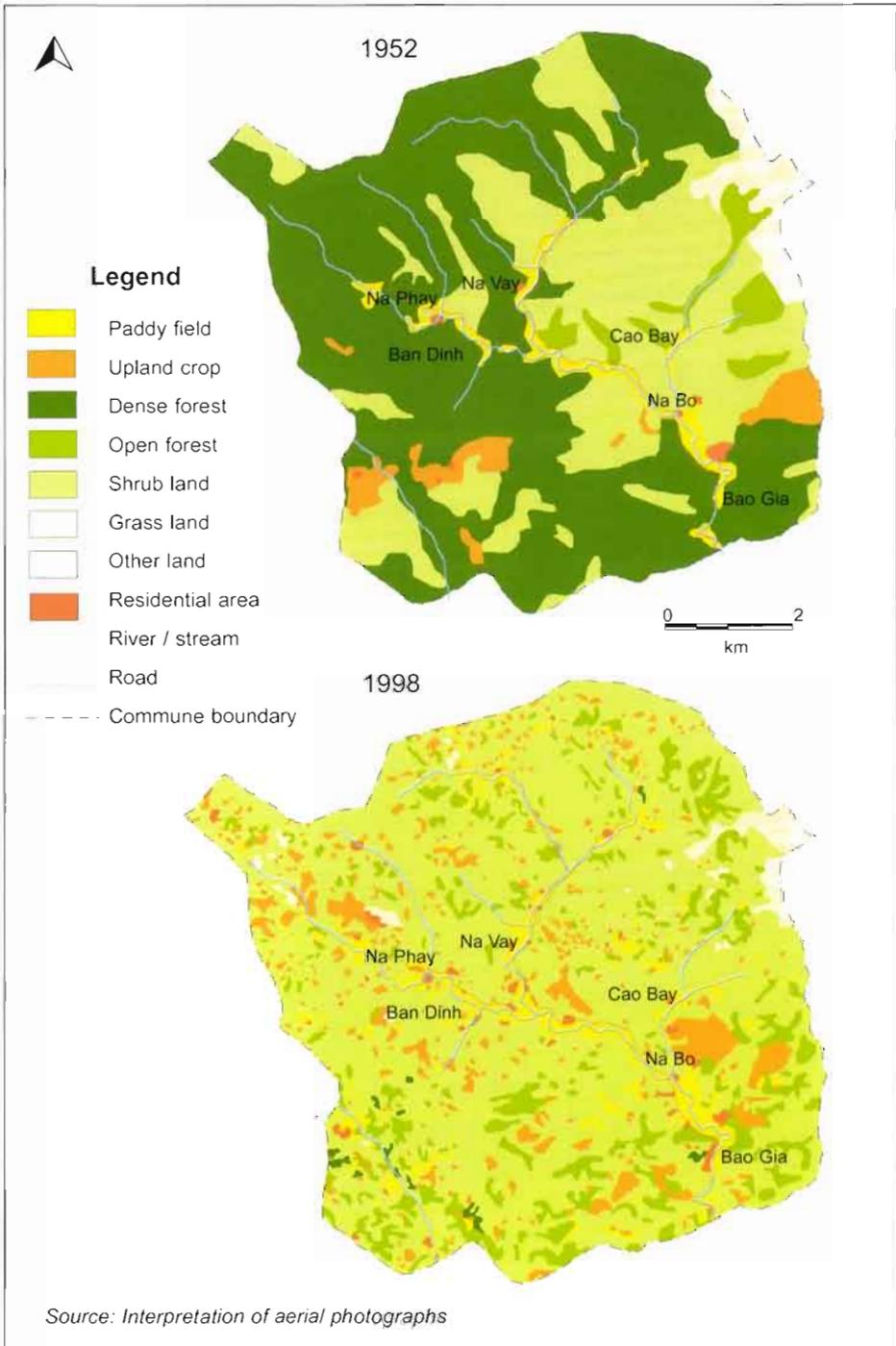


Figure 1-B: Land use maps of Nghien Loan Commune, 1952 and 1998.

formerly practiced extensive swidden cultivation, but this technique was outlawed in the early 1990's. Since then, the sale of forest products and other non-farm activities has become an important component of household income. As in *Van Tung*, the *Thinh Vuong* landscape has regenerated in recent years, likely due to the recent ban on slash-and-burn cultivation.

The age pyramids of both villages are typical of developing countries, with many children and fewer elderly people (Alther, 2000). However, the relatively low number of children below ten years of age suggests a stabilizing population. This is a result of the national family planning campaigns to limit families to one or two children.

3.2. *Nghien Loan Commune - a case study in inaccessibility*

Nghien Loan Commune, in the far northern part of *Bac Kan* Province, is characterized by low accessibility. A rugged landscape and few roads have kept this commune isolated. Major marketplaces are distant indeed for farmers here.

Production systems in both studied villages are subsistence-oriented. *Ban Dinh* farmers, mostly of *Tày* ethnicity, focus on flatland paddy rice production, and complement this with terraces and slash-and-burn cultivation on the hillsides and small-scale animal husbandry. *Khuoi Un* farmers, mostly *Dao*, focus production on the hillsides, where they combine extensive terracing with slash-and-burn cultivation. Buffalo and cow raising is developing in the commune, spurred on since 1999 by the existence of a new livestock marketplace in *Ban Dinh*.

Of all the areas studied by the SAM Program, *Nghien Loan* Commune has shown the sharpest separation of ethnicities. Here, ethnic groups inhabit clearly-distinct tiers of the ecosystem, with *Tày* farmers cultivating the valley-bottoms; *Dao* on midland hillsides and terraces; and *H'mong* farmers subsisting almost exclusively on the steepest slopes using slash-and-burn cultivation of upland rice, maize, and cassava. This rigid tiering of the ecosystem is likely a result of high population density (68 people/km² in *Ban Dinh* village and 112 people/km² in *Khuoi Un* village), poverty, and intrinsic scarcity of flatland. Unlike the farmers studied in the comparatively wealthy and accessible villages described above, farmers in *Nghien Loan* do not have the luxury of sharing their land and social spheres with outsiders (i.e., people outside their ethnic group or immigrants).

Since the cooperative period, *Nghien Loan* Commune has received an influx of immigrants, particularly of *H'mong* from *Cao Bang* Province, first fleeing the 1979 war with China and later pushed out by new land allocation policies. Thirty-three families inhabited *Khuoi Un* in 1990, the year that paddy land was allocated to individual households. Today there are more than 200 households in the village. Over the years, this growing population has dramatically impacted the landscape as displayed on the land use maps in Figure 1-B, and current practices are not sustainable. Fallow periods on the hillsides are decreasing, yields are dropping,

weeds are gaining predominance, and pasturelands are not regenerating as quickly as they are being grazed.

The prospects for *Nghien Loan* are not entirely bleak. Faced with a growing population subsisting on a shrinking resource base, *Khuoi Un* locals have built on their social capital to implement a set of livestock-management rules that permit them to produce more from their limited land. The ability to develop community-based resource management rules is of substantial benefit to a village facing scarcity. In the last year, a road from *Cho Ra*, the district administrative center, has been built through the commune, making *Nghien Loan* more accessible to the rest of the district and increasing farmers' options for diversification. Some already are considering the option of planting fruit trees.

4. Effects of accessibility on income generation strategies

Figure 2 displays a conceptual model of how roads influence four elements of farmers' income generation strategies. Apart from their rice-based subsistence agriculture, households in the study area have four main options to generate income. Each of these four options is largely influenced by accessibility:

- (i) participation in State programs and in development projects (State and other),
- (ii) marketing of agricultural and forest products,
- (iii) other, mostly non-agricultural employment alternatives, and
- (iv) migration.

These four elements of farmers' income generation strategies are listed in light blue in the middle of Figure 2. Positive influences on the household economy are shown in green on the left of the figure, whereas negative influences are shown in red on the right side.

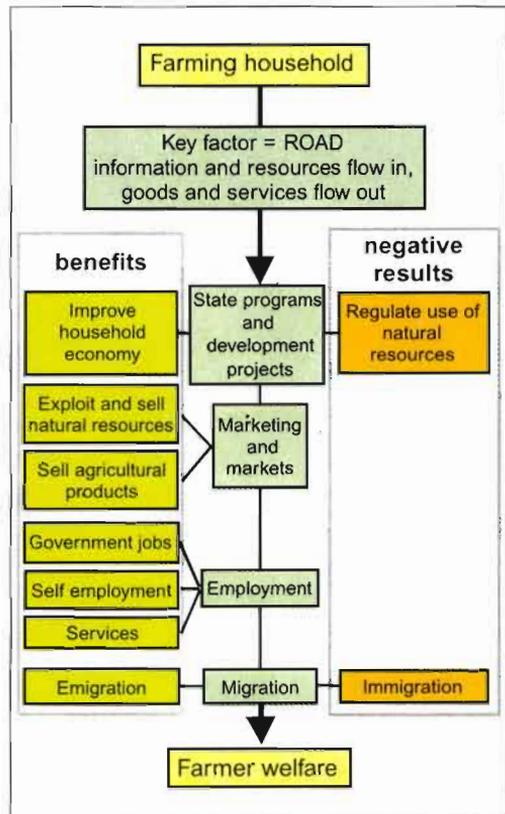


Figure 2: Conceptual model of influence of accessibility on farmers' income generation strategies

Castella et al. (2002a) showed strong relationships among accessibility, land use systems, ethnicity, and poverty indicators in villages within *Cho Don* District of *Bac Kan* Province. In the next sections of this paper we will move beyond the statistical description of these relationships, by applying the conceptual model introduced in Figure 2 and investigating the mechanisms linking these variables.

4.1. Effects of accessibility on relationship with the State

The State has a substantial influence on livelihood strategies in the uplands of northern *Viet Nam*. From the establishment of the cooperatives in 1960 to the decollectivization processes of the 1980s and the land allocations of the 1990s, State policies have had major impacts on social organization and the relationships of production in the studied region. In each case, State policy was developed at a national level and then passed down through provinces, districts, communes, and villages. At the village level, village leaders and farmers tailored each policy to fit their own local circumstances as well as possible. One region might follow a given policy to the letter, while another region might virtually ignore it. Although on paper policies may be all-encompassing and have national scope, in practice the influence of the State is limited by the accessibility of the targeted regions.

Van Tung, by virtue of its accessibility, has been a close partner of the State organizations in implementing State policy. This has both helped and hindered farmers. On the one hand, *Van Tung* has received one State project after another, and many farmers benefited from governmental support. On the other hand, the close scrutiny by district authorities has restricted farmers' ability to reinterpret State policy to make it fit their particular circumstances.

The villages of *Nghien Loan*, meanwhile, have had tenuous relationships with the State. The same policies implemented in *Van Tung* likewise arrived in *Nghien Loan*, but in *Nghien Loan* authorities have not had the capability to enforce any policies seen as undesirable by the local population. Nor has *Nghien Loan* been privileged by the same influx of funding as *Van Tung*. *Nghien Loan* is out of reach of Government projects. So far, only a few activities from the resettlement program for ethnic minorities have reached this remote area, limited to the distribution of blankets and kitchenware to poor households. The vast majority of projects in *Ba Be* District where *Nghien Loan* is located have focused on the readily accessible lakeshore region, supporting the National Park management board in tackling biodiversity conservation issues (Zingerli et al., 2002).

The implementation of the cooperatives

In 1960, the State established the cooperative system in similar form in all of the studied villages. Almost all land and most livestock was collectively owned, and laborers were remunerated according to a labor point system. The cooperative system had the twin goals of equalizing the economic status of individuals and organizing agricultural production on a national scale.

In *Van Tung*, the implementation of the collectivist system from 1961 to 1969 was continually resisted. Farmers lacked motivation to put any more effort than was necessary into cooperative tasks, as their share of the collective production was being minimized by rice exports to the delta region of the Red River, where famine was raging. These exports led to hunger in villages such as *Van Tung* that otherwise would have covered their staple food needs. Making matters worse, newly arrived families, mostly of *Kinh* ethnicity, could join the cooperative without contributing either cattle or land, leading to tensions among members.

In the early 1970s, innovative farmers focused their attention on private agricultural activities, either appropriating parts of collectively managed fields or building new terraces. Farmers who withdrew from the cooperative to concentrate on individual production were stigmatized initially, but once it was clear that they had become more successful, other farmers soon copied them. By the time the 1988 *doi moi* reforms arrived to dismantle the *Van Tung* cooperative, farmers already had developed an open market economy, and the new policy was little more than a formalization of what already existed.

In contrast to *Van Tung*, *Nghien Loan* farmers did not experience major problems with rice exports to the lowland regions. *Nghien Loan* was part of the same national system of cooperatives as *Van Tung*, but its relative inaccessibility made it an inconvenient source for rice exports. That said, farmers in the *Nghien Loan* cooperative nonetheless faced difficulties with the allocation of production drawn from a very limited paddy field area. As the population of the commune grew, the proportion of rice production available to each household decreased. With time, households faced longer and longer periods of rice shortage, and had to rely more and more on private cultivation of the uplands for their survival.

Forestland allocation and protection policy

Beginning in the mid-1990s, the State began to allocate forestlands to individuals across the nation, with the intention of increasing farmers' sense of ownership of forestlands and putting an end to the extensive deforestation that was taking place. In 1997, a World Food Programme (WFP) reforestation project was accompanied by further allocation of forestland. Local authorities stipulated the permissible uses of specific upland areas, and allocated them to individual households. Associated with the allocation was a protection policy that restricted the exploitation of certain forest areas and outlawed slash-and-burn cultivation. Farmers who received areas classified for reforestation or forest protection would receive annual payments for watching over the land and protecting it from being cleared or cultivated.

In *Van Tung*, farmers' reaction to the forestland allocation policy was general disinterest. 75% of families did not want to become responsible for protecting forests. To meet the demands of the provincial Department of Agriculture and Rural Development (DARD), village leaders decided that all farmers would

jointly protect the surfaces that could not be allocated to individuals, and the remuneration would be equally distributed among them. In spite of the campaigns of the extension officers, only 20 ha of forest were allocated to individuals. The remunerations offered for forest protection were too small to be worthwhile to farmers, and the forests that needed to be protected were too far from the village. Instead, farmers pursued better income-generation opportunities such as agricultural intensification, formal and informal employment, and small-scale trade. Nonetheless, as we will discuss later, the pressure from the forest protection policy stimulated some farmers to seek more favorable living conditions in the south of the country.

Forest protection policy in *Van Tung* met with resistance, but nonetheless was implemented, driving some farmers out of the region. In contrast, in the *Dao* and *H'mong* villages of *Nghien Loan*, the policy was virtually ignored. In the mid-1990's, a large number of *H'mong* arrived in the *Nghien Loan* region. Most had been driven out of the *Cao Bang* area by forestland allocation and restrictions on slash-and-burn cultivation. *Nghien Loan* was subject to the same policies, but was inaccessible enough that authorities could not enforce the bans. At present, slash-and-burn techniques in an environment of high population pressure are rapidly diminishing the resource base. But with few other choices, *Nghien Loan* farmers continue to engage in the only activity that can feed their households.

Thin Vuong farmers, like those from *Nghien Loan*, rely on the forest for survival, but ignoring forest protection policy was not an option for them. The village lies along the highway, making newly-cleared fields highly visible to local authorities. Thus, farmers feared the repercussions of disobeying the law. Low population density allowed each household to receive a large amount of forestland for protection, and thus a correspondingly large annual payment. With few agricultural alternatives, farmers willingly became guardians of the forests... as long as they were being paid for it. Forest cover improved remarkably in the late 1990s, and in the past few years very few upland fields have been burned. It is the high accessibility and visibility of the village that has made forest protection policy effective.

4.2. Effects of accessibility on access to projects

Development assistance projects do not necessarily target the individuals who are in greatest need. Inaccessible communities can be passed over in the selection process because of the added cost of working in difficult regions. Further, regions with better infrastructures may have greater potential to capitalize on the assistance offered by projects. Thus, projects may be able to achieve more rapid progress in comparatively accessible regions, even if there are greater needs elsewhere. Indeed, some projects simply may have nothing to offer to a region that is too remote. For example, *Nghien Loan*'s inaccessibility and lack of marketing

channels makes it a very ineffective target for a fruit tree plantation project. All these reasons can result in a distribution of projects that marginalizes the regions that are the least accessible, and often the most in need of support.

We have already discussed *Nghien Loan's* Commune lack of access even to the district extension service, and the resultant clustering of projects in other communes of *Ba Be* District. In contrast, some but not all of *Nghien Loan's* villages benefited from the WFP reforestation project. In particular, the *Tây* village of *Ban Dinh* as well as most of the *Tây-Nung* villages within *Nghien Loan* Commune participated in the WFP project. However, the *Dao* village of *Khuoi Un* did not. It was virtually impossible for individual households of the *Dao* and *H'mong* villages to participate in such a project because their very limited land was dedicated exclusively to annual crops. They could not afford to dedicate a piece of land for such a delayed return on investment.

Van Tung, in contrast, has benefited from a comparative abundance of projects. Unfortunately, this abundant assistance has not always translated into benefits for farmers. In this section, we will examine several projects that have been implemented in *Van Tung* in recent years, and attempt to identify how these projects have contributed to the current skepticism of farmers toward development assistance.

Table 2 summarizes some of the projects that have been implemented in *Van Tung* and *Thinh Vuong* in the last decade. In the early 1990s, local authorities provided fruit tree seedlings (mostly plums) to farmers to give them an opportunity for additional income generation. When the seedlings were distributed, there was not a lot of fruit on the market, and prices were high. But because the same project had been implemented in many villages in the area, by the time the trees bore fruit, the market was flooded with plums and prices had dropped sharply. As the project did not offer a means of processing the fruit or a feasible way to bring it to larger markets in the lowlands, the fruit tree project failed to deliver on its promise of increased income.

Following the forest protection project mentioned earlier, in which few *Van Tung* farmers participated, the government proposed a reforestation project in cooperation with the WFP. The areas chosen for reforestation were close to the villages, and the payments offered were substantial enough to attract the attention of farmers (1.5 million Dong per replanted hectare, as opposed to the 50,000 Dong offered by the previous forest protection program). Most of the farmers in *Van Tung* were interested in participating in the project, for the following reasons:

- The remuneration was substantial enough to make participation worthwhile.
- Although labor requirements were high, farmers could organize the timing for their labor input as they chose.
- The seedlings were offered free of cost, but the forest would be the farmers' to exploit in the future. People were getting something for nothing.

Table 2: Some of the many State-implemented projects in Van Tung and Thinh Vuong Communes

Project	% of village households participating in projects		Purpose	Result
	<i>Van Tung</i>	<i>Thinh Vuong</i>		
Fruit tree plantation project (early 1990s - 1998)			Offer income-generation opportunities through sale of fruit on an open market.	Market flooded with fruit, small potential for profit.
Forest protection (1993 - about 2000)	25	95	Give farmers incentives to protect forests from slash-and-burn cultivation and deforestation	Overall disinterest, insufficient opportunity for profit
Reforestation 327 / WFP projects (1993 - about 2000)	64	39	Give farmers incentives to replant areas close to the village with pine trees.	Farmers planted the trees but did not care for them - they received the remunerations, but the trees died.
State promotion of tobacco growing project (1998 - present)	71	-	Create opportunity to generate income through tobacco crops, bring production to Vinataba.	Farmers grow tobacco, at the expense of the forest and goals of previous projects.
Livestock project	-	58	Generate income and capital for peasants in <i>Thinh Vuong</i>	Increased income for wealthier households, harmful to forests.
Honey making project	-	26	Generate income from bee keeping and producing honey in forested areas	Success, where forests are available and honey can be marketed in stalls on the road.

This approach to reforestation was more effective than the previous State program at attracting the attention of farmers, but nonetheless it is difficult to rule it a success. The “*cay nha nuoc*”, the “Government tree”, as the locals call it, was widely planted but poorly maintained due to a lack of both farmer knowledge and interest. Farmers claimed that the soil was not sufficiently fertile and water sources were too far away, but observation suggests that farmers were fulfilling only the minimal requirements to qualify for support. Only a small fraction of replanted areas have developed well.

In the second half of the 1990s, a joint initiative by DARD and the *Ha Noi Vinataba Company* brought tobacco production to *Van Tung*. The Vinataba tobacco company offered an input package to farmers consisting of seedlings, fertilizers and, if necessary, pesticides. Extension officers introduced tobacco cultivation techniques to a group of farmers, who then disseminated their knowledge throughout the village. Agricultural extension workers and agronomists from Vinataba visited regularly and monitored the progress of the crop. Farmers were obliged to sell the tobacco to the company, but the price was not fixed.

The tobacco project offered additional income to farmers, though there were both financial and social costs. Tobacco cultivation substantially reduced the time available for visits and social events, the traditional pastimes of the winter season. Further, children who previously would have gone to school now had to spend the winter season tending grazing cattle to prevent them from damaging tobacco fields. Nonetheless, the majority of farmers (71% in *Van Tung* village) chose to cultivate tobacco on at least a portion of their rice fields.

Although most farmers seized upon the tobacco-growing project for its income-generation potential, it did little to improve local opinions about the State's ability to bring worthwhile projects to the region. The tobacco leaves sold to the State company first had to be dried in large wood-burning ovens. The high timber requirements of tobacco drying placed this new project in conflict with earlier reforestation and protection projects. The local authorities wanted farmers to preserve and regenerate the forest in the area, but were at the same time implicitly sponsoring timber exploitation. District agricultural officials were aware of the conflicting nature of the project, but argued that they themselves were not in a position to question broader development plans issued by superior offices.

The tendency of farmers is to follow the most profitable of several conflicting directives, so tobacco growing currently takes priority over forest protection. But the protection policy packaged by the State has never been very popular. Farmers remain concerned that what few forests remain will soon disappear if tobacco cultivation and drying continues, but no plans have been made to prevent this eventuality.

Given the large number of projects that have graced the region without producing substantial benefits, it is not surprising that farmers react with skepticism to new projects. The State has not established a reputation for creating effective income generation opportunities in the region, and large-scale projects are unpleasantly reminiscent of the failed cooperatives. When a new project arrives, local farmers assess it only in terms of the immediate profit it can bring them. Farmers thus draw income from the reforestation project, but are not concerned with the survival of the trees. Likewise, they draw income from tobacco growing regardless of conflicts with previous State policies and forest quality.

The frequency of projects in *Van Tung* also has created expectations among local farmers. Our interviews suggested that farmers expect to see at least one income generation project per year in their area. They showed little initiative in making long term plans, preferring instead to wait and see what gets offered to them.

4.3. *Effects of accessibility on relationships among households and on relationships with the market*

Apart from their degree of access to extension services and income-generation projects, *Nghien Loan* and *Van Tung* are highly differentiated in their access to broader markets for their production.

Nghien Loan's isolation means that farmers use their agricultural production almost entirely for household consumption. Buffaloes are mostly used as a means of traction, while fowl are raised for household consumption. Capital in the form of cows and buffaloes is being saved primarily for the future purchase of rice fields. In short, farmers' perspectives of the future are limited: farmers' primary livelihood strategies are focused on just trying to attain rice self-sufficiency through intensification and extensification of paddy fields. In part, this perspective is justified, because opportunities for diversification are limited. One exception is the rapidly developing *Ban Dinh* livestock (buffalo-cow) market. It offers an income generation opportunity, but is mostly exploited by the wealthier *Tày-Nùng* households. They can concentrate on this new activity because their ability to hire labor frees them from personal involvement in rice growing activities. But the general lack of possibilities for diversification, and the diminishing resource base in *Nghien Loan*, are pushing most *Dao* and *H'mong* farmers into a situation of imminent crisis.

Meanwhile, *Van Tung* enjoys relative prosperity, in part because of its proximity to *Ngan Son*, which provides the village an outlet for its agricultural production. The effects of the nearby market are visible in the diversification strategies of *Van Tung* and *Thinh Vuong* farmers as compared to the *Nghien Loan* farmers (Figure 3). Non-farm activities contribute 45% of *Van Tung*'s total household production. About half of this contribution is earned at the *Ngan Son* market in the form of trade, employment, and sale of forest products. Even in *Van Tung*, fully 55% of the total household production is in the form of agricultural produce (primarily paddy rice followed by maize, vegetables, meat, and eggs). However, *Van Tung* farmers sell much of this produce for cash. Of *Van Tung*'s total annual household production, only 30% is in the form of agricultural produce that is consumed by the household. In contrast, in remote *Nghien Loan* Commune this figure is 68%.

Non-agricultural activities play a major role in the *Van Tung* household economy, and contribute to the income of every second household. Non-agricultural income sources include Government work that is mainly of an administrative kind, informal employment, day labor, and trade (Alther, 1999). Government work in

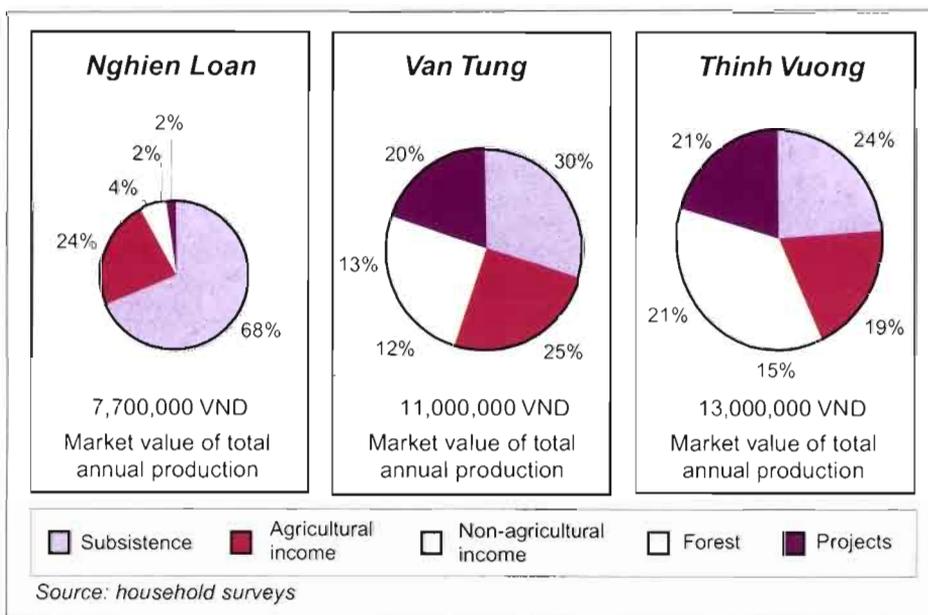


Figure 3: Comparison of average composition of annual household production in the study areas in 1999.

particular allows individuals to develop their social networks, helping them to stay informed of economic developments and new laws and policies. Trade is another means of building social capital, as it reinforces relationships with people outside of the village. Most families who engage in trade do so with the help of relatives in other towns or villages.

In the other high-accessibility study area, *Thinh Vuong*, non-agricultural activities make up 57% of the total household production, mainly because agriculture is restricted by natural conditions and environmental laws while trade and government work, including road maintenance, have become important for income generation. In contrast, in low-accessibility *Nghien Loan* Commune, non-agricultural activities make up less than 8% (against 45% and 57% in *Van Tung* and *Thinh Vuong*, respectively) of total household production. If the one-time benefits of the WFP reforestation program are excluded, this figure drops to 5% (Rousseau and Gevraise, 2000).

Van Tung benefits further from its proximity to a source of external information about the market and national policy environment. With the advent of the *doi moi* reforms, farmers are finding themselves more and more responsible for creating their own production strategies, and information on marketing channels is a crucial input for the production decisions they must make. Upon our arrival in *Van Tung*, we found that farmers were much more interested in any information we could provide about the market than in whatever project we were associated with.

4.4. Effects of accessibility on migration

An additional particularity of *Van Tung* uncovered by our survey was the mass emigration that occurred in the mid-1990s. The development projects that were intended to bring prosperity to the region threatened certain farmers' livelihood systems, mainly due to the fundamental changes in land use policy: common land became private, and crops that traditionally were grown under swidden production were banned. In contrast with many regions of *Viet Nam*, where farmers with economic difficulties are drawn to larger population centers, farmers in the studied region were drawn to the rural New Economic Zones in the south of the country (Alther, 1998).

For many farmers, the South is thought of as a land with fertile soils and a better climate. Many farmers have relatives who had already moved there. In the early 1990s, newly opened areas in *Dak Lak*, *Binh Phuoc* and *Lam Dong* Provinces had very low population densities, a further drawing factor for people in comparatively densely populated *Bac Kan* Province. Information from those who already had made the move suggested that education levels in *Bac Kan* Province were higher than in *Dak Lak*, *Binh Phuoc*, and *Lam Dong* provinces, and that immigrants could very quickly find themselves better off than the southern local inhabitants. Less stringent environmental laws also meant that shifting cultivation would again be a possibility, and it seemed that there was plenty of land with which to work.

In contrast to *Van Tung*, in low-accessibility *Nghien Loan* we heard very little about migrations. The difference could well be explained by accessibility, both to information and to the necessary infrastructure to engage in such a relocation. In *Van Tung*, farmers get letters from their emigrant relatives. They watch TV programs about migrations and can get newspapers at the market. On the National highway there are direct bus services to the provinces in the southern Central Highlands. But far from the district capital, *Nghien Loan* farmers receive little information about the New Economic Zones, and in any case a move would have been rather hard to imagine without family connections in the South.

4.5. Effects of accessibility on social conditions

Social consequences of low accessibility are visible in *Nghien Loan*, where *Dao* and *H'mong* villages are characterized by a higher level of illiteracy than other villages in the commune. Low education has direct consequences on farmer livelihood. The capacity to seize upon innovations tends to be less. As we will address later, selection of project participants often results in the exclusion of less-educated farmers. Families in very remote areas tend to be larger than in more accessible villages. The low-accessibility villages of *Ban Dinh* and *Khuoi Un* averaged 5.4 and 6.8 persons/household, respectively. In contrast, the high-accessibility villages of *Van Tung* and *Thinh Vuong* had smaller households, averaging 5.0 and 5.3 persons/household, respectively. Low-accessibility villages

have larger households both because of fewer contacts with family planning services and because family labor force remains the most important asset in situations of poor integration into the market. Accessibility, with the non-agricultural opportunities it brings, is thus a force for demographic transition.

5. Discussion: perspectives on the future

At the provincial level, remoteness and poor accessibility can be obstacles to the development of rural employment and non-agricultural income generation activities. In *Bac Kan*, trading opportunities are limited compared with those in other northern provinces that share borders with China or that border the Red River Delta. *Bac Kan*'s inadequate transportation network, in spite of recent upgrading efforts, remains a major constraint to industrialization and attraction of investments from outside of the province. Within the province, non-agricultural activities are mostly limited to a few small mines and services in the small urban centers. Income generation primarily consists of small-scale agriculture and the now strictly-regulated exploitation of forest resources. Only in a few places that are easily accessible has non-agricultural income become important. This unequal accessibility within the province brings about substantial disparities in income generation opportunities and people's chances to lift themselves out of poverty.

In the future, substantial investments by the State will bring roads to many remote regions. For example, beginning in 2002 the State will use over \$110 million in World Bank loans to build infrastructure, including roads, in 6 northern mountainous provinces. We have seen in the studied villages that improved accessibility can have a definite positive impact on economic situation. However, roads alone are not the all-purpose solution for rural development.

5.1. Helping farmers take advantage of increasing levels of accessibility

Building on local initiatives

The decision by *Khuoi Un* farmers to enforce a livestock management regulation themselves was unparalleled in any of the other studied villages. Faced with increasingly severe constraints of land scarcity and population growth, the shifting cultivators of *Khuoi Un* decided that their system could no longer sustain free-grazing livestock. In 1999, the village collectively decided to implement a two-year-old district livestock management law that until then had gone ignored. Under the new law, farmers would be responsible for the surveillance of their livestock at all hours, and would have to pay for any damage to others' fields. The adoption of this law by the village was driven by need, and stands in contrast with the general disinterest towards projects and regulations displayed by the other villages. We believe that locally-driven initiatives are most likely to respond to local needs.

Van Tung has seen a multitude of projects, but has rarely displayed the kind of collective initiative shown by *Khuoi Un*. At the beginning of our investigation, farmers and village leaders repeatedly said that it was impossible to set up a grazing management scheme to keep the cattle from part of the fields during winter season in order to plant a second crop there. However, when the Vinataba Tobacco company initiated tobacco cultivation in the village, local leaders agreed to establish a grazing management scheme. In part because of the absence of land scarcity, and in part because of negative memories of the collective period, *Van Tung* farmers have not been willing to rely on anything except individual initiatives. Those projects that did meet with any measure of success did so only because locals saw potential for individual profit in them; *Van Tung* did not take to heart the grander ideals and visions of the projects. *Khuoi Un* farmers likewise adopted the livestock law not for its “grander ideals and visions”, but because it was in their individual interests. Can the projects in *Van Tung* be termed successes because a number of farmers participated and gained income from them?

Participants believe that if the projects had not arrived, farmers would have created their own initiatives and earned similar profits. This view is contradicted by emigrant farmers who feel a lack of governmental support at their new homes in the South and find it very hard to improve their economic situation there. In Figure 3, the pie charts show that in the high-accessibility villages development projects contribute about 20% of the household production. *Van Tung* and *Thinh Vuong* farmers seem not to be aware of this anymore, perhaps because this support has flowed regularly into the villages for the past five years. In addition, the state of the forest has definitely improved since the implementation of the reforestation and forest protection projects; this gain in natural capital has been one clear and concrete benefit of projects in the area. Without the external financial incentive, i.e. by building only on local initiatives, such a project would not have been possible. Other case studies in *Ba Be* and *Ngan Son* Districts offer more evidence of the key role of local authorities and local mass organizations for implementing State environmental projects (Castella et al., 2002; Zingerli et al., 2002).

State projects in *Viet Nam* are often implemented on a national scale, disregarding all-important local peculiarities. Local peculiarities are particularly difficult to assess in the highly heterogeneous natural and human environments of the mountainous areas of *Viet Nam*. However, thanks to long-term contacts with authorities implementing projects, farmers have learnt about the mechanisms of project implementation and how to manipulate these projects to their benefit. For example, *Thinh Vuong* farmers put pressure on the local department responsible for forest protection when the promised payments were delayed. The farmers said that they were unable to help protect the forests without remuneration and instead would have to cultivate rice on slopes again in order not to go hungry. The payments were made shortly thereafter. After a very low yield in 1998, farmers in

Thinh Vuong were surprisingly relaxed. They planned to send a delegation to *Cao Bang* to ask for State food support. For this village, the government is a safety net. The lesson from *Khuoi Un* is that if a project is to be genuinely owned by the local people, then it needs to respond to their needs, regardless of the dreams and visions of policy-makers and extension staff. If a project is ignorant of local needs as perceived by the farmers themselves, it will be used by those farmers as little more than a short-term source of free income. On the other hand, when communities are involved from the beginning, they will be more likely to accept responsibility for project implementation. When they have identified themselves with a project in this way, the project stands a better chance of surviving even after the outside inputs are removed.

Re-thinking local extension systems

Roads play an essential role in providing access for extension staff. Extension staff prefer to work in villages close to a road, giving farmers in these villages much better opportunities to participate in development projects than farmers living in more remote villages. The village selection process plays an instrumental role in determining whether or not development will be equitable.

Extension staff and authorities have vested interests in seeing projects succeed, but for most government agencies the quantity of the impact is often more important than its quality, i.e. how many ha of forest land are declared to be reforested land rather than the number of trees surviving after three years. Judged by farmer participation, the *Van Tung* tobacco project was a success, regardless of the fact that it is exacerbating the deforestation problem and standing in opposition to forest protection and regrowth projects. The goal of the creators and implementers of projects needs to shift towards facilitating local changes, instead of trying to direct them by continually injecting subsidies. Instead of trying to artificially create economic incentives for farmers, rural development authorities need to consider what incentives already exist and what kind of initiatives the farmers themselves are interested in pursuing.

In *Van Tung*, all our interviews suggested that farmers feel a need for information about the market and feel constrained by limited access to sources of information beyond economic programs on local radio. Instead of trying to dictate what farmers should grow (a technique that often has failed to improve living conditions because of inadequate market understanding, e.g. the plum and apricot trees), the extension service could work to develop information-sharing mechanisms to better connect farmers with potential buyers of their production.

Developing rural employment opportunities

Roads are an important factor in creating employment opportunities. Roads create opportunity for development projects, and where development projects are being implemented, Government agencies will need local people to mediate between

villages and authorities. People located close to the road will be able to join the administration, securing a regular source of income. A variety of spontaneous self-help projects by farmers with good access show the potential of self-help projects under condition of good accessibility. During the past years, five families in *Thinh Vuong* set up small shops along the national highway. These stalls are not gold mines yet but farmers feel it's a worthwhile strategy of diversification. The local products sold to drivers, and processed goods sold to villagers and people from more remote villages, contribute 20% to these households' production. The shopkeepers also sell products from other villagers such as forest products and local specialties (e.g. honey or a special kind of rice wine). These products often bring a high price, because the buyers consider them as novel products, made by ethnic minorities and thus something special that can be sold profitably in *Ha Noi*. We expect that the volume of products sold by such stalls along the road will increase. However, there will be increasing competition among shop owners and some of them will be ousted. Such local channels of marketing increase diversification. For example, some farmers in *Thinh Vuong* started fruit plantations, selling fresh fruit right from the field.

However, new roads will also become springboards for further migrations. The migrations to the New Economic Zones in the South have largely ended, as the conditions of low population and thriving industry in the South have ended. In the future, the rural-rural migrations of the 1990s risk being replaced by rural-urban migrations, which the population centers of *Viet Nam* may not be able to support. Currently, migration to urban regions is not yet an option to *Van Tung* and *Thinh Vuong* farmers because they feel that they would not be able to compete with urban people for employment.

Rural employment generation can begin in agriculture through diversification as many areas have already reached the limits of intensification and extensification. In addition, the State has announced plans to promote the development of rural industries in coming years. As with other income generation opportunities, people with better access to information and better education will have a greater chance to benefit from new rural industries. It is unlikely that rural job creation can completely stem the tide of migration, but it can certainly play an important role. Although most families' dreams are for their children to get a good education and find work outside of agriculture, both farmers and their children have strong attachments to their traditional homelands. A survey among students in the accessible villages, aged between 12 and 16 years of age, showed that most students are dreaming of a job as teacher, nurse, policeman, soldier or mechanic but few are willing to live and work outside of their district. Children in remote villages are less aware of non-agricultural job opportunities. Thus, local support for rural industry certainly exists.

5.2. Targeting the poor

In this chapter, we have demonstrated the effect of accessibility at the commune level on income generation. Wide accessibility gaps are also apparent within communes and even within villages. Studies suggest that the poorest villages may not necessarily be located inside the poorest communes. Poor villages in wealthier areas may have even less access to opportunities from development projects, as projects tend to focus on areas with the greatest instances of poverty. For example, *Thinh Vuong* is, thanks to its easy accessibility, a comparatively wealthy village. Nonetheless, *Thinh Vuong* benefits from relatively many projects because it is located within an otherwise poor district.

In addition, the poorest individuals within a village often suffer from inaccessibility to projects and income generation opportunities. Some projects require a certain amount of capital, surplus labor force, or land for participation. Where the poorest farmers lack the capital or labor force to participate effectively in an already-defined project, it would be self-defeating for that project to target them, even if they are the most needy. Projects need to be implemented such that they succeed, but a vicious circle often results - projects can pass over the poorest farmers and only widen the income gap within a village. Although a poverty alleviation project's "success" should be measured in terms of its impact on the poorest, rather than in terms of the absolute amount of something produced (amount of fruit, amount of capital per se, etc.), it is important to recognize the real working conditions of the extension agents. They have their local counterparts: village authorities. The latter are rarely the poorest. When asked about helping the poorest, most village authorities argue that the poor are poor because they are not capable of doing a proper job – and thus unsuitable or even harmful to include in any project. To government representatives, poor villages often mean poorly accessible villages. In these remote areas, extension agents also point out the communication problems and the long time needed to attain a minimal understanding with farmers, stating that progress (in terms of output) was reached much more slowly than in villages that can be approached more easily.

The difficulty of involving the poorest of the poor needs to be acknowledged by the practitioners of development. However, projects that benefit the village as a whole can indirectly raise the standard of living of all, including the poorest. Thereafter, even the poorest would be able to participate in individual income generation projects. With a good understanding of the social structures that exist at the village level, extension staff and development officials can help villagers build on their social assets and communication networks, creating an environment where the poor can benefit indirectly from the village's overall economic growth (Hoang Lan Anh et al., 2002).

6. Conclusions

Proximity to roads and markets has a positive influence on the farm household economy. Farmers in accessible areas have wider possibilities for income generation than farmers in more isolated areas, and tend to be wealthier as a result. However, roads have costs as well as benefits. Farmers feel that the proximity of a road threatens their autonomy, as it allows them to be watched more closely by authorities. Feeling that their traditional ways of life and farming systems are being threatened, farmers are uncertain about the benefits of being nearer the road (Alther, 2000). Having been subjected for years to policies developed far away, with little preference given to their own thoughts and opinions, it is not surprising that farmers are ambivalent about the benefits of participating in “remotely controlled” top-down development projects.

Nonetheless, increasing accessibility in the mountainous regions will be the trend in the near future. Policy makers and development practitioners need to work with local farmers in the transition to livelihood systems based on accessibility instead of isolation. Access to markets, information, and government services can be major benefits to farmers, but after past experiences farmers need to be convinced of this. If farmers arrive unprepared and unassisted at a new situation of high accessibility, they may try to escape the pressures on their traditional ways of life in a new kind of migration: an unsustainable rural exodus to the cities, where they will only find more poverty. Instead of taking the participation and interest of farmers as given, government services need to support participatory, locally-driven initiatives that can smooth the transition to accessibility, giving farmers the chance to understand and capitalize on the benefits of their new situation.

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