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< Labellisation of products as a mechanism for environmental justice. Case study of dried shellfish in Saloum Delta Biosphere Reserve (Senegal) >

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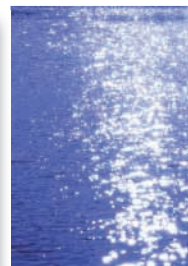
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The following study is dedicated to labellisation of products as a mechanism for environmental justice. Case study of dried shellfish in Saloum Delta Biosphere Reserve (Senegal). Originally, it was written to be published as a book chapter. But the collective work, concerning Environmental Justice, has never been achieved. That's why we have decided to publish our chapter today in AMURE publication. However, it has to be mentioned that this analysis is up to date until 2007.

**Labellisation of products as a mechanism for environmental justice.
Case study of dried shellfish in Saloum Delta Biosphere Reserve
(Senegal)**

Omar Sarr, Betty Queffelec, Marie-Christine Cormier-Salem, Jean Boncoeur

Abstract

This chapter considers the question of how to conserve shellfish resources, protect traditional know-how and create a profitable hand-processed business in southern countries. To resolve such a difficult question a legal innovative mechanism has been proposed: the labelling of products. In this chapter the suitability of these frameworks for southern countries is questioned through the example of the labelling of dried shellfish in Saloum Delta (Senegal). In this region dried shellfish are hand-processed products coming from a mangrove ecosystem and sold on the national market.

In this study, the relevance of the labelling initiative is explored. The producers and all the labelling initiatives conducted in Senegal have been explored to understand both the opportunities and difficulties of the initiative. The constraints related to this operation are analysed by making use of recent results from a research program (Biodivalloc) concerning traditional transformation of Mangrove shellfish in the Saloum Delta (Senegal). The problems related to the definition of quality and traceability norms are addressed from an interdisciplinary, economic and legal, point of view. The potential economic efficiency of labelling is analysed (with special attention paid to the problem of access to new markets, particularly exportation), as well as its potential impact on conservation of biological and cultural diversity.

Keywords: Labelling, biodiversity conservation, economic efficiency, traditional know-how, quality, traceability, Mangrove shellfish, Saloum Delta.

1. Introduction

The state of the environment and renewable resources is an issue of concern all over the world. Many alternatives have been explored to ensure a better use of the environment, principally through promotion of sustainable use based on a compromise between conservation on the one hand, and socio-economic and cultural development objectives on the other. However, the realisation of such a compromise is challenging for developing countries

whose priorities are related to socio-economic development and alleviation of poverty, as acknowledged by the international community.¹ Since the beginning of the 90s, special attention has been given to the local level in order to achieve this aim.² In the preamble of the Convention on Biological Diversity, parties recognise:

the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.³

The issue then is whether there are any mechanisms capable of linking priority objectives of developing countries with the goals of conserving their biodiversity. This question was the key issue of an interdisciplinary research project named Biobivalloc⁴ and operating in a variety of southern countries. Some of these countries have defined policies aimed at enhancing the value of origin-based products through both socio-economic development and biodiversity conservation (conserving biological diversity and cultural diversity). The idea is that valorisation of local know-how could support biological diversity protection. The policies are generally based on the use of labelling tools which have been successfully tested in industrialised countries. In the case of fish products, some examples are, at the international level, fisheries certification by the Marine Stewardship Council⁵, or, in France, labelling of some oyster and mussel farming activities (*moules de bouchot de la Baie du Mont-Saint-Michel*, *huîtres de Marennes-Oléron*) The question is whether those northern models are transferable to the South.

The purpose of this study is to provide some answers to these questions on the basis of a research conducted in 2007 in the Saloum Delta (Senegal)¹. The study focuses on the products of the mangrove ecosystem, especially shellfish, which are characteristic of the area. The local communities *Niominka* and *Soce*, supported by external partners are attempting to establish some initiatives for the labelling of hand-processed transformed shellfish and this study will analyse the relevance of such initiatives. We will first consider the study area (Saloum Delta) as well as the ecological, institutional, legal, socio-economic and political context in which these initiatives take place.

¹ The legal analysis is up to date until 2007.

Labelling tools, which are voluntary, encompass various procedures and steps, from « simple » labels and norms to certifications (which require the intervention of an external certification organism), or from informal to official signs of quality. Each of them generates difficulties and opportunities². Also, official signs of quality allow public recognition but are usually costly; they allow immediate credibility but also possible sanctions; selling prices may be higher but local specificities are not necessarily preserved. On the opposite, informal signs or collective brands are more flexible and may fit better to local contexts, but they are not widely recognized; reputation is based on confidence in producers' self monitoring, which frequently is not enough to build strong credibility and justify higher selling prices.

Eco-labelling is considered with growing interest in the context of fisheries crisis, as a way to tackle both marine biodiversity conservation and development issues, and to strengthen the links between local population and the biodiversity surrounding them. In developing countries, local communities involvement and public policies in favour of labelling processes vary according to political, legal and socio-economical context. Besides, labelling of products from the sea is far less developed than in the case of agricultural products. Along the West African Coast, more and more projects and incentives favour these tools, but for what purpose and for whom? ³

2. Context

The Saloum Delta contains a National Park, which was created in 1976 and was inscribed as Ramsar Sites in 1984, then by UNESCO on Biosphere Reserve list in 1981, and World Heritage List in 2011(See map 1: Protected areas of the Saloum Delta). The Delta covers 1,930 square miles⁶ among which 293 square miles (15%) form the national park. It represents 21% of the *Sine-Saloum* region, and 2.5% of the whole territory of Senegal. From the last population census of 2002, its resident population (3 departments of Fatick, Foundiougne and Kaolack) was estimated at 827 048 people, amounting to 38% of the total population of *Sine-Saloum* and 17% of whole population of the country. The population growth rate was 2.8% in the

² Queffelec, B. 2007. *Analyse juridique des initiatives et potentialités de valorisation de produits de la mer en Afrique de l'ouest*, Rapport de recherche, Biodivalloc, ANR 05 BDIV02, Paris.

³ CORMIER-SALEM M.-C. & SAMBA A., Ecolabelling in Fisheries along West African Coast: the Potentials and Pitfalls. Contribution to international symposium of IIFET, Economics of fish resources and aquatic ecosystems: balancing uses, balancing costs. Montpellier, 10-16 juillet 2010

Delta, 2.3% in the *Sine-Saloum* region, and 2.7% at the national level. Part of this growth is due to a positive migratory flow related to the rapid development of peanut farming until the beginning of the 1960s.⁷ More recently, rural-urban migration and emigration developed as a consequence of the local economic system crisis.⁸ Nonetheless, population density has remained high in the region, especially in the Saloum Delta area: while the population density was between 149.4 and 181.3 inhabitants per square miles on average at the national scale in 2007, it was around 202 and 230.5 inhabitants per square miles in the *Sine-Saloum* region, and reached 316 inhabitants per square miles in the Delta zone.

From the last National population Census (2002), the population living in the park is estimated to be 120,000, which corresponds to a density of 158 inhabitants per square kilometre.⁹ The indigenous population is composed of two major communities: the *Serer-Niominka* and the *Soce*. However, the Saloum Delta has received foreign-born communities from other regions of Senegal and other neighbouring countries like Mali and Guinea. Fishing and mangrove product exploitation are the major economic activities, agriculture having much receded because of the effects of the drought that has been rife in the Sahel since the 1970s. However, tourism, wild fruit picking, gardening and trade are extra sources of income for the population.¹⁰

From an ecological point of view, Saloum Delta is an estuary area characterised by a mangrove ecosystem which hosts a diversity of biological resources on which the subsistence of local populations depends. Other resources associated with mangroves are also exploited. This is the case with mangrove salt and honey, which are also a part of the labelling initiative. However, the details of these products will not be considered in this chapter. The biological resources are essentially composed of fish, shrimp and shellfish. Catching finfish is mainly the activity of men whereas shellfish harvesting is reserved for women. However, this configuration might change soon because of the increasing scarcity of fish. Due to overfishing and the lack of alternative sources of income, men are taking more and more interest in shellfish harvesting.

In the framework of decentralisation, local communities get powers concerning natural resources and environmental protection. As a result, rural communities can set frames of dialogue and develop plans and local action (art 28 and 30 Loi 96-07 du 26 mars 1996 about power transfer to region, communes and rural communities). But fisheries resources management are not part of these transferred powers, including any marine species and therefore shellfishes (art. 3 and 4 of the fishery code). In *sine saloum*, despite the status of protected area and biosphere reserve of the delta, fishing operates mostly under conditions of open access. However, even if they don't get to power to

by the law, some local authorities decided to develop management plans for shellfish. They especially develop fishing reserves with seasonal prohibition to fish". Some NGOs have contributed to these developments. For now, there is no case law about it."

Shellfish have an important place within the Saloum Delta population for their nutritional, socio-cultural, economic, trade, political and institutional value.¹¹ In fact, shellfish are one of the most important sources of animal protein for the local population. This is also true for the population in other parts of the country, particularly as over the last few years they have been marked by food shortages due to scarcity of cereals such as rice and millet, which are the traditional food sources. In addition, fish has become rare due to overexploitation and the demand by foreign markets has increased.¹² Thus, the demand for processed shellfish as a substitute for finfish and cereals has increased greatly in the local market. These products are used either as a basic food or as an ingredient for the cooking of many local recipes. They are particularly appreciated by the people of the Saloum, hence their nickname of *shellfish eaters*.¹³ According to the results of a field survey, 21 different recipes including shellfish are served in Dakar restaurants. The same recipes are also well known in Senegalese households.

Shellfish also have an important place in the social system of the Saloum islands at all stages of production (from harvesting to processing), commercialisation and consumption. For example, in the Saloum Delta, they constitute a strong link between members of the same family, especially between those who stay in the village and those living in the city. That link is expressed through *presents* composed of shellfish sent to the latter by the former. This helps to maintain, and strengthen the "cultural integrity"¹⁴ of Saloum Delta communities which are often challenged by rural-urban migration or emigration which obliges young people to stay away from the family base.

Moreover, shellfish have very important cultural and ritual functions. They are at the centre of cultural and ritual events and are the subject of several myths and beliefs. Many *kjökkenmodding* (old shellfish piles) are discovered in the region some of which represent former kings' tombstones.¹⁵

From an economic point of view, the results of the inquiry we have conducted in the Saloum Delta indicate that shellfish harvesting and processing represents the major activity of nearly 92% of the women of Saloum Delta in terms of time allotted to that activity (see Table 1). It represents the major source of income for nearly 76% of those women and the sole source of income for nearly 7% of them (see Table 2). However, in addition to shellfish harvesting and processing, 69% of women are also

involved in agriculture, 47% in trade and 38% in processing finfish products (see Table 1).

Table 1: Women's major economic activities in Saloum delta

Major activity	Nbr. Quotes	Frequency (%)
Shellfish collection and processing	68	91.9
Agriculture	5	6.8
Trade	1	1.4
Total	74	100

Table 2: Place of shellfish harvesting in total incomes of Saloum Delta women

Importance of harvesting	Nbr of Quotes	Frequency (%)
Sole source of income	5	6.8
Major source of income	56	75.7
Important source of income	9	12
Marginal source of income	1	1.5
No answers	3	4
Total	74	100

Processed shellfish of the Saloum Delta are highly valued in urban markets, especially those of large cities such as Dakar and Kaolack, but also in local weekly markets including rural ones. For example, the national demand for *Niominka yeet*, *touffa of Betenty*, *pagne of Dionewar* is very high. According to a survey realized with the female producers to know where they sell their products, the urban markets are represented by the main markets which include up to 22% of them, compared to 11% for the weekly markets. However, more than 55% of female producers sell their products on the spot to intermediaries (see Table 3). The final consumers (households and restaurants) buy directly from these markets. The results of the inquiry conducted with restaurant managers reveal that 43% of them have a preference about the origin of the products they buy. *Sine-Saloum* is preferred by 35.3% of restaurant managers and ranks second among preferred origins for all species of shellfish, behind *Casamance*, another Senegalese region where shellfish harvesting is very important. However, it ranks first of the preferred origins for *Pagnes* and *Touffa* (see Table 4).

Table 3: The different shellfish markets of Saloum Delta

Major markets	Nbr of Quotes	Frequency (%)
Sales on the spot	41	55.4
Sales on weekly markets	8	10.8
Sales on urban markets	16	21.6
Export	1	1.4
No answers	8	10.8
Total	74	100

Table 4: Origins of shellfish preferred by restaurant managers

Preference based on the species	Casamance	Saloum delta	Joal+Fadiouth
Preferred origin for all species of shellfish	39	35.3	25.7
Preferred origin for “pagnes”	36.8	39.5	23.7
Preferred origin for oysters	48.5	36.5	15
Preferred origin for “touffa”	35.3	41.2	23.5
Preferred origin for “yeet”	35.5	22.6	41.9

Additionally, shellfish are at the centre of political and institutional systems in relation to natural resource management in the Saloum Delta, which is characterised by the multiplicity of actors and the complexity of the actors' behaviour. The role of central government is pushed into the background, contrasting with NGOs whose influence on local authorities (local representatives, traditional authorities and leaders for example) as well as on the State institutions, is becoming more and more important. The intervention of NGOs is often aimed at establishing a standard systems of principles and practices. Such systems are sometimes contradictory to the local context. For example, in spite of the fact that the Senegalese halieutic resources are considered as a national heritage and that their management is a responsibility of the ministry of fisheries, NGOs suggest to the populations of the Saloum Delta to mark out the fishing zones which are near their villages and to regulate the access to these zone. However, the intervention of the NGOs fits into the framework of public policies as defined by the State. Thus, the Senegalese State, supported by other international partners including the World Bank, the IMF, the WTO, some other United Nations institutions (FAO, UNCTAD, UNEP, UNDP)¹⁶ and the NGOs, have defined three main public policies with regards to the incentives for Saloum Delta shellfish labelling. The first one is related to reducing poverty, as defined in the Poverty Reducing Strategy Document (DSRP) and sharing un an

equitable way benefits from biodiversity conservation. The purpose of this policy is to strengthen the role of the fishing industry in the fight against poverty. The second is the Accelerated Growth Strategy (SCA), which predicts an increase of the fishing contribution to economic growth. The third policy is concerned with fishing and is aimed at sustainable development of the fishing industry.¹⁷

3. Shellfish labelling in the Saloum Delta

Moves for labelling Saloum Delta shellfish have been undertaken in NGO field projects (for example, the *Femmes et Coquillages* project of PRCM¹⁸), and within bilateral cooperative arrangements between Senegal and other countries (for example, the PAGEMAS¹⁹ project of JICA²⁰). Other moves have been initiated by producers' organisations, for example, FENAGIE²¹ and its local entities (FELOGIE²²). These moves aim to promote both the intrinsic and the extrinsic quality of products resulting from hand-processing of the following species: cockles (*Anadara senelis*) locally called *pagne*, the mangrove oyster (*Crassostrea gasar*) or *yokhos*, the giant hairy melongena (*Pugilina morio*) and murex (*Murex spp*) called *touffa* and finally the volutes (*Cymbium spp*) or *yeet*. The following four features characterise these actions: resource management measures, produce transformation processes, packaging and traceability.

As far as management is concerned, there is an emphasis on the promotion of responsible harvesting practices as well as on measures capable of ensuring conservation of resources and related ecosystems. On this basis, the local populations, with the support of NGOs and international organisations, establish their own management measures which are called local 'conventions'.

The community deals with natural resources and environmental management at the local level. Recommended measures within the scope of these practices generally includes the creation of communal marine reserves, the establishment of 'biological rest' periods, alternate exploitation of fishing and harvesting sites, kind of fallow sea-lands, amongst other things.

Measures related to the transformation process are aimed at improving product healthiness and achieving hygienic and sanitary quality norms. On this basis, new procedures, including several stages of bleach cleaning and washing and burning, have been adopted. The ultimate goal is to reach a standardised quality level in order to help the product reach the Senegalese upper class. Apart from these hygienic and health measures, a packaging system has been implemented to ensure better protection and conservation of products. Many types of packaging are used, some of which are plastic packages and glass jars. For product traceability needs, a marking system is used. The information delivered on the label varies but it mainly indicates the type of product, the origin, the weight and the price. A resource

management sustainability system as well as sanitary processes of transformation have also been put forward.²³

4. Relevance and effectiveness of shellfish labelling

The relevance of shellfish labelling in the Saloum Delta is analysed with regard to the ability of this move to promote local development and biodiversity conservation, including biological and cultural diversity.²⁴ The purpose is to assess real or potential impacts of this move on the global socioeconomic and ecological system and requirements (norms and constraints).

Technically speaking, the management measures implemented with respect to local conventions concerning biological diversity conservation seem relevant. Also, actions undertaken to raise public awareness of environmental conservation are relevant and positive. In many villages of the Saloum Delta, people are beginning to change their relationship with the environment with a tendency to return to local, traditional, naturalist practices and know-how. Traditions and know-how have long been ignored and considered as an impediment to progress.²⁵ Today they are not only taken into account, they are also considered to be useful for conserving biodiversity.²⁶ Local communities and their traditional and local ecological knowledge are increasingly recognised as constituting a heritage to be preserved.²⁷ This is recognised at the international level where Article 8(j) of the Convention on Biological Diversity (CBD) stipulates that each party to the convention shall:

Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

Some of these practices are based on the 'sacralisation' of nature which is related to both biological diversity and cultural diversity. However, the legitimacy and legality of local conventions are often reconsidered in the maritime field with regard to the national law corresponding to fish resources management. Local conventions and practices do not have a legal status recognised by the national law. This situation can create conflict between

people from villages which have adopted the local fisheries practices and people coming from other villages who want to fish and who deny the legitimacy of this 'local law'. For more community-based environmental justice, local conventions must be formally recognized.²⁸

Moreover, the populations' involvement in the elaboration of practices and the implementation process is unequal. The populations of villages that are not directly covered by the NGOs' projects are generally excluded. In addition, in the villages covered by the NGOs, those who do not belong to any organisation collaborating with the latter do not feel involved. A survey indicated that only 8% of fishermen and 12% of women who are active in shellfish harvesting and processing, had participated in the elaboration and implementation of the management plan for the Saloum Delta Biosphere Reserve.²⁹

As for the product transformation process, the idea of homogenisation, which underlies the quality standardisation, does not align well with the enhancement of traditional know-how. In fact, the products resulting from the new approach are perceived as new products, different from the traditional ones. Furthermore, hygiene and sanitary norms, promoted within the labelling movement, are not the most significant factors in the Senegalese consumers' choice of shellfish. For the Senegalese consumers the sought-after qualities are the size of the individual's shellfish, the colour and consistency of the processed product, which depends on transformation and storage techniques and, finally, taste which validates the preceding criteria.³⁰ According to female producers, the quality of the product is judged first by appearance, then by touch, and finally by taste. The product must be sufficiently dry and well preserved. Signs of 'poor quality' are worms and other pests; broken and flaking fish; rotted and mouldy shellfish; and strong odour of decomposition. Poor quality is due to insufficient cooking, having an inadequate drying time, or bad storage.³¹

Producing quality shellfish thus becomes part of traditional know-how, which might be threatened by the introduction of new types of products. Additionally, the consumers' opinion of the relevance of packaging, implemented within the scope of the labelling movement, is mitigated greatly. In fact, 50% of consumers think that it is unnecessary to package products for two major reasons: 35.7% think that they appreciate the product more by touching it and 14.3% state that the weight of their usual purchase is far above the minimal package weight. Conversely, the other half of the consumers thinks that packaging allows one to keep the product longer and guarantees healthiness. The consumers' opinion on labelling is bolder. In fact, 63% of them think that it is useless since most households, which are the main customers, are illiterate.

The new products are slightly more expensive than the traditional products. However, few women are involved in the movement and they only

dedicate a day per week to the new products, devoting the other days to traditional products. Their production costs are also more expensive even though the current projects' production costs are mostly supported by NGOs. These products are promoted only at the time of the International Fair in Dakar and are not well known or sought after. Generally they are sold on an irregular basis to well-off urban middle- and upper-class customers, at the end of the working day when offices are closing. Sales volumes are low. Thus, their commercial value is very limited at the local and national scale.

Current actions to enhance value are based upon the principle that when they earn more the populations will reduce their pressure on the resource.³² But, according to the study we have conducted with the female producers, 70% of them stated that they would not agree to reduce their harvest volume even if their incomes increased considerably. The two main reasons they put forward were that they wish to earn more money to escape poverty and vulnerability and they fear "free rider" behaviour.

In such a context, how and why should one implement more formal valorisation through ecolabelling? In fact, these questions find various answers according to the level of the market considered: local, national and international.

At the local level, such a project seems unnecessary. Consumers are not sensitive to valorisation measures that are presently implemented because they have their own set of indicators to assess the quality of products, and first of them, their confidence in the producers. Therefore, we can be sure that a formal label which would not take into account these local indicators, would be irrelevant.

At a national level, most people, as at the local level, have no interest in the valorisation measures that have been implemented, and have their own means to assess the quality of products. But some people from the upper-classes seem sensitive to the initial valorisation measures (packaging in small bags and labels). Therefore, an ecolabel could be of interest to them. The success of International Agrifood Exhibition (FIDAK) organised each year in Dakar, Senegal, and the Forum held in March 2013 in Dakar "Terroir and Culture" supported by farmers associations and Ministry of Agriculture testified the growing interest of Senegalese consumers for qualified products. Interviews conducted in the big markets of the Dakar-Pikine agglomeration between 2010-2013 confirms the Dakar inhabitants are ready to pay a higher price for quality products. Another trend developed since the big food crisis of 2008 : the daily national dish, called *cee bu jen* (rice with fish) tends to be only consumed during feast days. In the daily lunch it is replaced by fast food (bread with margarine or mayonnaise) or a dish composed of rice with a small piece of fresh fish and more and more salted fish (like *kejax*).

However, it is not certain that a formal ecolabel, based on the models used in developed countries, would be necessary or that consumers would agree to pay for it. An example, in the related area of organic agriculture, is conclusive of this behaviour. A project in relation to organic agriculture is being conducted in Senegal in communities quite close to Dakar. In fact, there is currently no certification for this label and the guarantee is founded on the confidence between producers and consumers supported by a NGO, *ENDA tiers monde*, which has committed its name and credibility to the project. In 2001, the conclusions of an FAO study of that topic stated that the interest of consumers in organic products was positive, albeit a surprise. However, a labelling system, based on confidence, cannot be viable over the long term. For now, this system is a provisional alternative to the certification for producers and organisations. At this early stage they cannot pay for certification organisations and inspectors. When the organic movement becomes more popular and widespread in Senegal, an inspection, certification and labelling system should be implemented.³³

During this research project meetings were conducted with producers and the ONG in 2007 and it was noted that the project is still working in the same way as described above. However, the evolution towards a certification system is no longer planned.

Another kind of labelling system which could be of interest at a national level is awards. In France, the reputation and the price of food for example, can be increased by receiving awards. The golden medal of *The Agricultural Trade Fair of Paris* is especially prestigious. In Senegal, there is the Grand Prize of the *Head of the State Award*. Women organised in an 'economical interest association' (DIE or *Groupement d'Interet Economique*) of Dionewar (Saloum) were awarded this accolade for their shellfish production. Such a prize could be mentioned on the label of those products to increase their reputation.

At an international level, the situation is different. Consumers are much more sensitive to ecolabelling. They want strict guarantees that the protocol for production in an ecological way, has been followed. This is done by way of certifications which are conferred by accredited organisations such as Ecocert for example. That kind of ecolabelling contrasts with the flexibility of a commercial relationship, at the local and Senegalese national level, broadly based on confidence and knowledge of the product. It is doubtless necessary to have a differentiated appreciation according to the context : in rural areas, the circuits of supply are short most of the time: the housewives go to the small markets of their rural community or to the bigger weekly markets (called *louma*) when they do not stock up directly with the producers. The reduced number of intermediaries contributes to this confidence. In urban areas, housewives with a significant purchasing power, buy big quantities of fish or the big pieces from the wholesale market of Dakar-Pikine or with

factories (Amerger e.g.) and freeze them. This clientele is even there the most susceptible to buy qualified products.

Therefore, an ecolabel could be useful in such a context. However, an attempt shows how difficult it is to link local Sine Saloum wills with European ones.

As a matter of fact, West African artisanal or processed seafood products are very few to be certified, and even less to be candidate to be certified. According to a GTZ-feasibility study on eco-labelling in Senegal⁴, only 4 fish could be candidates to certification: shrimp, lobster, octopus and cuttlefish. Mismatches between certification requirements and the reality of many small-scale fisheries are obvious. Also, only few developing countries' fisheries have been applying for certification by the MSC. Main reasons are the predominant small-scale multi-gear and multi-species fisheries, the general lack of data and organisational structure, the lack of fishery management and regulation and also insufficient capacities and capabilities for efficient enforcement⁵.

A fine illustration is given by Fair-fish in Senegal. According to his director Billo Heinzpeter Studer⁶, project stopped because :1) there was a too long period till first success ; 2) there was a huge gap between demands of Swiss supermarket Migros and conditions of small-scale fisheries in Senegal and so, continuous needs of increasing project funds ; 3) Swiss project management was overoptimistic: regarding the gap between demands and conditions, there was a too long period of remuneration of the local team by time instead of achievement ; 4) local staff was overstrained. There was a mutual frustration due to unfulfilled tasks that lead to cumulated cases of neglect of duties ; 5) one-track orientation and one retail chain lead to dependency and heteronomy.

⁴ Blueyou, ENDA/REPAO & GTZ (coord), 2007. *Feasibility study. Eco-labelling of artisanal coastal fisheries in Senegal*. Bueyou & ENDA/REPAO, Zurich et Dakar, May 2007, 74 p.

⁵ Cormier-Salem, M.C. and Roussel, B. (ed). 2009. Des produits de terroir pour conserver la diversité biologique et culturelle au Sud. Enjeux, acteurs, instruments. IRD, *Autrepart*, 50, 214p.

⁶ Cormier-Salem, M.C., Goisbault, L., Sarr, O., Ka, S. 2009. Biodiversité littorale et projets de valorisation des productions localisées en Afrique de l'Ouest. Dakar, Sénégal, Compte-rendu des travaux de restitution de l'équipe 1 Biodivalloc, 1-7 novembre 2009. Dakar, UMR 208 IRD/MNHN, 13p. multigr.

Moreover, labelling for the European market implies to access to this market. Producers who want to sell products in the European Union must follow strict sanitary rules especially concerning seafood. Those conditions imply a choice, either producers significantly modify their production process to comply with European rules, or they cannot export to the European Union. For example, a cold room and a drying room would be needed. Such a production method is far from the present Senegalese hand-processed one. It would perhaps lead to the same product but would render the know-how of women useless.

Therefore, this case cannot bear out the hypothesis presented in the introduction that an ecolabel could protect both biodiversity and local know-how.

5. Conclusion

External actors such as NGOs, which work for environmental protection, have introduced shellfish labelling initiatives in the Saloum Delta. Several labelling projects are presently being experimented with.

They have the benefit of mobilising some women in relation to natural resources and ecosystem conservation. From this point of view, they can contribute to the preservation of biological diversity even if the legality of local conventions is questioned.

However, from a socio-economic and cultural point of view, these initiatives, as they operate at present, do not seem to be able to reach their objectives which include the improvement of market access for products, increases in the producers' incomes and cultural diversity conservation through the preservation of local know-how. Indeed, products from shellfish labelling initiatives do not satisfy the local demand exigencies and their production system does not allow their sale on a large scale on the western market which is nevertheless targeted.

Also, selling seafood in Europe could lead to exclusion of actors and the loss of the traditional system based on local know-how and typical social organisations. The market created by those labelled products is very small. It only allows a limited volume of products to be sold in a niche market: middle and upper urban classes visiting near their work place.

There is however another avenue that could be investigated. Indeed, processed shellfish of the Saloum Delta already have great fame and a reputation on the Senegalese market. This prominence and status is notably connected with local traditional know-how including a typical socio-cultural community. The Saloum Delta is a protected area, which embodies the government's and local authorities' will to ensure biodiversity conservation in this region. The population is also willing to make a commitment to

biodiversity conservation while aspiring to economic and social development. In such a context, creating a collective mark such as a 'mark of park' or mark of biosphere reserve' could be envisaged. The specifications of such a mark would be mainly based on the preservation of local know-how and the implementation of effective and efficient tools for biodiversity conservation. However, the creation of such a mark requires for its legality and legitimacy, a wide dialogue between all stakeholders and all villages of the Saloum Delta. The involvement of all stakeholders would be the key to the solution, which would guarantee the success of this mark.

Notes

¹ United Nations, Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August - 4 September 2002, document A/CONF.199/20, p. 173.

² Reference from <http://www.inter-disciplinary.net/publishing/id-press/ebooks/connected-accountabilities> on page 135

³ Convention on Biological Diversity, signed in June 1992 Rio Earth Summit, entry into force 29 December 1993 United Nations, *Treaty Series*, vol. 1760, p. 79.

⁴ BIODIVALLOC is funded by the French National Research Agency biodiversity programme entitled 'From localised products to geographical indications: which tools to manage biodiversity in mega-biodiverse countries?'

⁵ C R Wessels, K Cocxhrane, C Deere, P Wallis and R Willmann, 'Product certification and ecolabelling for fisheries sustainability'. *FAO, Fisheries Technical Paper 422*, 2001, p. 83.

⁶ I M M Dia, *Elaboration et mise en oeuvre d'un plan de gestion intégrée - La Réserve de biosphère du delta du Saloum, Sénégal, UICN, Gland, Suisse et Cambridge*, Royaume-Uni, 2003, pp. xiv and 130.

⁷ B Lacombe, 'Société et environnement: Des rapports non-figés. L'exemple du Bas-Saloum (Sénégal)' in *Environnement Africain. Série Etudes et Recherches (FRA)*, 1974, p. 15; Lericollais A. & al., 'Analyse du changement dans les systèmes agraires serer au Sénégal: Bilan et perspectives des recherches'. *ORSTOM Document d'étape*, 1987, p. 41.

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⁸ O Sarr, 'Aire marine protégée, gestion halieutique, diversification et développement local : le cas de la Réserve de Biosphère du Delta du Saloum

(Sénégal)'. *Thèse de Doctorat en Sciences Économiques*. École Doctorale des Sciences de la Mer, Université de Bretagne Occidentale, 2005, p. 245.

⁹ M C Cormier-Salem, C Bernatets, B Queffelec, O Sarr, 'Mangrove system sustainability: Public incentives and local strategies.' *Delta 2007: Managing the coastal land-water interface in tropical Delta systems*, 07-09 November 2007, Bang Sean, Thailand

¹⁰ O Sarr and M C Cormier-Salem, 'Shell's Valorisation Policy in Saloum (Senegal)'. In *CFEE/EPA/IRD/IDDRI. Promoting local specialities from Southern Countries. Origin-based products and biodiversity: heritage, territories, governance*. Contribution for the International Symposium, April 2007, Addis-Abeba (Ethiopia), pp. 23-28.

¹¹ Sarr and Cormier-Salem op.cit.

¹² O Sarr, 'Aire marine protégée, gestion halieutique, diversification et développement local : le cas de la Réserve de Biosphère du Delta du Saloum (Sénégal)', op.cit., p. 245.

¹³ Sarr and Cormier-Salem op.cit.

¹⁴ D Stiles, 'From Margins to Margins: Cultural Integrity, Ecological Survival, and Future Transcripts in the Historical Home-Based Health Narratives of Nova Scotia and West Virginia', in *R. G. Lee, R. Stech (eds.) Centres of and Mechanisms for Environmental Justice: Interdisciplinary perspectives ID Press, Oxford 2014*.

¹⁵ *ibid.*

¹⁶ FAO: Food and Agriculture Organization of the United Nations; UNCTAD: United Nations Conference on Trade and Development; UNEP: United Nations Environment Programme; UNDP: United Nations Development Programme.

¹⁷ The implementation of shell labelling movements in Saloum Delta satisfies other public policies related to environment conservation especially in the framework of the Convention on Biodiversity.

¹⁸ Regional Program for Coastal and Marine Conservation in Western Africa.

¹⁹ Projet d'Appui au Renforcement de la Gestion Durable de la Mangrove du Saloum Delta.

²⁰ Japan International Cooperation Agency.

²¹ Fédération Nationale des Groupements d'Intérêt Economique des Pêcheurs.

²² Fédération Locale des Groupements d'Intérêt Economique des Pêcheurs.

²³ Sarr and Cormier-Salem, op.cit.

²⁴ D Barjolle and B Sylvander, 'Facteurs de succès des produits d'origine certifiée dans les filières agro-alimentaires en Europe: marché, ressources et institutions'. *INRA Prod. Anim.*, vol.16 (4), 2003, pp. 289-293 ; L Bérard and

P Marchenay, *Les produits de terroir entre cultures et règlements*. CNRS Edition, Paris, 2004, p. 230.

²⁵ S B Brush and D Stabinsky (eds.), *Valuing Local Knowledge: Indigenous People and Intellectual Property Rights*, Island Press, Washington, 1996, p. 337.

²⁶ A Agrawal, *Environmentality: Technologies of Government and the Making of Subjects*, Duke University Press, London, 2005, p. 326; F Berkes (ed), *Common property resources. Ecology and community-based sustainable development*, Belhaven Press, London, 1989, p. 302.

²⁷ M C Cormier-Salem and B Roussel, 'Patrimoines et savoirs naturalistes locaux', in J. Y. Martin. *Développement durable: Doctrines, Pratiques, Evaluations*, IRD Editions, Paris, 2002, pp. 126-142.

²⁸ E Techera, op. cit. make appropriate update as above

²⁹ O Sarr, 'Aire marine protégée, gestion halieutique, diversification et développement local : le cas de la Réserve de Biosphère du Delta du Saloum (Sénégal)', op.cit., p. 245.

³⁰ Sarr and Cormier-Salem, op.cit., pp. 23-28.

³¹ M C Cormier-Salem, 'Les "produits de terroir" dans les Suds : des liens incontournables entre qualité et durabilité?' in A. Da Lage et al, (eds), *L'après-développement durable. Espaces, nature, culture et qualité*. collection ellipses, Paris, 2008, pp. 157-166 ; M C Cormier-Salem, S Boulay, B Queffelec & O Sarr, 'Ecolabelling in Fisheries: the Potential and Pitfalls. Ecological Norms and Local Responses along West African Coast', Rome, International Symposium, FAO/Globec/IRD, *People and Fish*, 7-11th July 2008.

³² E Charles, *Economie de la valorisation. Revenus du producteur et stratégies d'exploitation: Application au cas de la pêche artisanale. Thèse de doctorat en économie de l'agriculture et des ressources*. Ecole Nationale Supérieure Agronomique de Rennes, France, 2001.

³³ H El-Hadji, J M von der Weid and N Scialabba, 'L'agriculture biologique au Sénégal', FAO, Rome, 2001, para 3.7, viewed on 10 November 2009 <<http://www.fao.org/docrep/003/X6915F/x6915f03.htm>>.

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