

Eco-labelling in Fisheries along West African Coast: the Potentials and Pitfalls.

Marie-Christine Cormier-Salem* & Alassane Samba**

* IRD, UMR208 PALOC, IRD/MNHN, Dakar, Senegal

** ISRA, Dakar, Senegal

Abstract

Eco-labelling is considered with increased interest within the scope of fisheries crisis, as a way to tackle both marine biodiversity conservation and development issues. Along West African Coast, diversity and specificity of seafood issued from localised fishery systems (or fishery territories) are remarkable and recognised from long time. Recently, initiatives to draw more value from fish and fishery while maintaining them for the future are more and more developing. Nevertheless, those innovative dynamics are generally initiated and implemented by foreign operators, targeting specific categories of customers and are unequally re-appropriated by the fishermen communities. They still occupy a minor place in local and national economies. Moreover, these devices are binding and thus exclusive. So, they could have unexpected and contradictory effects on biological and cultural diversity.

An Interdisciplinary (anthropology, geography, economic, sociology, ethnobiology, ecology and law studies) and comparative approach, conducted in different environmental, political and socio-economical contexts, leads to assess the constraints and opportunities attached to eco-labelling in fisheries (Biodivalloc programme, ANR05 BDIV02).

Also, the aim of this contribution is to examine the connection and consistency between the devices and norms that shape those instruments and the local practices and actors strategies all along the fish network. It seeks to determine the conditions of using these tools in ways that ensure the co-viability of coastal (biological and social) systems.

This question is addressed through diverse study cases, the Mugil fishery of Mauritania, the Octopus fishery of Senegal, the mollusks exploitation (*Arca*, *Crassostrea*, *Cymbium*, *Pugilina*, etc.) of the Saloum Delta, Senegal.

Introduction

Eco-labelling is considered with growing interest within the scope 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 [1,2,3]. In developing countries, local communities involvement and public policy in favor of labelling processes are unequal according to political, legal and socio-economical context [4]. Besides, labelling of products from the sea is far less developed than those of agricultural products. Along West African Coast, more and more projects and incentives favor these tools but for what and for whom? Who are the stakeholders? What are their strategies?

To tackle those questions, interdisciplinary (anthropology, geography, economic, sociology, ethnobiology, ecology and law studies) and comparative approach has been conducted in different environmental, political and socio-economical contexts (Mauritania, Senegal, Bissau Guinea)* [5].

The general aim of this communication is to assess the constraints and opportunities attached to eco-labelling in fisheries in developing countries. Here, we'll focus on artisanal sector and small-scale fishery through Senegalese study cases and compare them with Mauritanian *Mugil* fishery.

Diversity and specificities of seafood : towards Localised Seafood Systems

In reference to Farming System approach and Localized Agrifood Systems (LAS) concept [6,7,8], we argue there are « Localised Seafood Systems » (LSS), based on strong relationships

between actors, products and territory in fisheries. Local seafoods (our famous French « products of terroir ») are central elements of those systems [9] and express the complex combination of territorial specificities (ecological and biological components, such as marine currents and grounds, fish population and stock, etc. linked to marine ecosystems ; but also productive, social and cultural components that shape the « seascape »), fishery activities (fishing methods, fishermen organisation, etc.), and actors' knowledge and know-how all along the chain, from fishermen to traders and consumers [10,11].

The relevance of LSS concept will be demonstrated through 1) specificities of fishery systems along Senegalese coast ; 2) reputation of various Senegalese marine products attached to their origin ; 3) diversity and complexity of value chains.

Specificities of fishery systems along Senegalese coast

Senegalese fishery systems are characterised by multiplicity of landing sites, gears and species caught. Until 1980s, two main fishery zones are distinguished [12]: the northern one is characterised by narrow continental shelf, dangerous navigation conditions, dominance of demersal and big pelagic fish ; the southern zone is characterised by large continental shelf, quiet sea condition, dominance of smaller pelagic fish and estuarine species (fish, shrimp, shellfish).

Fishery Areas	Canoes number	Communities	fish	gear	products	volume
Saint Louis	1347	Guét-Ndarien	<i>Shark, Bluefish, Pseudotolithus</i>	Handline, bottom fixed gillnet	<i>gej, sali**</i>	P128504 D 2213
Kayar	945	Lebu, Guét-Ndarien	<i>Shark, Pseudotolithus</i>	Handline	<i>gej</i>	P61033 D2863
North Cap Vert	689	Lebu	<i>Euthynnus</i>	Drifting Handline	<i>sali</i>	P7727 D936
South Cap Vert	2358	Lebu	<i>Sardinella spp.</i>	Beach seine	<i>kecax</i>	P52682 D9117
Mbour	1085	Lebu	<i>Sardinella spp.</i>	Surface and Encircling gillnets ; beach seine	<i>kecax</i>	P39319 D10300 (3379)
Joal	670	Lebu, Serer	<i>Sardinella sp. ; Ethmalosa ; Pseudotolithus ; Cymbium ;</i>	Encircling gillnet ; beach seine ; bottom gillnet	<i>kecax, yeet, gej</i>	P126427 D7116 (5224)
Sine Saloum	1440	Niominka	<i>Ethmalosa, Mugil, Sardinella ;</i> shrimps ; cockles (<i>Anadara; Murex</i>); <i>Cymbium</i>	Encircling gillnet ; bottom gillnet ; basket	<i>tambajang, yeet, pañe, tuffe</i>	P4161 D7566 (1767)
Casamance	2151	Diola, Niominka	<i>Ethmalosa, Mugil, Pseudotolithus, Arius, oyster, shrimps</i>	cast net ; fêlé-fêlé (gillnet) ;	<i>tambajang, metora, gej, yoxos, dried shrimps</i>	P20183 D14163 (389)

Figure 1: Specificities of Senegalese fishery systems [13,14,15]

P : Pelagic ; D : Demersal ; () cockles

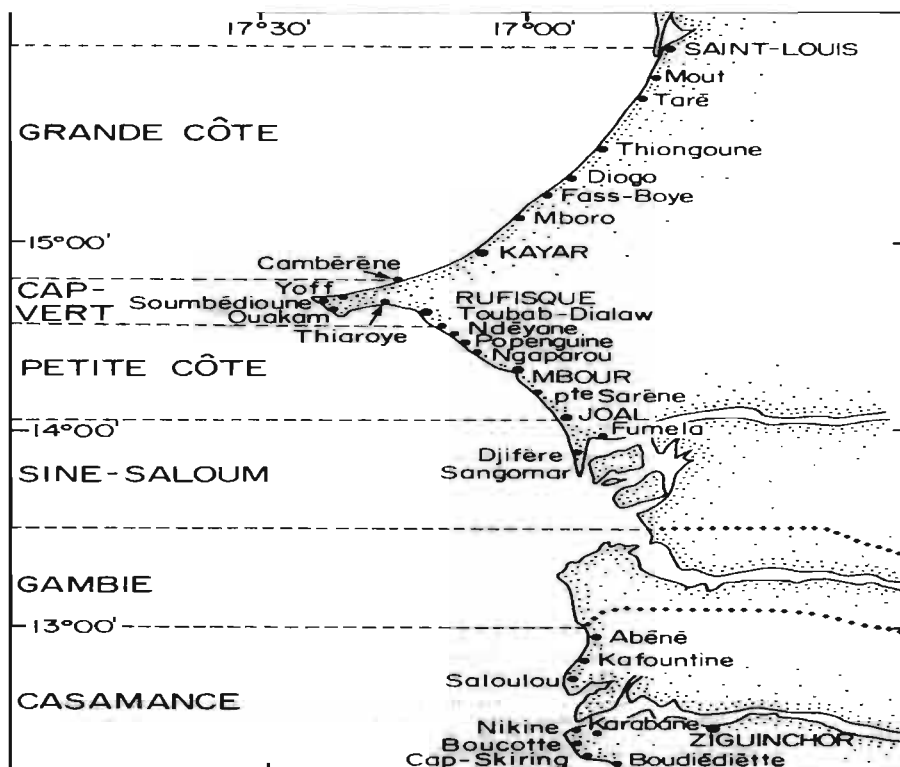


Figure 2 : Map of Senegalese landing sites and fishery places [15]

Since 1980s, purse seine diffusion leads to *Sardinella* landing explosion and *kecax* becomes the most important product all along the coast. These tendency is reenforced by demersal resource depletion. Nevertheless, local fishery specificities are maintained and uniqueness of each territory, attached to fishery landing site and local fishing systems, is reclaimed by communities.

Senegalese seafood : an old heritage

In Senegal, where seafood is the first source of animal protein and play a major place in alimentation (*cee bu jen* or rice with fish is now considered as the identity dish of Senegalese and more and more West-african people [16]), diversity and specificity of seafood, overall processed products (before frozen chain development) are remarkable, attached to: 1) uniqueness of marine resources and capture or gathering methods; 2) diversity of processing techniques (most often sea products are fermented and putrified, then dried and salted in the North of the country, rather smoked or braised in the South) ; 3) traditions and know-how of women that most often control the processing and the trading.

Reputation of products according to their origin (to territorial specificities and local know-how) is well established and, for most of them, from long time as it is exemplified by *yeet* (*Cymbium spp.*) processed by Lebu women of Joal, *pañe* (*Anadara senilis*) and *tuffë* (*Murex*) boiled and dried by Niominka women of Saloum Delta, *gej* from Abene or oysters or *yoxos* (*Crassostrea gazar*) gathered, cooked and smoked by Diola women of Casamance [17].

Those products constitute an old heritage : since at least two thousand years, long-distance exchanges are attested by *kjokkenmöding* or shell clusters, found in the mangrove ecosystems of these countries, from Senegal to Sierra leone. The clusters contain shells, fish-bones and commodities like poteries coming from other areas. It is supposed that coastal people exchanged sea products against rice, cola nuts, palm oil, etc. [18]. Since 16th century, according to Western navigators, first written testimonies on fishery activities, processed fish occupy a major place in the commercial networks between coast and hinterland and along the coast between marine fishermen and peasant communities. So, processed fish and seafood products are from long time Africa's leading exchange commodity [19].

Complexity of value chains

Commercial networks extension and diversification are linked to fishery systems development [20]. With urbanisation (1950s), frozen channels (1980s) and exchanges globalisation, sea food products (fresh, processed and frozen fish and shellfish) are more and more differentiated. As premium products (« noble » fish) are dominant for market niches and exportation, by-catch products for local and national markets occupy a growing place. These changes very often result in fierce competition between short and long channels, domestic or national consumption and exportation. Also, volutes, usually processed (*yeet*) and oriented to Senegalese urban markets, are more and more sold frozen on China markets, Canton Province. Another good illustration of complexification of value chains is given by false cod or *Ciof* (*Epinephelus aeneus*). During the Second World War, European industrial boats targuet this species along Mauritanian and Senegalese coast to produce salted false-cod for European market; then, more and more Senegalese small-scale fishermen exploite *ciof* with handline, in such an extent it becomes emblematic fish of Senegalese dish, *cee bu jen*, instead of *Dentex gibbosus*. More recently (1990s), as Senegalese urban demand increases, exportation of fresh *ciof* to world market leads to growing pressure on this resource and over-exploitation. Now, it is difficult to eat *cee bu jen* with *ciof*. Only juvenils, captured in estuaries and deltaic areas, are proposed in restaurant and hotels for foreign or rich consumers. Also, value chain promotion is a major challenge for developping countries.

West-African qualification incentives analysis

General analysis : lessons from some projects

There are more and more initiatives for fish eco-labelling and social responsibility issues (Figure 3 : Various fish adding-value initiatives in Senegal) [4, 5, 17, 21, 22, 23, 24, 25, 26]. They concern various marine resources, fish (*Mugil sp.*, *Ethmalosa fimbriata*, shark, etc.), crustaceans (shrimp) and cockles (murex, oyster, etc.). Products are traditional (*gej*, *yeet*, *tuffë*, etc.) as well as new (deep-frozen fillet) or hybrid (improved traditional chain). Main producers are artisanal fishermen and women, involved in processing and trade. Supports come from NGOs, but also private and public partners. Initiatives are generally exogenous and prospects are most often designed according to non-local standards (UE or International sanitary norms, FAO code of conducts, MSC criteria for ecocertification). Until now, there are no eco-certified marine products issued from African countries. As a matter of fact, most of those initiatives are recent (less than 5 years) and limited in space (pilot zone, a few villagers or producers) and volume (between 300 kg and 2 tonnes).

All of them have for goals to give more value to local products, but what does it mean ? Behind the term of « adding-value » or « value chain promotion », there are no consensus. Tools (from single packaging to fair-trade label) and expected effects (from traceability to animal well-fare) are as various as products, actors and strategies.

In fact, the term « adding-value » seems to refer to: 1) giving more economic values: access to market and premium market prices are supposed to increase local actors income, limite rural exodus and international migration and finally alleviate poverty ; 2) enhancing ecological values and maintaining ecosystem services (overall biological diversity protection): main of labelling processes concentrate on sustainability : guidelines, code of conducts and good practices impose tools and standards (selective fishing gears, not overexploited species, minimum size, closed seasons, targeted species according to Friend of the Sea' lists, etc.) ; 3) recognising traditional knowledge, especially women's know-how and substaining sociocultural heritage; 4) improving quality for commercial, environmental and ethical purposes (hygienic norms, animal well-fare, gender equity, etc.) ; 5) reducing counterfeit, which is the initial goal of AOC (exemple of henne used to dye *yeet*) and protect the name of the product. So, goals -economic, ecological, ethical, social, cultural, legal- are most often embedded [4].

Species	Products	Areas/ localisation	Actors	Product typicity	Adding-value Tools (name, nature, key objectives/goals)	Beginning of the project	Market	Expected effects
<i>Ethmalosa fimbriata</i> , <i>Mugil spp.</i>	Frozen fillet and ready-to-sell portions	Biosphere Reserve of Saloum Delta ; different fishing villages	Small-scale fishermen	Not really (only extensive fishing methods which do not overexploit the stocks : handline ; encircling gillnet « féfé-félé » ; beach seine)	Fair-Fish, Switzerland ; ecofriendly fishery. Certificat from Dakar agency of « Société Générale de Surveillance » (SGS) and Friend of the Sea	2007	World Export : Swiss consumer via Migros supermarket + minimum of fair-fish products for the Senegalese market)	1st- Reduce pain in fish /Animal welfare : diffusion of a « stunning and killing club » ; - sustainability (standards as fishing gear, not overexploited species, minimum size, closed seasons) ; - fair trade (improvc the income of the fishermen ; give women responsibility ; create more money earning opportunities ; boost local economy
Diverse species	<i>kecax</i> (braised-dried fish) ; <i>arigoni</i> from shark ; nuoc-nam	Ziguinchor Province, Casamance, South of Senegal	600 young women (fish processing and trade)	Hybridation of traditional and new techniques	UR Santa Yalla & NGOs (CCFD)	2004	National	By-catch and discards adding-value
<i>Farfantepenaeus notialis</i>	Deep-frozen shrimps : processed raw and frozen as head-on (HOSO) or peeled undeveined (PUD) products	Goudomp area, Middle-Casamance, Senegal	Small-scale fishermen	Wild shrimp of Casamance estuary ; artisanal fishery	Private Public Partnership (PPP) : NGO Idec/ GTZ, UICN, USAID et EGP Netherlands	2005	World Export : Asian market and other countries	Guidelines and code of conducts ; supply chain securisation ; for an African label of ecocertification ;
<i>Octopus Sepia</i>	Frozen octopus and cuttle-fish	Senegalese villages of Nianing and Pointe Sarène	Small-scale fishermen (Guet-Ndar, Lebu)	New product, new market	REPAO / ENDA ; FAO. MSC certification	2006	World Export	- Sustainable exploitation of ressource (biological rest ; guide of good practices) ; - respect of hygienic norms quality standards and traceability ; - producers organisation, poverty eradication, equity (gender focus) ; alternatives activities promotion
<i>Cymbium spp.</i>	<i>Yeet</i> (fermented and dried mollusk)	4 Senegalese villages : Niodior, Dionewar, Falia (Saloum islands) and Fadiouth (Petite-Côte)	Fisherwomen (processing and trade)	High, 4 kinds of « yeet » ; used as condiment for Senegalese « <i>cee bu jen</i> »	ENDA	2002	National market	Fight against competition and overexploitation, linked to export-oriented market ; quality improvement and traceability for

								better access market; women know-how recognition and income maintaining
<i>Anadara senilis</i> , <i>Crassostrea gazar</i> , <i>Pugilina morio</i> & <i>murex sp.</i>	<i>Pañe</i> , <i>tuffè</i> , <i>yoxos</i> (dried cockles and mollusks)	Gandoul Islands, Saloum Delta	Fisherwomen	High with local specificity (from one country to another)	Enda Graf Sahel with support of MAVA and PRCM (WWF, WI, IUCN, FIBA)	2004-08	National market	Code of conducts (Biodiversity conservation ; sustainable livelihoods); Women promotion/ gender focus
<i>Mugil cephalus</i>	Dried fish (<i>tishâr</i>), salted and crushed fish (<i>khlî</i>), <i>poutargue</i> (gonads pressed, salted and dried) <i>beydh ezôl</i>) and oil from fish head and internal organs.. (<i>dhen</i>)	National Park of Banc d'Arguin, Mauritania	Imrâgen fisherfolk of Banc d'Arguin (around 1400)	High (fish system and fishery strictly controlled ; economic and socio-culturel values and uses of Mullet products)	1) Mullet fishery ecocertification/MSC, UICN/FIBA 2) NGO « Mauritanie 2000 » normalisation via IMROP /Slow fish « sentinelle product »	2006	World market (UE, Asia..) for <i>poutargue</i> National market for other products	Resource and ecosystem protection ; Imrâgen women knowledge conservation and livelihood improvement

Figure 3 : Various fish adding-value initiatives in Senegal and Mauritania [5, 21, 22, 23, 24, 25, 26]

In the context of Ocean resource depletion and marine biodiversity erosion, most of initiatives focus on value chain promotion in addition and in combination with all activities related to fisheries co-management, eco-labelling and fair trade models to create synergies and maximize benefits and long term sustainability of the fishery. While industrial fisheries will never be able to cope with ecofriendly criteria, sharps argument favor small-scale or artisanal fisheries to developpe schemes rending better fish quality. Thanks to higher quality, the fishermen have access to premium market, get higher earnings and social provisions.

Illustration of two main trajectories

In developping countries, and especially in West-african sea countries such as Senegal and Mauritania, two main trajectories could be highlighted: in one hand, valorisation of origin-based products (promotion of products as origin), which are more or less « traditional », export oriented and supposed to integrate world market, to improve value chain thanks to international norms, labels and even, ecocertification; in the other hand, local traditional products, with a well established reputation and distributed through diversified commercial chains (local, national and interreregional) controled by women producers, not candidate to ecocertification or official labellisation, but rather to quality signs and collective brand.

The first one, very few and limited (in exchanged volume, extension of production area, involved actors along the sea food chain) could be illustrated through the study case of mullet fishery ecocertification in Mauritania [29, 30 ,31, 32]. Mullet fishery system is the basis of Imrâgen livelihood. Mullet (*Mugil cephalus* Linné) and processed products are the main (unique) source of income : dried fish (*tishtâr*), salted and crushed fish (*khlî*), *poutargue*, gonads pressed, salted and dried (*beydh ezôl*) and oil from fish head and internal organs (*dhen*) are traditionnaly processed and sold by Imrâgen fishermen wives. With the creation of PNBA (National Park of Banc d'Arguin) in 1976, Imrâgen population is divided into two communities : inside the Marine Protected Areas, strong constraints in terms of resources access and uses are imposed, in favor of « traditional » and « ecological » fishing methods (only « shoulders » net, canoë with veil called « lanches », etc.) ; outside, motorized small-scale fishing with various gillnets develops. Since mid-1990s, processing activities controled by women are in crisis, due to several factors, among which: growing fishing effort linked to increasing fishermen populations (from Mauritania and Senegal) and less selective gears outside the Park ; increasing demand of *Mugil* gonads sold fresh by wholesalers to Nouakchott companies and exported to European market.

In 2001, IUCN (International Union for Conservation of Nature) and FIBA (International Fund for Banc d'Arguin) decide to support Imrâgen fishery system inside the Park in promoting mullet products as origin. This project, which aims at mid-term an eco-certification of *Mugil* fishery, has three goals : *Mugil* stocks preservation, traditional knowledge conservation and Imrâgen economic development. Innovations concern landing fish access (microcredit), production and processing conditions (training in hygienic norms and Western criteria of quality ; distribution of working riel: buckets, pots, knives, balances, cupboards, etc., new), packaging and sales. During the fishing campaign 2006-2007, a test was proposed to the women of two villages of the Park. It concerns above all *poutargue* product, which has a high value (around 200 \$/kg on world market) and is destined to European consumers, living in Nouakchott. Poutargue is putting under vacuum to improve the appearance and the preservation. The product is bought to the women between 20 and 30 \$M/kg according to its quality, a little more than the price offered by the local wholesaler, and sold around 60 \$/kg in Nouakchott in supermarkets as well as in the headoffice of the PNBA. At the end of season, benefices are supposed to be redistributed to the women.

Contacts are established between IUCN and Marine Stewardship Council (MSC), leading international organisation for fisheries eco-certification, whose principles are consistent with FAO-Guidelines for Eco-labelling of marine capture fisheries [2]. At the end of November,

2007, MSC declares officially PNBA mullet fishery ecocertification is undergoing full assessment procedures.

Another initiative in favor of « poutargue » promotion is conducted by a Mauritanian NGO, called « Mauritanie 2000 » supported by Slow Fish [23, 32]. It concerns all the Imrâgen women of the coast (inside and outside the Park) involved in *poutargue* production and aims to improve processing techniques and products packaging and so, give opportunities to enter new markets. Today, the *poutargue* of Imrâgen is one of the ten "sentinels" products, qualified by Slow-Food in Africa. This concept « sentinel » designates local product and the attached know-how, badly known and jeopardised of disappearance.

The second trajectory is well illustrated by Saloum or Casamance cockles exploitation and value-adding initiatives that aim to develop alternatives sustainable activities in a context of rural crisis (drought, population pressure, renewable resource overexploitation, decline of cereal culture, migration of young people, etc.) [17, 33]. Most of them focus on women, who play a main role in fish and cockles collect, processing and trade. Initiatives are either exogenous like Enda Graf Sahel project called « Women and Cockles », either endogenous, in the hand of women entrepreneurs like Alimatou Sarr from Dionewar or supported by Santa Yalla project of Casamance. Women replicate the traditional organisation of « age group » into operational groups and co-operatives (Economic Interest Group) officially recognised and supported by funding agencies. The process of labelling mainly consists of guaranteeing the safety of the product (flushing and washing several times with water, addition of chlorine, three successive cookings) and improving its presentation and its traceability (vacuum bagging, labelling). Innovations also include exploitation techniques in favor of mangrove ecosystem and biodiversity conservation. For example, the Japanese cooperation has introduced oyster seedlings in shallow waters. Traditional and sustainable techniques of shellfish collect are also encouraged, such as the "Moundé" baskets, which ensures that the smallest shellfish are not harvested.

Territorial qualification of seafood: new challenges

Certification tools are not the panacea. As a matter of fact, West African artisanal or processed seafood products are very few to be certified, and even less to candidate to be certified. According to a GTZ-feasibility study on eco-labelling in Senegal [27], only 4 fish could be candidated: shrimp, lobster, octopus and cuttlefish. Mismatches between certification requirement 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 enforcement [1, 4].

In the case of Fair-fish in Senegal, according to his director Billo Heinzpeter Studer [5], project stops 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 optimistic: 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 by not fulfilled tasks that leads to cumulated cases of neglect of duties; 5) one-track orientation and one retail chain lead to dependancy and heteronomy.

Labels and official signs to guaranty products quality « theoretically » allow consumers to make informed choice and producers to secure their market access (stability of furniture and quality, credibility), increase their income (higher price of local products) and improve their farming and fishing system (sustainable and equitable share of benefices). However, as it is pointed out by many studies on eco-labelling in developing countries [1, 27, 32, 33], tensions

are significant between markets, norms and actors involved in these processes. Also, international market induces more complex networks with new middlemen (wholesalers, retailers) and longer chain between producers and consumers. Moreover, local norms are not compliant with increasingly stringent food safety, hygiene and product traceability norms. So, there are sharp tensions between origin-products typicity and standardisation. Basis of quality criteria often lack of transparency and certificate organisms are not enough independent. Role of government in voluntary labelling and certificate and implication of actors along the entire supply chain are also in question: degrees of acceptance vary from one stakeholder to another. As tools are heavy, expensive and binding, some actors are *de facto* excluded from this value-chain [33].

Lessons from African eco-labelling initiatives in fishery

African ecolabelling in fishery studies and Biodivalloc program analysis [5,27,29,33] demonstrate labelling tools have to be chosen according to the market orientation and adapted to the local context.

Labelling tools are free and voluntary. They encompass various procedures and steps, from « simple » labels and norms to certifications (which need guaranty and third external organism to certificate), from informal to official signs of quality. Each of them have threats and opportunities [29]. Also, official signs of quality allow public recognition but they cost a lot ; they allow immediate credibility but also possible sanctions ; price is higher but multiple diversified networks are unadequate and local specificities not preserved. On the opposite, informal signs or collective brand are more adaptable, more flexible to local context but not recognised ; reputation is based on confident and self control, which is not enough to construct credibility and justify higher price.

A major stake concerns « quality », currently focused on two aspects, sanitation and sustainability [34]. In fact, two kinds of quality has to be distinguished [35]: intrinsic depends on the products themselves –gustatory, nutritional or medical value (see for instance in France Red Label and AOC) ; "extrinsic" quality is conferred by the conditions of exploitation, processing and marketing –respect for the environment, responsible and sustainable uses, poverty reduction, equitable sharing of benefits generated by Protected Areas, etc. (see for instance Fair-trade, IGP, ecocertification). Some of these criteria are compatible, but very often they are contradictory –for instance hygiene criteria often conflict with organoleptic criteria, normalisation does not fit with specification (or typicity) [5, 30].

In the case of mullet fishery and cockles exploitation, the two trajectories have diverse promises and threats : *poutargue*, high-valued product, export-oriented, is not really an Imrâgen product ; innovations, imposed by international norms and eco-certification via MSC are not always well accepted by local actors, but they ensure access to « market niches». On the contrary, cockles are traditional identity productsⁱⁱⁱ. The « old » food chain for domestic consumers and the improved food chain for urban or foreign, richer and warned consumers, could co-exist and respond to high and diversified demand on the local, national and African market. Nevertheless, cockles cannot be exported towards European or Asian markets because of sanitary constraints. Elaborate a collective brand could be a better tool than ecocertification to protect biodiversity and promote local products on national markets [17,29].

Conclusion : Issues and recommandations

Most of the eco-labelling processes aim first to improve local products value chains. They are oriented to market niches and are *per se* limited in terms of exchanged volumes. Beyond legal and commercial goals, ethical and ecological preoccupations have growing place. Quality economy, solidarity, equity and responsibility are becoming key words. However, as illustrated by Senegalese and Mauritanian studies, these tools suffer from inner tensions. Innovative processes lead to various changes, especially in terms of : resource and territory access, social

organisation (with complex recomposition of actors' power, from producers to consumers), value-chain and quality criteria. These tools, which are supposed to alleviate poverty, on the contrary could stress disparities and aggravate inequities (between men and women, young and elder, resident and migrant, etc.). In the context of African food crisis, another major stake is to guarantee for every body the access to a secure, healthy diet and quality (intrinsic and extrinsic) products.

Finally, the success depends on 1) the capacity of the producers to get organized and identify the relevant markets for their products, 2) consumers awareness for sustainable issues related to production, food quality and trade and responsiveness (militant market and consumers reliability) [4, 36].

To prevent the mismatches, following recommendations are suggested : 1) Strengthen the links between eco-labelling incentives and coastal management policies ; incorporate seafood products promotion in the ICZM ; consider ecolabelling as a tool of marine biodiversity conservation. There is a need of public incentives and local actors' capacity-building support. Particular attention has to be paid to property rules (access and uses right, benefits sharing, actors interactions) ; 2) conduct markets analysis at various scales (especially at West African scales) and study complexity of value-chain and market segmentation and/or competition and substitution ; 3) promote information sharing and initiatives exchanges among all stakeholders ; make Localised Seafood Systems more recognised ; create a meeting and advertising place like a « house of seafood products ».

References

- [1] Wessells, C., Cochrane, K., Deere, C., Wallis, P. and Willmann, R. 2001. Product certification and ecolabelling for fisheries sustainability. FAO, *Fisheries Technical paper 422*, Rome, Italy.
- [2] FAO. 2005. *Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries*. Rome, FAO, 3.
- [3] Gulbrandsen, L. H. 2006. Creating markets for eco-labelling: are consumers insignificant? *International Journal of Consumer Studies* 30 (5), 477 p.
- [4] 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.
- [5] 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.
- [6] Moity-Maïzi, P., de Sainte Marie, C., Geslin, P., Muchnik, J., Sautier, D. 2001. Systèmes agroalimentaires localisés. Terroirs, savoir-faire, innovations. *Etud Rech Syst Agraires Dev* 32 : 216 p.
- [7] Mutersbaugh, T, Klooster, D, Renard, MC, Taylor P. 2005. Certifying rural spaces : Quality-Certified Products and Rural Governance (special issue). *J Rural Stud*, 21 : 381-8.
- [8] Muchnik, J., Cañada J. S., Torres Salcido G., 2008. Systèmes agroalimentaires localisés : état des recherches et perspectives. *Cahiers Agricultures* 17 (6) : 513-519.
- [9] Bérard, L. and Marchenay, P. 2004. *Les produits de terroir entre cultures et règlements*, CNRS Edition, Paris, France.
- [10] Bartlett, D., Carter, R.W.G., 1991. Seascape ecology : the landscape ecology of the coastal zone. *Ekologia*, CSFR, 10(1): 43-53.
- [11] Laloë, F., Rey, H., Durand, J-L. eds, 1995. *Questions sur la dynamique de l'exploitation halieutique*. Paris, Orstom, coll. Colloques et séminaires, 542p.
- [12] Laloë, F. and Samba, A. 1990. *La pêche artisanale au Sénégal : ressource et stratégies de pêche*. Paris, Orstom, coll. Études et Thèses, 395p.
- [13] CRODT/ISRA. 2006. Recensement national de la pêche artisanale maritime sénégalaise,

Rapport final. Dakar, CRODT/ISRA, Mars 2006, 151p.

[14] DPM. 2010. *Résultats généraux de la pêche maritime sénégalaise en 2008*. Dakar, Direction des Pêches Maritimes, juillet 2010.

[15] CRODT/ISRA, 2009 : Présentation du système d'informations national sur la pêche et statistiques de la pêche maritime sénégalaise de 1997 à 2008. Archive scientifique n° 148, Novembre 2009, 63p.

[16] Bricas, N. 2006. *La pluralité des références identitaires des styles alimentaires urbains en Afrique*. Journées d'études du GDR "Economie et sociologie", Les marchés agro-alimentaires, 23-24 mars 2006.

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

[18] Cormier-Salem, M.C.(ed). 1999. *Rivières du Sud. Sociétés et mangroves ouest-africaines*, IRD Edition, Paris, France.

[19] Chauveau, J.P. 1986. Une histoire maritime africaine est-elle possible? Historiographie et histoire de la navigation et de la pêche africaine à la côte occidentale depuis le XVIe s. *Cahiers d'Études Africaines*, 101-102, 26 (1-2): 173-235.

[20] Chaboud, C., Kébé, M. 1990. *Commercialisation du poisson de mer dans les régions intérieures du Sénégal*. Dakar, Centre Rech. Océanogr. Dakar-Tiaroye/Inst. Scient. Rech. Agr. 300p.

[21] Bernardon, M., Mohamed Vall, M. O., 2004. *Le mullet en Mauritanie: biologie, écologie, pêche et aménagement*, Nouackchott, FIBA-PRCM-UICN.

[22] Moity-Maïzi, P. 2006. Artisanat et artisans dans la transformation de poissons au Sénégal. In : Granié, A.M. and Guétat-Bernard, H. (ed) *Empreintes et inventivité des femmes dans le développement rural*. Presses Universitaires du Mirail / IRD, Toulouse, France.

[23] Slow Food, 2006. La sentinelle de la poutargue de mullet des femmes imraguen. Manuel de production. Fondazione Slow Food pour la biodiversité, Italie, Alberto Peroli Febrario,

[24] Walter, C. 2006. *Femmes et coquillages vers une gestion participative de la ressource*. Rapport de stage Master II, IUEM, Brest.

[25] IDEE Casamance & Blueyou, 2007. *Eco-labelling and Value Chain Promotion of the Casamance Shrimp fishery. Achieving sustainability through Fisheries Co-Management and Market Incentives*. IDEE Casamance & Blueyou, Ziguinchor (Senegal) and Zurich (Switzerland), Funding proposal, 30p.

[26] Brenier, A., Henriques, A., Le Douget, L. 2009. *Des femmes et des coquillages... Expériences d'un projet de conservation dans le Delta du Saloum*. FIBA, ENDA Graf Sahel, IRD, Dakar, Sénégal, rapport de la mission d'évaluation, 48p.

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

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

[28] Phillips B., Ward, T. and Chaffee, C. 2003. *Eco-labelling in Fisheries: What Is it All About?* Oxford, Blackwell Science, 196p.

[29] 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.

[30] Cormier-Salem, M.-C. 2008. « 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*. Paris, collection ellipses : 157-166.

[31] Boulay, S. 2007. *Aspects sociaux et culturels des produits issus de la transformation du mullet chez les Imrâgen du Banc d'Arguin et modalités d'insertion locale de démarches de*

valorisation, Rapport de recherche, Programme BIODIVALLOC (ANR Biodiversité), UR 169 de l'IRD.

[32] Boulay, S., Boncoeur, J., Charles, E., Cormier-Salem, M.-C., Queffelec, B. 2009. *La valorisation des produits imrâgen : une voie durable au service de la diversité biologique et culturelle du parc national du Banc d'Arguin, Mauritanie*. Contribution au colloque « localiser les produits », Paris, Unesco, 9-12 juin 2009.

[33] Cormier-Salem M.-C, Bernatets C., Sarr O., 2010. "Mangrove system sustainability. Public incentives and local strategies ". In: C.T. Hoanh *et al.* ed, *Managing the coastal land-water interface in the tropical delta systems*. IWMI/IRRI/Univ New Castle, Comprehensive Assessment of Water Management in Agriculture series: chap 30: 409-421.

[34] Mariojouis, C. 2000. Introduction to quality: quality concepts, quality perception by producers, clients and consumers; quality signs (geographic origin, ecolabelling, etc.); translation of quality concepts into products procedures and services. *Cah. Opt. Medit.* 51, 15-22.

[35] Charles, E. and Boude, J.P. 2004. Exploitation d'une ressource naturelle et politique de valorisation par des signes de qualité. La pêche de bar de ligne de Bretagne. *Economies et Sociétés*, série Socio-économie du travail (AB), 23, 14p.

[36] Jacquet, J.L., Pauly, D. 2007. The rise of seafood awareness campaigns in an era of collapsing fisheries. *Marine Policy* 31:308–13.

Footnotes

* These paper is issued from Biodivalloc programme (ANR05 BDIV02) titled: "From localised products to geographical indications: which tools to conserve biodiversity in mega-biodiverse countries?" and a symposium organised in Dakar in November 2009.

** Main processed fish are : *gej* (putrified, salted, dried fish), *sali* (salted-dried), *kecax* (braised-dried), *yeet* (putrified, salted, dried volute), *pañe* (boiled-dried arks), *tuffë* (boiled-dried murex), *yoxos* (grilled-dried oyster), *tambajang* (salted-dried pelagic fish), *metora* (smoked).

*** Other Imrâgen products – *tishtar*, oil, etc- have the same trajectories than cockles. There is room for collective brands -like Park label- to furnish national markets and West African markets.

Cormier-Salem Marie-Christine, Samba A. (2010)

Eco-labelling in fisheries along West African coast : the potentials and pitfalls

Paris : IRD, 12 p. multigr.

International Symposium of IIFET. International Institute of Fisheries Economics and Trade : Economics of Fish Resources and Aquatic Ecosystems : Balancing Uses Balancing Costs, Montpellier (FRA), 2010/07/10-16.