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Mangrove grabbing. An exploration of changes in mangrove tenure from a political ecology perspective

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The three-dimensional nature of the sea spaces and the mobility of the halieutic resource make very complex their modalities of appropriation, use and access (Cormier-Salem, 1995 ; 2000). However this moving spaces are not res nullius, but res communes or commons, under the control of a community. Among others, Berkes (1985) and Mc Cay and Acheson (1987) have questioned the theory of the tragedy of the commons (Hardin, 1968) and put in evidence the diversity of the TUR'f (Territorial Use Rights in fisheries) and the CMT (Customary Marine Tenure), according to the historical and geographical context and the institutions (from local people to international decision-makers). They have been the object of numerous definitions and classifications, underlining their age (as the middle-age "prudhommies" of the Mediterranean lagoons in Braudel, 1949) and their flexibility (among others, see Christy, 1982 ; Pollnac, 1984 ; Durrenberger & Palsson, 1987). The diversity of institutions testifies the various relationships between people and sea, from the halieutic fief of Calabria, Italy (Collet, 1985) to the "lobster gang" of Maine, USA (Acheson, 1975, 1988) and the maritime tenures of the Pacific Islands (Ruddle and Akimichi, 1984). From Pacific case studies, Ruddle et al (1992) have highlighted 6 principles: sea rights depend on social status; resource exploitation is governed by use rights; resource use territories are defined; marine resources are controlled by traditional authorities; conservation was traditionally widely practiced; sanctions and punishments are meted out of infringement of regulations.

Our fieldworks, conducted since more than 30 years in West Africa and extended to diverse countries (East Africa, Guiana, Antillas, India, Vietnam, Thaïland, etc.) led to distinguish two types of coastal tenure, the amphibian "terroir" of peasants-fishermen and the sea trails of the migratory marine fishermen (Cormier-Salem, 1992 and 1995). The former is a closed, limited, managed area, while the latter is a permeable, extensible, discontinuous, reticular structure, consisting of marine roads and specific controlled places (for fishing, landing, market..).

In this paper, we focuse our attention on the mangroves, which are coastal wetlands, semi-closed seascapes, such as estuarines, lagunas, lagoons and corall reefs.

Mangroves have long been considered as wastelands in the Western thought. Neverthess, for the local people, they are communal territories, inhabited, managed into multiple use systems, governed by access and use rights and controlled by local customs. Through an approach of political ecology, the aim of this paper is first to highlight the diversity of mangrove tenures, second to analyse the main actors, factors and steps of their enclosure, third formulate hypotheses on their « grabbing » and the effects on local livelihood. The growing literature on "land grabbing" and more recently on "green grabbing" emphasize the pervasiveness of the neoliberalim and the risk of nature's commodification (Fairhead *et al*, 2012; Kozoy and Corbera, 2010; McAfee, 2012). Land grabbing and green grabbing are forms of land appropriation or commons enclosure, conducted by public or private actors, moved by diverse logics (productive versus conservative). The term « ocean grabbing » is more and more popular, but remains poorly explored. In their synthetical article, Bennett *et al* (2015), suggest an analytical framework and point out the need of in-depth investigations, based on empirical studies, spatial analysis, historical accounts and exploring drivers, consequences and solutions to avoid or resist ocean grabbing. From various mangrove case studies (see Fig.1), this paper aims to contribute to the exploration of coastal and ocean grabbing and illustrates the complex current web of rules and policies, jeopardizing a sustainable and fair governance of the mangroves.

The diversity of mangroves tenure

Forgotten civilisations

The age of the occupation of mangroves and the precocity of their multiple use are attested as well in Asia (between 8000 and 4000 BP, according to Higham, 1988) as in Latin America (13000 BP in coastal Amazonia from Figuti, 1992; 6000 BP in the Antillas from Barrau and Montbrun, 1978), and in Africa (5000 BP from Linares de Sapir, 1971; Chauvaud, 2014) thanks to shell middens, found on all the continents. The excavations reveal the presence of potteries, tools made with teeth of sharks and shells, rests of food (rice, fish). These shell middens constitute the main, otherwise unique, information sources on the first human establishments in mangrove. To arrest the specific links between people and mangrove, in particular their management and tenure regimes, the former sources are lacking: we can only base them on the linguistic analyses, the toponymy, the founding myths and other oral traditions. With the European explorations towards the New World from the end of the 15th century and the colonial penetration, the written sources multiply and give a first, very contrasted, image of those regimes.

In countries where mudflats are very mobile (Delta of the Amazon, Delta of Niger, Everglades, etc.) and where the resources of the hinterland are plentiful, we do not raise hard and permanent houses in the mangrove. Only small groups of itinerant users

Figure 1 : Mangrove world distribution and localization of the site studies

live there, on a seasonal or not regular basis: in North America, the first Amerindians - Calusas and Tequestas of Everglades - so lived near the coast and combined the fishing (fish, oyster, tortoise, eel) in the mangrove and the hunting on the highlands (bears, deers) (Vileisis, 1997).

The existence of former civilizations in the mangrove is nevertheless attested in western Africa. Among other narratives, that of the André Alvarez d'Almada (1594), is completely explicit on the construction of rice "terroir" in the mangrove along the Northern Rivers (between the current region of the Casamance in Senegal and Bissau Guinea) (Cormier-Salem, 1999). According to Haraprasad (1999), a former and dense population would have lived in the mangrove delta of the Ganges and of The Brahmaputra, the Sunderbans, in India; big cities prospered until the decline of this forgotten civilization in the 18th century, in particular due to the British colonization. Island Kilwa in Tanzania establishes another remarkable example of an urban and commercial civilization, built in the mangrove (Sheriff, 1987): the tens of palaces and mosques, dating from the 9th to the 16th centuries, testify of the glorious past of the sultanate, until the arrival of the Portugueses, who destroy the estate in 1505 and monopolize the trade of gold, textile, spices, ivory and… slaves.

Plurality of Customary Mangroves Tenures

Considering in one side the fragmentary precolonial sources and in other side, the diversity of the human establishments in the mangrove, we can that make the hypothesis of highly varied forms of customary tenure, since the "simple" knowledge of its resources, the presence of spritits and supernatural creatures, with which the populations have to negotiate, until the construction of mangrove "terroir", controled by local people, as it is the case for the Northern Rivers' communities.

The knowledges on mangrove, that the local people, master, are essential to adapt to this extreme ecosystem, regarding the quantity and the quality of water, with each tide. The Black or Afro-descendant groups of Pacific Columbia (Hoffmann, 2002), the

estuarien fishermen of Brazilian Nordeste (Cordell, 1980), or the aborigines of the Australian mangrove (Warner, 1958) master perfectly the lunar calendar and the cycles of tides. On the islands of the Pacific and in Asia, this traditional ecological knowledge was well highlighted (UNESCO / UNDP, 1986) in particular in Vietnam as regards the extensive production of shrimps. In Papua, Murik, inhabitants of the north coast, are designated themselves as "mangrove men" and have a rich corpus of songs associated to mangrove (Lipset, 1997).

More elaborate forms of control of the mangrove are also found, more or less, all over the world: the appropriation of ecological niches (a sandbank, a rock), the exclusive use of certain resources (e.g. shellfish and mollusks, sedentary resources, easier to master that the migrant pelagic species), the protection of habitats and species harmonize with the regulations of fishing seasons, the control of gears (e.g. the limitation of the size and the meshing of nets, the ban on the custom of the poison).

Obviously, CMT are particularly developed among mangrove-dependant people and along mangrove coasts, populated and managed for a long-time. These socio-ecosystems are under the authority of the local communities, who built their "terroirs". The "terroir" correspond to portions of amphibian territories, defined as continuous and contiguous spaces, more or less closed and limited, valued for multiple purposes (cultural, religious, aesthetic, halieutic, silvicultural, agricultural, pastoral, etc.), managed and shared according to the local institutions.

So, to resume the example of the Northern Rivers (Cormier-Salem, 1999), all the space of mangrove is the object of a control which follows the custom of the Ancestors, the respect for which is assured by the Elders Council. In Casamance, the Diola communities are homogeneous[1], without any casts or classes, structured by lineages and clans, under the Elders Council's authority : this Council is in charge of the distribution of the benefits from the terroir, of the decision-making and the conflicts resolution. From the concessions to the banks of the "bolons" (or tidal channels), diverse uses and access rights are combined. The domestic gardens, the rice seed nurseries and the rice plots, located on the supratidal terrasses, are individually owned by the chief of the household ; the fish ponds, the big dikes, which enclose the terroir and protect it against the salty water, the infratidal mudflats, the bolons are collectively managed by the set of the usufructuaries, descendants of the founding lineage. Certain places are haunted, sacred or submitted to prohibitions. They correspond very often to remarkable places of the mangrovescape: sandbank, island, small "bolon" or river, "tanne" (most often nude and oversalted area, located in back-mangrove zone), shell middens, populated with spirits, sheltering totemic species, such as manatees, tortoises and birds, being of use as tumulus or ancestors' graves. They can also result from introduced elements, such as baobabs, where takes place *ndout*, Serer initiatory ceremonies in the Delta of Saloum in Senegal.

Narratives of the mangrove's grabbing

If all the social scientists agree to recognize the relevance on the long lasting of the customary tenures, all also underline their current disuse and dysfunctions that conduct to conflicts (Ostrom *et al*, 1990 ; Peluso, 1993). The drop or the abandonment of the CMT holds so at first the constitution of a centralized public device and the elaboration of an official legislation, often inspired by the roman law, which tends to make mangrove of the public or private goods. The colonial institutions, then the new independent States competed to the explosion of the commons or "terroirs", to the destruction of the former order, to the escheat of the traditional institutions, to the marginalization of the traditional users and, finally, to the tragedy of the commoners (MacCay *et al*, 1987 ; Ostrom *et al*, 2002).

From a juridico-administrative point of view, the mangrove, forest in the sea, is a composite and unstable area, difficult to define. Actually, two views are raised among State administrations: for some, mangrove is a wasteland, or a no-man's-land, free of access; for some others, on the contrary, mangrove is a very valuable socio-ecosystem, matter of a plurality of jurisdictions, as each of its components depends on a different public authority. The borders between those components are never clearly defined, even undefinable. So, the terrestrial component, eg the forest, is most of the time within the competence of Waters and Forests Ministry, or of the Agriculture, while the most marine component, eg the bolons, the rivers, which drain the forest with variable extensions according to the cycles of tide, depend on Maritime Affairs, on the Fishing, or/and on the Environment Departments.

The lack of public institutions or, on the contrary, their multiplication with competitive authorities of jurisdiction, from local to international levels, each of them with their own designs of the environment and the development, drive to conflicting policies and overlapping bureaucracies, weak law enforcement and, globally, contribute to a undesirable governance of mangrove. In the following section, from precise case studies, we redraw the stages of the mangrove enclosure, which is a world-wide tendancy and highlight who are the main actors of mangrove grabbing, what are their logics, which mechanisms they mobilize.

From colonial imperialism….

The predominant image of mangrove swamps, the one that emerges from the narratives of European voyagers and missionaries in the 17th century, echoed throughout the 18th and 19th centuries in the writings of colonial agents, is that of a repugnant, hostile, unhealthy and impenetrable environment (Cormier-Salem, 2006). For hygienist and productivist aims, mangrove swamps were reclaimed under the control of strangers, who became their landlords.

In America, according to Carney (1993), the reclamation of mangrove for ricecultivation in South Carolina is directly bound upon the arrival of the slaves, native of western Africa, who, not only, supplied the working strength, but introduced their know-how.

In the South Vietnam, part of the French colonies of Indochina, in 1911, the French colonists decided to fit out the mangrove swamp of CanGio in the following way: 4000 ha were protected to preserve the air quality around Saigon; 500 ha of mangrove also protected around the community zones as shelter against typhoons; all the rest was left for purposes of silvicultural exploitation. In 1917, rules being little binding, the forest was strongly exploited, without there are real controls (Tran, 2006).

In Martinique, according to Barrau *et al* (1977), the mangrove up-to-now is a place of confrontation of races and classes. Its control makes the object of conflict of authorities between the diverse departments of the State (National Office of Forests, Direction of Agriculture, Department of Maritime affairs, Direction of the equipment, etc.). This confusion benefits the White Creoles: endowed of concessions by the State, they widely banked up and polderized the mangrove swamps and so enlarged their properties. With the end of the slavery, certain properties of sugar cane decline and become game reserves in the hands of the White Creoles. Along channels, given up by the planters, former slaves settle down, grounds that the mangrove is a domain relatively free of constraints. Small fishermen's villages develop. As express by Barrau *et al* (1977:19) "everything indeed takes place as if, in these wood of undecided muds, between land and sea, the tenure tensions sublimated, engendered by about four centuries of a colonial exploitation, originally based on slaves plantations."

.... to green imperialism

The first enclosures of the mangrove were public, colonial and aimed at converting mangrove swamps into sugarcane plantations or rice fields. The following more recent enclosures (especially from the years 1970s) joins what certain authors qualified as "green imperialism" (Grove, 1996) and aim at making it world heritages (Cormier-Salem, 2006). The emblematic species (royal tiger of Bengal in Sundarbans, migratory birds in western Africa, tortoises and crocodiles in Latin America) and habitats (Ramsar Convention on Wetlands, 1971) are protected in conformance with diverse regulations (taxes, quotas and zonations such as Exclusive Economic zone, temporary fisheries closure) and national and international conventions. The patrimonialization of the nature matters among these political institutions, which, in the name of the preservation of the biodiversity, exclude the local communities of their terroir and make traditional users of the delinquents, the fishermen of the predators, the wooden collectors of the main responsible for the deforestation (Cormier-Salem and Roussel, 2000).

The Natural Reserve of the Kaw-Roura swamp in French Guiana illustrates the tensions and the conflicts of custom and appropriation of the mangrove (Cormier-

Salem, fieldworlks, 1997; 2006). The inhabitants, grouped in the village of Kaw, are a few, 70, among which 40 permanent residents. Descendants of the former slaves, their installation would go back to the colonial period and would be connected to the development of sugarcane plantations. From 1860-70, with the end of the slavery, this system collapses: contrary to the Antilles, houses and plantations are given up. The contribution of new workers within the framework of the transformation of the Guiana in penal colony from 1852 till 1946 does not allow the relaunching of the agricultural activities. Nature reasserts itself: fallow lands are recolonised trees groves. The Guiana mangrove moves back and forward, according to the tides and the enormous quantities of muddy sediments transporting from the Amazon River. The inhabitants of Kaw, very isolated, devote mainly to the activities of fishing in the Kaw river and hunting. The implementation of the Natural Reserve of the Kaw-Roura wetland of a surface of about 98500 ha and its ecotourist valuation arouse strong tensions. Classified site Ramsar in November, 1993, the Natural Reserve is created by decree in March, 1998. Thanks to its vast surface, the mosaic of ecosystems and landscape (from mangrove forest to feshwater forests or "pinotières") and the wealth of the fauna (black caiman (*Melanosuchus niger*), Matamata tortoise (*Chelus fimbratus*), manatee (*Trichechus manatus*), agami heron (*Agamia agami*), crested Hoazin (*Opisthocomus hoazin*), red Ibis (*Eudocimus ruber*), Kaw Roura is the biggest wetland of France and has a status of Natural Sanctuary.

In front of these environmental and ecological assets, the inhabitants of Kaw are afraid for the sustainability of their practices, in particular hunting and fishing, because of the restrictive measures of protection of the wildlife and the competition of "Metro" hunters, native of Cayenne. Besides, the slaves-descendant populations are not autochtonous. They have neither property rights, nor rights of user recognized on the resources of the mangrove. Contrary to the Amerindians of Guiana, who can take advantage of traditional ecological knowledge, and mythical ancestors to be recognized claims on the Amazonian forest or Black groups of Pacific Columbia: Hoffmann (2002) shows how the mangrove became the heritage of Afro-descendant groups to legitimize their territorial claims and base their identity.

In this generalized movement of enclosures, it is also necessary to question the arrival of new actors with other logics and more opportunist and individual strategies, the modernization of the techniques of exploitation, the globalization of the exchanges. The schooling, the urbanization and the conversion in other religions (christianization, islamization) also compete to the loss of identity and to the questioning of traditional values.

The development of the shrimp farming, in the hands of private enterprises, in the years 1970-80s, is obvious all around the world, at first in Asia, but also in Latin America and in Madagascar, to a lesser extent in Africa. Numerous works showed the ecological damage (the boom of the shrimp farming is recognized as one of the major causes of the mangrove loss, around 20 % in 30 years from Alongi, 2002) and the

socioeconomic vulnerability of former users: the intensive breeding drives to the privatization of commons, to the upheaval of the multiple use systems, to the impoverishment of fishermen's communities.

In Madagascar, when shrimps are decreed national strategic resources (Goedefroit *et al*, 2002), mangrove swamps, more exactly tannes, appear as pioneer fronts to conquer and to convert into shrimp farms (Cormier-Salem, 2006). From the years 1990s, is launched a vast reclamation plan of the tannes, considered by the public Administration as an open space, being a matter of the public domain. The economic stakes in the shrimp network are such, as industrial companies obtain the support of the Malagasy government and see granting vast surfaces. The tannes are not inhabited areas; they are not permanently exploited or managed with fixed, visible, marks. They are often situated at the confines of the territory. Nevertheless, they have a number of non-use and use values, as they shelter geniuses or spirits. They are very often grazing lands for the herds, land reserves and buffer zones between communities. So they play a major role to maintain good neighborly relations. With the demographic pressure, the emergence and the development of new practices, these areas are the object of numerous greeds. In Menabe region, along the norst-west coast of Madagascar, the conversion of tannes into shrimp farms, owned by foreigners (Aquamen), incited the local communities of sakalava-vezo fishermen to claim their first occupier's right or "*tompontany*" on these lands. Not only they feel marginalized and outcasts of this lucrative sector, but, besides, they cancel the land grabbing and their exclusion from the lands of their ancestors territories.

The phenomena of trance (*trumba*), where the spirits of the ancestors speak through wizards soothsayers (*ombiasy*), the reactivation of former prohibitions (*fady*), the acts of sabotage against the shrimpculture ponds express the force of the local claims. In Madagascar, the enclosure of tannes and their reclamation reveal the complex sets of power between the private (economically and politically powerfull actors coming form Pakistan or *zanantany*) and public interests, the traditional and official institutions, the local notables, the State and the royal sakalava descendants.

The new mechanisms of payments for environmental services, biodiversity offset and REDD+ (Reduced Emissions from Deforestation and Forest Degradation), appear as the last one adversities of the market economy and accelerate the movement of green grabbing (Sunderlin *et al,* 2015). The 2015 political agenda, national and international (COP 21; UNEP program Ecosystem-based Adaptation), puts mangroves in the spotlight because of their particular function of Climate Change mitigation (Alongi, 2002). Main discources report the dramatic loss of the mangroves areas and their ability to sequestre carbone, justifying politics of reforestation in the frame of REDD+. Those dominant discourses are reinforced by the recognition of the multiple values and functions of mangrove (shelter against tsunamis, nursery for fish, refuge habitat for birds, water purification, fuelwood, etc.) (Cormier-Salem, 2014). In previous publications (Cormier-Salem, 2004; Cormier-Salem and Panfili, in press), we questioned

the definition of mangrove as a single forest of mangle trees and the reforestation schemes, based on uncertain scientific data on mangrove dynamics (Cormier-Salem, 2004), limited methodologies for carbon accounting (Leach & Scoones, 2013), and most often inappropriate guidelines (monospecificity of the plantation, too high density of the seed lines, unfair compensation of the seed collectors, etc.). Besides, we highlight the risk of environmental injustice and mangrove grabbing (Peluso, 1993; Beymer-Farris & Bassett, 2011; Sikor & Newell, 2014 ; Fairhead *et al*, 2012).

In Senegal, the changing legal status of the mangroves is a key question, leading to territorial claims and conflicts (Cormier-Salem, 2006): in Low Casamance and Saloum Delta, as discussed above, mangroves have long been communal territories or "terroirs", used, managed and owned by local peoples. With the "White" penetration and colonization, then Senegal Independence in 1950s, ownership on non-managed or non-permanently exploited lands, was transferred into the National Domain. Since, under the umbrella of political decentralization,[2] a vast plethora of laws and rules, negotiated between rural communities (traditional land owners) and governmental institutions, emerged: for instance, in the mangroves of the Saloum Delta, some areas are public good, on a national (e.g. National Park, 1976) or an international level (e.g. Unesco biosphere reserve, 1981; World Heritage,[3] 2011); some others are still communal good, ruled by local conventions; endly some others are private goods, owned by local actors[4] (marine fishermen, fish processors, etc.) but also, more and more, by foreigners (tourist operators, private entrepreneurs, traders..). The vast reforestation campaigns, called "Plant your tree", launched in 2008 in the Saloum Delta, managed by a Senegalese NGO, Oceanium, funded by Livelihood Funds (a consortium of private companies such as Danone and Yves Rocher) rised again the question of mangrove grabbing. For at least 30 years (the duration of REDD+ contracts), the private companies have the control of the reforested mudflats. There is a privatization of plots, transformed into mangrove forest areas after reforestation operations on the detriment of the "commoners". Also, women, who are used to collect cockles on "their" mudflats, have no more access to this place; fishermen can no more circulate and exploit fish (Cormier-Salem & Panfili, in press).

Mangrove's tenure under controversial claims: webs of power relations

In the following last sections, we analyse the current web of actors, principles and devices through two case studies, Casamance in Senegal and Vietnam. We emphasize the controversial claims on mangroves, revealing the heterogeneity of local actors and the asymetric relations between institutions and highlight the risk of environmental injustice. Beyond tangible costs and benefits, studies of environmental justice look to comprise three interrelated dimensions: distribution of direct and indirect benefits from natural resources, procedure relating to decisions which govern them and recognition

of culture, knowledge and needs of different groups in those processes (Schlosberg , 2007). Empirical studies conducted in Senegal and Vietnam question the relevance of environmental politics under the umbrella of Nagoya protocol regarding Access and Benefit Sharing.

The Northern Rivers's mangroves: threatened patrimonies?

The Northern Rivers mangroves, as discussed above, are terroir managed by the local communities, structured by the rice growing and the other uses, such as the gathering of oysters and fishing in the bolons. In Casamance, they constitute the basis of the Diola heritage, inherited from the ancestors, passed onby generations in generations and in which they become identified. The Diola heritage recovers a set of techniques (among which the *kajendu*, the instrument of plowing of the mudflats to transform them into rice fields), of practices (for example, the construction of the dikes of protection against the intrusion of the salty water from the bolons and the Casamance river), of knowledges and know-how (the desalination of the plots of mangrove, the circulation of waters under the control of a chief of waters), but also traditions and rites. Since the 1950s, this heritage underwent profound upheavals, in particular because of the massive emigration of the young people who constitute the main part of the manual labour force. The hardness of the rice works, the weight of the family constraints, the isolation and the difficult living conditions in the villages of mangrove swamp, without fresh water, nor electricity, are many repulsive factors. On the contrary, the pursuit of the education, the obtaining of a paid employment, the financial autonomy, the mirages of the urban life are so many objective and suggestive factors, which contribute to the acceleration of the emigration from the land towards the cities. For lack of labour force, dikes are not any more maintained and numerous rice fields are given up. This demographic crisis, demonstrate from the 1950s, accelerated with the drought of the years 1970s-80s and its incidences on the salinisation of grounds and waters. To face this crisis and slow down the exodus, the family strategies diversified: the adoption of varieties of rice with short cycle, the transfer of the activities of culture from lowlands towards uplands (rice growing, sylviculture, gardens, etc.), the conversion of numerous farmers-fishermen in the marine fishing are so many examples of innovation.

In Casamance, we so find a tendency towards individualism and the abandoning of 'traditional' systems, as a result of the emigration, the globalization, the commodification of the relations, the contesting by the juniors of the power of the seniors, even the rejection of the ancestors' religion. These socio-spatial mutations question about the preservation of the community heritage. Besides, the Casamance and, in particular, its fishing resources, attracted an increasing number of actors, foreign to the region. At first (years 1980s), the migratory marine fishermen, native of the North of Senegal,

were welcomed by the Diola communities, then little turned to the sea and settled their fishing camp on the beach, exploiting marine, free-access waters.

In the same way, the *cubbalo* fishermen, native of the Senegal River, were welcomed by the communities of Middle Casamance, at first to hunt crocodiles, then to specialize in the shrimp fishing.

The massive arrival of actors from the North (or Nordists), mastering lucrative sectors and the increasing pressures on the resources (in particular fishing) in a context marked by the drought, were translated by lively tensions between communities and establish one of the springs of the war, which rages in Casamance for more than 30 years (Cormier-Salem, on 1992; Marut, on 2015). Coastal and river waters, for a long time officially open access, were the object of diverse State regulations, which, far from solving the conflicts, aggravated them. So, since 1974, a series of measures are taken by the Fishing Department, sometimes authorizing, sometimes forbidding the shrimp fishing in the Casamance river (Cormier-Salem, 1992).

Without getting into detail conflicts between the Fishing Administration and the fishermen's communities (Mbaye & Cormier-Salem, 2015), suffice to hold, on one hand, the powerlessness of the State Fishing department to enforce the regulation, on the other hand, the initiatives taken by the local communities to govern the shrimps fishery according to two different logics, even opposing : the Diola of the rural community of Mlomp, which recovers 24 villages, bounded an "Area of the Autonomous and Community Heritage" (APAC), which corresponds to their traditional mangrove terroir. Diverse measures were adopted to regulate the uses within their community and exclude the fishermen of the other communities. Similar APAC are envisaged in numerous communities of the Casamance with the support of the State departments (Direction of the Community Marine Areas, the sub-prefects and the prefect of the Region of Ziguinchor). This official recognition of APAC is perceived by the other fishermen's communities as a pretext to exclude them from fishing zones. The fishermen shrimp boats, for the most part of the migrants, were refused the access to these areas. So, they proposed to the Fishing Depatment alternate measures, such the institution of a biological rest.

Since about fifteen years, in Senegal, the craze for the local conventions did not contradict itself: these contractual instruments are adopted on the basis of frames of dialogue by a deliberation of the local authority (Rural Communities, Regions) and approved by the Administration (sub-prefects, Prefects, Governors) which becomes a joint signer (Mbaye & Cormier-Salem, 2015). These conventions proved their efficiency to govern both mangrove (Casamance River, Saloum Delta) and marine waters: so, diverse fishing ports on the Senegalese coast such Cayar, Ngaparou, Pointe Sarène, etc., set up priority fishing zones on the basis of local conventions. Nevertheless, they question about the exclusion from the non-native or "allochtonous" fishermen and more generally the notion of allochtonie in regions characterized by the age and the importance of the human mobilities (in particular in marine fishermen's communities), on the

marginalization of certain native ("autochtonous") actors (such women and juniors, who do not participate in the processes of dialogue) and the loss *de facto* of the sovereignty of the State on the public assets. By restoring the legitimacy of the local communities on their terroir, this asymmetry between actors can drive to environmental injustice.

Vietnam

Over the years, the Vietnamese government has developed a different approach to manage the forests, from centralized State controlled models to cooperative management models, and private management (Ha *et al*, 2014). State ownership of forest resources led to *de jure* state property, but *de facto* open-access, because of its poor management capacity and a deficient institutional and legal framework. In Vietnam, mangrove is a national asset, owned by the State, managed under different regimes, regarding forest allocation and land tenure and involving various stakeholders – State central administrations, state-owned forestry companies, People Comity, farmers, woodcutters, fishermen, etc. During the American war (because of defoliation[5]) and the post-war period (because of wood-cutting by the first refugees), mangrove dramatically decreased. In the 1970-80s, the development for shrimpfarming accelerated mangrove destruction. In the early 1990s, to face this loss, reforestation efforts started along with new forest management regime: the 1993 Land Law and Decree 02/CP in 1994, mandated that management be handed over from state-owned enterprises (SFEs) at the central and provincial levels to households, villages and communes for sustainable and long-term use (De Jong *et al*, 2006). Here, through first empirical studies conducted in 2015, we underline the contrasted status of two mangroves sites, one in the north, Xan Thuy, the other in the south, CanGio, although they are biosphere reserve under the authority of the People Comity, managed for forest protection (in the core zone) and economic development (in the buffer and the transition zones).

The Xuan Thuy mangrove was designated Ramsar Site in 1989 (the first in South-East Asia), then National Park in 2003, endly, core zone of the biosphere reserve of the Red River Delta in 2004 (Nguyen, 2014; fieldworks Cormier-Salem October 2015). The forest of mangrove, low and locally dense thanks to the reforestation, is a strictly protected space which belongs to the State, but *de facto* open access, strongly degraded and threatened by the overexploitation of sea food. This is not only against the law, but in the absence of any form of management regime, it has also resulted in conflicts. Also, more than 500 women enter the core zone to collect oysters, crabs and fish. Along the sea, on the vast mudflat, thousands of people have fixed their nets for catching clams (*Metetrix spp*). The collectors live in on-pile houses and have no secure rights on their plots. In the buffer zone, the main authority, Nam Dinh Provincial People's Committee (PC), has allocated mudflats to households on leases (5 years inside the Park, 20 years outside the Park). The price depends on the quality of the

mudflat. The shrimp farms, because of the declining quality of soil and water, have been replaced by the clam farms. The dyked ponds are more and more extended, even to the detriment of the protected and replanted forest of the core zone. The clam farmers set up an intensive system of exploitation. They control all the stages of the operations : the collection of the mother seeds at sea, the breeding and swelling in ponds, then the trade to the other farmers, the replacement of the pond' s ground, each month, by fresh sand, etc. Those breeders have a double settlement, one in hard in the village, the other, one more summary, near ponds. As long as they have means to manage their ponds and to pay the leasing, they are tenants of the plots of mangrove and can have very high income. More in-depth investigations are needed to assess the mangrove tenure. However, we can point out the unbalanced distribution of plots allocation and the economic and political power of two groups of actors, privileged government officers and breeders.

The CanGio mangrove, in the Mekong delta, was designated as a coastal protection forest by the Ministerial Council Decision in 1991. In 1993, the State Forestry Enterprise was replaced by the Environmental Protection Forest (EPF) Management Board under the Department of Agriculture and Rural Development (DARD). In 2000, the EPF came under the juridiction of Can Gio District People's Committee. In 2000, CanGio became the first Mangrove Biosphere Reserve (MBR) in Vietnam. Management was transfered from DARD to Can Gio People's Committee / Can Gio Forest Management Board (PFMB).

The forest of mangrove is in very good state, dense and diversified (between 1978 and 2000, were transplanted 21100 ha of Rhizophora apiculata, 715 ha of Eucalyptus spp. and 281 ha of Nypa fructicans) and the access to forest resources is strictly controlled (what is not the case of the fishing resources). The CanGio Reserve is registered, divided into 24 forest compartments, who are divided into several subcompartments themselves.

The core zone (4720 ha) shelters the Can Gio Forest Management Board (PFMB) and is reserved for the scientific activities. Few families live there. In the buffer zone (37340 ha), the exploitation of the forest is forbidden, while the "traditional" exploitation of the rivers and tidal channels is authorized, without any official regulation. We raise diverse groups of users : men and women, residents, collect on foot, crabs and shells in the mudflats; fishermen, native of other provinces, are migrants, seasonal workers and run the rivers aboard their boats. They use diverse fishing gears – nets, baskets and dams ; others have flexible enclosures, built with nets, along banks. They farm black cockles and check them since their boats.

The transition zones (29310 ha) is densely populated and converted in farms (oysters, shrimps, etc.). The originality of CanGio holds the presence in the core and buffer zones of protective families of the forest (Burgos, 2008). In 1990, the government of Vietnam invited new residents to come to settle down in Can Gio. Can Gio PFMB signed contracts with 141 households, offering them a ground, a subsidy of installation, and a small income during 30 years, in exchange for which, they made a commitment to watch

Figure 2 : Photo of the Vietnam mangrove forests: the contrasted mangrove-scape testifies the contrasted managment regime CanGio mangrove, South Vietnam (Cormier-Salem©ird, 2015)

and to protect the mangrove forest. To-day, there are 160 protective families, every family is responsible of on average 80 ha (the smallest protected forest is 25 ha and the biggest, 300 ha). They could conserve their charge as long as they fulfill their duty.

Conclusion: lessons from the past, scenarios for the future

The complexity of the coastal spaces with intangible and moving resources, the multiple and contradictory pressures on them, the plurality of the tenure regimes put with

Figure 3 : Xuan Thuy mangrove, North Vietnam (Cormier-Salem©ird, 2015)In CanGio as in Xuan Thuy mangroves (Fig. 3), in spite of the differences of regime (strict control versus lack of management), we raise a game of powers between the representatives of the central and provincial government, the protective families or endowed with concessions, the foreign and migrant users and, at the same time, a strong social dynamics with the enrichment of certain actors (new traders in CanGio, stemming from protective families; breeders of clams in Xuan Thuy). In the CaMau mangroves, Ha et al (2011) point out a similar imbalance in access to finance, markets, and differences in authority between the two actors, farmers and State Forest Companies. This expresses the unequal distribution between first inhabitants and immigrants, as well as among privileged government officers and farmers.

acuteness the question of the legal status of mangrove: are they pioneer fronts, in the limits ceaselessly moved forward in the maritime infinity, as the mangrove of Madagascar or the North Vietnam, converted into shrimp ponds? Are they amphibian gardened spaces in the hands of peasant-fishermen's communities as the mangrove terroir of Northern Rivers? Or are they still wild sanctuaries, refuges habitats for numerous botanical and animal species in danger as the mangrove of Guiana? Besides, to whom belong mangroves? Are they local, national or world heritage? Who are the beneficiaries? To whom return the benefits of the conservation of their services?

From our field studies and analysis of international litterature, we can put forward the general lines of the history of mangrove tenures: the systems of customary rights, under the authority of the elders, were replaced by laws, under the juridication of the State policies; mangroves, formerly terroir or commons, became public domains with the Western Colonization, then Independent State. During the 1960s-80s, they were dramatically reclaimed to be converted into private shrimps farms. Under the name of conservation policies (following the first international Convention, Ramsar, focused on

wetlands and signed in 1971), number mangroves were designated protected areas and reforested. The coercitive regulation mecanisms (such as MPA, Marine Protected Area) and the incitative market mecanisms (such as REDD+) conceived to conserve our "global commons", lead to amplify conflicts and claims and, most often, accelerate mangrove's enclosure to the detriment of the "commoners" (McCarthy, 2009).

In fact, the history of mangrove tenures is not linear and must be qualified, considering the diversity of the geographical and historic contexts and the game of actors. On the ground, to-day, we raise a set of rights, laws, agreements. The same place may be under various juridictions. We argue that the plurality of incompatible management regimes, the lack of coherent policies, standards, and weak enforcement of policies in leasing the mangrove commons (e.g. various unregulated aquaculture in Vietnam or Madagascar, inappropriate reforestation campaigns in Senegal or Tanzania, conversion of fishing zones into protected areas and tourism zone in Florida or Guiana) have resulted to mangrove degradation (deforestation, seafood overexploitation, reclamation) and environmental injustice (illegal usurpation of indigenous people's rights over ancestral domain areas, unequitable access to mangrove resources, deprivation and marginalization of local people, weak concertation and unbalanced participation of the stakeholders in the procedures, loss of CMT recognition, identity crisis).

From 1990s, in connection with the new international governance of bioversity, we attend a change of paradigm of environmental policies as regards the role of the local actors, from their marginalisation to their patrimonialization (see article 8 alinea j, CBD, 1992; Nagoya protocole, 2013) (Cormier-Salem and Roussel, 2002). Mangrove-dwelling people are no more considered as the main drivers of mangrove degradation, but as management partners, even the guardians of our mother earth, our common world heritage. This new paradigm raises question on the power struggle between State leaders and civil society, and furthermore, on the responsibility of the State, the participatory democraty and the legacy of community-based management and local conventions (Ostrom *et al*, 1990; Peluso, 1993; Reniel *et al*, 2011).

Most often, the transfer of rights and responsibilities to local groups, organizations and local level governments institutions do not come along with the transfer of means and decision-making power. Furthermore, the local conventions and the co-management of the resources, certainly, allow to restore the custom, of recognize the rights of the local communities on their land. But they do not avoid asymmetrical relations between groups of actors and the marginalization of some. Marginalized people are the poorest, the less powerful, the most vulnerable, among whom the women and the youngest, but also the migrant users.

Further empirical studies are requested, first to better identify the stake-holders with their perceptions, uses and tenure regimes (knowledge, techniques, practices, customary rights, etc), second reveal conflictual interests and claims on mangrove at various levels (notably at local level, between men and women, juniors and seniors, residents and migrants, etc., but also at national and international levels, with a par-

ticular attention to be paid on NGOs and new private entrepreneurs), third elaborate relevant scenarios of management, adapted to every context. Equitable access to mangrove resources and fair allocation of wetlands among the concerned stakeholders is of paramount importance to afford a long-lasting and shared gouvernance of mangrove. ❍

Notes

1 They have long been qualified under the term of "acephalous" society, without chief or hierarchy (Thomas, 1959). In fact, the head of the lineage is the main authority, with the priest. The non-Diola people, the war captives, as the former people of Casamance, the Baïnouk, have been assimilated to Diola lineage though mariage and, so, got rights to the terroir'use and access on an egalitarian basis (Linares, 1987).

2 Senegal has launched Act III of its decentralization in 2014.

3 The cultural and religious values of shell middens or tumuli, older than five millennia, have justified, among others criteria, the inscription of Saloum Delta on the Unesco List of World Heritage (Cormier-Salem 1999).

4 The notion of local actor is delicate and object of identity and territorial claims among the fishermen groups : the Serer Niominka are native (or autochtonous) of Saloum Delta ; the migratory marine fishermen are either Senegalese (Lebu from the peninsula of Cap-Vert, GuetNdar from Saint-Louis), either foreigners (Bozo and Somono of Mali, Guineans, Nigerians, etc.). These fishermen are more and more numerous, attracted by the coastal resources, in a context marked by the drought of the 1970s-80s and the crisis of the farming systems (Cormier-Salem, 2014).

5 More than 2.2 million hectares of land in South Vietnam (Mekong Delta), of which 150,000 hectares of mangroves, were heavily damaged by bombing and toxic chemical défoliants from 1965 to 1970 (Tran, 2006).

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