



Marine and Coastal Resources Governance Issues in Casamance, Senegal: Example of MPAs

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Abstract

The maritime zone of Casamance (south of Senegal), like everywhere in the West African coast, has become a competitive area for development projects. This competition appears in different forms and affects several sectors (fishing, tourism, real property, mining, etc.). These different actors have developed forms of competition that are poorly circumscribed by public policies, thus leading the State of Senegal to resort to Marine Protected Areas (MPAs). The governance of Marine Protected Areas has also become a trend due to its participatory approach which highlights the common desire to preserve marine and coastal natural resources. The framework of the participatory governance has organisational and legal limitations that require

corrections sometimes in order to become more effective and efficient. This paper focuses on the role of protected areas in the regulation of tensions around marine and coastal resources in Casamance. The approach is based on the review of documents (scientific and strategic policies, etc.) and field training on the protected areas of Casamance. The results indicate that the MPAs are an excellent governance strategy and have led to better conservation of marine and coastal resources in Casamance.

Keywords: Marine Protected Area, Coastal marine resource, coastal management, Casamance, Senegal

Introduction

Casamance is still suffering from incoherent planning in the context of climate change and economic activities that can affect coastal and marine resources. In 2013, Act 3 of decentralization strengthened the transfer of powers to local authorities. As a result, local authorities can manage local areas according to the principle of subsidiarity. Their actions sometimes come up against a lack of means, financial resources, and intersectoral coordination to ensure that the governance requirements of protected areas are taken into account. Local authorities do not have the necessary and sufficient means to manage these competences (Faye, 2020). Therefore, before the creation of MPAs, public policies in Senegal aimed at the rational management of fisheries resources. They were manifested by the establishment of new fishing facilities for modernization, intensification, and increase in production (Cormier-Salem, 2013). Their aim was partly out of phase with the protection of the resources at the origin of the dynamics of occupation of the littoral space, which is sometimes contradictory, and the overexploitation of fishery resources (Sène & Diémé, 2018; Sy *et al.*, 2018; Thior, 2020). In view of the pressure on resources, accentuated in part by modernization policies (fishing quay), new initiatives are being taken for a change of policy in the management of natural resources.

This change is reflected in Senegal by the creation, extension, and networking of MPAs. Although the latter are no longer conceived as tools for controlling fishermen, they are now tools for the shared and sustainable management of marine and coastal resources (Dahou, 2009; Cormier-Salem, 2013). Beyond the pressure on the environment, the fishing centers of Kafountine, Cap Skiring, Diogué, Elinkine, etc. are the areas explored frequently. The migration of fishermen from Gambia and northern Senegal to the fishing areas of Casamance has boosted the fishing effort, which has reached the limits of productivity, especially in high season (Thior *et al.*, 2021).

Despite the presence and effort of decentralized services, the dynamics remain very complex between fishing and maritime spatial planning in Casamance. Institutional deficiencies and differences sometimes reveal flaws in state policies. This is manifested by the difficulties of politicians in controlling the pressure on the coastal dunes (which supports most economic activities) and in understanding the competition between users. These competitions are manifested by tensions on the one hand between fishermen, operators and traditional occupants of these spaces, and, on the other hand, by migrant and industrial fishermen, tourists, real property speculators, including gas and mining which the actors must share (Cormier-Salem, 2013; Thior *et al.*, 2021). More so, the scarcity of fishery resources leads fishermen to migrate from areas where they are denied access to protected fisheries. Exploitation areas are shrinking and tensions are heightening. The causes are not technical or socio-cultural, but political (Cormier-Salem, 2013; Queffelec, 2013; Thior, 2021).

Despite efforts to involve in the development of the master plan for the West African coast (West African Coastal Monitoring Mission-MOLOA¹, West Africa Coastal Areas-WACA²) and the definition of strategic policies for the integrated management of coastal zones, governance seems to come up against legislative shortcomings. Furthermore, the challenges of planning in Senegal refer to the ongoing debate on the nature of the mechanisms of territorial governance, geopolitics, and the functioning of the institutional practices that they give rise to.

1. Methodology

1.1. Study Areas

Faced with the socio-economic challenges of the coastal zone, the policy for the protection of natural resources should strengthen control of the space and the potential in marine and terrestrial resources by the population. In view of the pressure on resources, accentuated in part by modernization policies (fishing quays) which intensifies production, local initiatives are developing and changing policies for the management of natural resources.

This change in policy appears in Senegal through the creation, the extension, and the development of MPAs networking. Following the recommendations of the IUCN congress held in 2003, the public authorities decided to support the creation of MPAs in Senegal. The creation process began in 2004 in a tense context where the issue was to preserve marine

¹ MOLOA is a mission to monitor the West African coastline and reduce coastal risks in West Africa. Its objective was to carry out a regional study of the coastline and to draw up a Master Plan for the West African coastline. The restitution of the work took place in 2015.

² WACA was Launched in 2016 after MOLOA. This program aims to provide effective responses in the management of West African marine and coastal ecosystems.

biodiversity while maintaining a socio-economic balance. These are no longer designed as control tools (and extension) of fishermen, but as tools for the shared and sustainable management of marine and coastal resources (Cormier-Salem, 2013; Thior, 2019). The MPAs of Casamance include Niamone-Kalounayes, Kassa-Balantacounda, and Kaalolaal Blouf-Fogny, while the APAC (Indigenous and Community Heritage Area) consists of Kawawana from Mangagoulack, Kapak olal from Mlomp Kassa Kassa Bliss, and Karthiack-Thiobon (Figure 1).

The Mangagoulack APAC was created in 2009 by the local population due to the decreasing situation of fish resources. The local community have become aware of this situation, which has led to a drop in the weight of their catch. In addition, there is the abusive exploitation of mangrove wood, which is endangered by certain oyster harvesting techniques. This led to the creation of the Association of Fishermen of the Rural Municipality of Mangagoulack (APCRM), which subsequently initiated the creation of APAC in order to find a solution to the abusive exploitation of these natural resource.

The question that arises from this initiative is how Mangagoulack APAC manages to reconcile biodiversity conservation and local population needs? This local development obviously implies the exploitation of natural resources by the populations to meet their needs. Following Act III of decentralisation, the populations of the Mangagoulack commune can largely rely on their resources and skills to develop their land. The issue addressed in this study is essentially based on the following question: how and by what means does KAWAWANA manage these two aspects (biodiversity conservation and local development), which can sometimes seem contradictory.

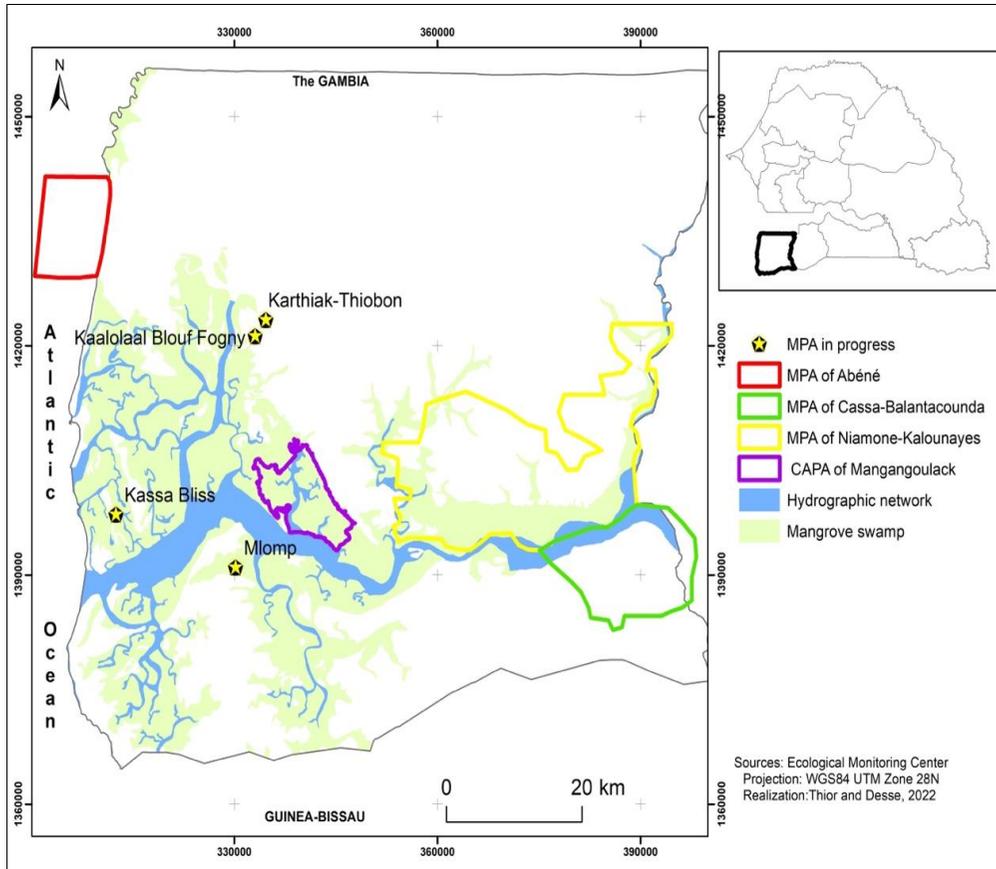


Figure 1. Map of the Marine Protected Areas (MPA) in lower Casamance: MPA of Abéné, MPA of Cassa-Balantacounda, MPA of Niamone-Kalounayes. The Indigenous and Community Heritage Area of Mangangoulack completes biodiversity conservation areas in lower Casamance.

The Abéné MPA was created in 2004 in a context of declining fish landings. It covers 119 km² and is the only MPA in Casamance to extend 11 km offshore while occupying the coast to the Gambian border and the estuary is rich in manatees, crocodiles, and dolphins. On these beaches, the turtles come to lay their eggs between July and December. Tourist projects are rare (no organized visit) but are supervised by the MPA. However, they do not generate enough income to compensate for the loss of the fishing area. The proximity of the Kafountine fishing quay and the deterioration of the watchtower and beacons that delimit the MPA are a sign of the means and capacities of intervention. Nonetheless, a possible exploitation of zircon could taint part of the efforts made.

The Niamone-Kalounaye MPA, located upstream of Ziguinchor, inside the estuary on 64 ha, was created by decree in November 2015, but it was developed in January 2018. It consists essentially of mangroves and inlets.

About 72 sites are listed there, with customary management of natural resources. It is delimited in an area where biological rest is observed with experimental control fishing. A free fishing area is noticed all year round, but with a minimum mesh size of 25 mm. A final one is limited to paddle and motor canoes even for fishing actions. The local populations live mainly from fishing, oyster farming, rice growing, and animal breeding.

1.2. Data and Methods

The methodological approach is based on the review of scientific documents and the strategic policies on the subject, the development and administration of data collection tools (interview and focus group), field observations, and the processing of the geospatial data collected.

The interviews were conducted with resource persons in the domain of marine and coastal natural resources management (the conservators). Qualitative data was obtained from interviews with MPA captains, MPA and APAC managers, and fishing community leaders. In addition to this, interviews and focus groups were conducted with users and local populations. Geographical coordinates were taken using a Garmin eTrex 30x GPS.

Data processing was carried out using software such as Arc Gis 10.5, cartographic layout, and QDA Miner Lite for the transcription of the interviews. Data and maps are referenced in WGS84 UTM Zone 28 North.

3. Results and Discussion

3.1. Tensions Around Natural Resources

Any territorial structure is organized according to three societal, international, and social components on which the lever of governance can be exercised for a common project (Miossec, 2011) (Figure 2).

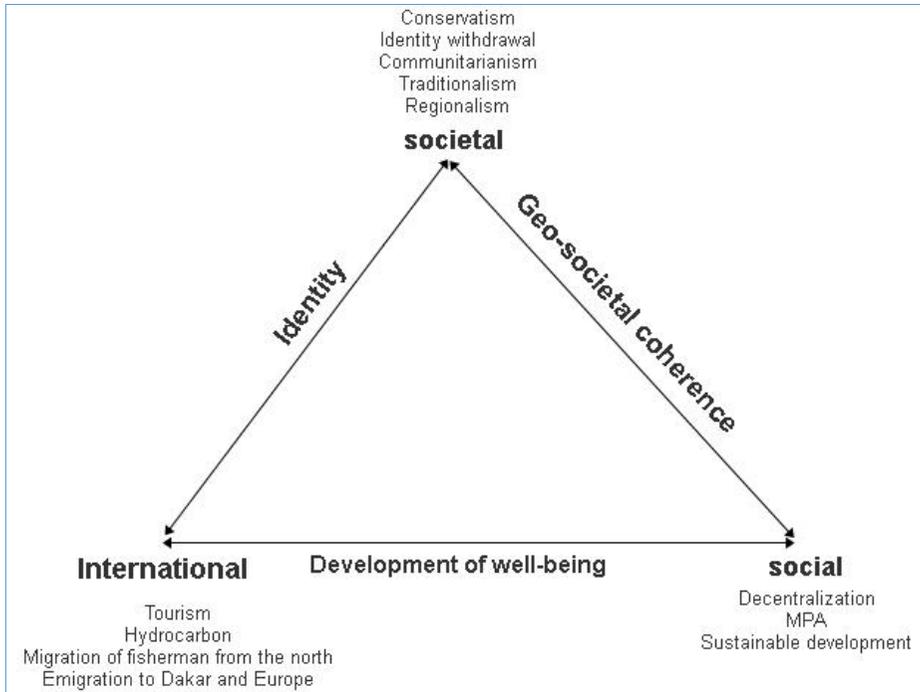


Figure 2. General Tensions Diagram based on the following 3 aspects: Societal, Social, and International. They represent essential elements of the governance of Marine Protected Areas.

Since the 1980s, Casamance has experienced vigorous dynamics that impact territories, local societies and in particular the Diola, who are traditionally rice farmers and fishermen in the estuary of the Casamance River (Cormier-Salem, 2019; Sané *et al.*, 2021).

According to Miossec (2011), there are 3 main tensions that drive the territories: identity, geo-societal coherence, and the development of well-being. These tensions provide a better understanding of the capacity of societies to integrate external contributions, to overcome shocks, and avoid retraction. Through social contract (use of resources with respect for nature) within traditional societies as well as living together, the dynamics of retraction are managed. These conditions determine if a form of territorial coherence is achievable or not, in order to meet the imperatives of an assumed identity, development, well-being and geo-societal coherence.

Furthermore, a series of tensions exist between the societal and international components. The tourism development of the Cap Skiring resort around a few large international hotels has been reinforced by the airport (Sy *et al.*, 2018). In a second step, national entrepreneurs from Europe and the Petite Côte developed a small hotel business, which was reinforced by the installation of European retirees on a year-round basis or based on the logic of bi-residentiality. Other modest structures have spread along the coast towards

Kafountine or inland (Diogué, Cabrousse, Elinkine). In addition to land tensions, it is important to take into cognizance the environmental (pollution, filling in of certain mangroves) and social (prostitution and dependence of tourist jobs on the vagaries of global crises) impacts.

At the same time, strong dynamics drive the fishing sector. Until the 1970s and 1980s, artisanal maritime fishing activities were limited to a few sites on the Senegalese coast (Cormier-Salem, 2013; Thior *et al.*, 2021). These main sites were located on the northern coasts, notably at Guet Ndar in Saint-Louis, Kayar on the Grande Côte, and Mbour and Joal on the Petite Côte (Figure 3). In Casamance, a few migrant fishing camps (Cap Skirring Kafountine, Ziguinchor) had fewer than ten canoes. However, despite the slight presence of the Niominka and Thioubalo fishermen, the natives maintained the organization of their maritime space (Pélissier, 1966; Diaw, 1986; Sané *et al.*, 2017). Gradually, fishing practices have appeared that implement more active techniques for the search for valuable fish for commercial purposes (Cormier-Salem, 1999; Diouf, 2016). This dynamic in fishing practices is related to the arrival of fishermen from other Senegalese regions (Saint-Louis, Saloum etc.), but also from the sub-region (Ghana, Sierra Leone). In recent years, fishermen from Mali have specialized in estuary fishing and compete with Diola fishermen.

Globally, economic and health crises weigh on these populations and territories. Similarly, overfishing which impacts fish stocks, such as the strong erosion of the coast specific to estuarine muddy environments, reinforced by climate change, has a strong impact on societies and communities, sometimes exceeding local capacities and political responses. These tensions between the international and social components therefore weigh on living standards and the feeling of well-being.

These external impulses come into tension with the societal component and are materialized by the identity and separatist movements in Casamance and the insecurity that marks the border area with Guinea Bissau. At the level of grassroots communities, the maintenance and the search for the Diola identity around ritual festivals is witnessed. This is regarded as the maintenance of an animist culture combined with the practice of Islam. Subsequently, the political crisis in Casamance was solved through decentralization. As a result, certain local expectations were met, which appeased tensions between the societal and the social. This context also provides understanding on the evolution of the establishment of MPAs towards increasingly co-constructed projects based on co-citizenship resulting to geo-societal coherence.

3.2. From a Coastal Heritage Protection Movement to Participatory Marine and Coastal Resources Management

Pressure on fisheries resources, competitions, and conflicts between users of the maritime space that were difficult to control made public policies ineffective. The latter have thus ameliorated over time, integrating new concepts at each stage, with means and tools. More so, between 1970 and 1990, “rational management” adopted policies based on the protection of the coastal heritage (Cormier-Salem, 2013; Thior, 2020). For two decades, with the logic of MPAs, concepts have multiplied around the involvement of local communities such as integrated, co-management, participatory community management, etc.

3.2.1. From Rational Exploitation Strategy to the Protection and Conservation Policy

The primary concern of public policies in a context of resource scarcity was rational exploitation. This option allows increase in production with the modernization of fisheries infrastructure resulting in the installation of fish processing and conservation plants. Additionally, fishing agreements with European industries with a greater exploitation capacity compared to traditional exploitations are signed. Thus, the maritime economy has grown to the point that the resource has been threatened. In this context, protection therefore becomes a new policy concern since production is intensified to the detriment of rational exploitation.

Consequently, new measures were introduced to regulate fishing practices, both technically and materially. Action plans to protect the coastal heritage have also emerged and have taken certain measures such as banning fishing in arms of coastal rivers (the Bolongs) considered as breeding areas. In addition to the action of international NGOs campaigning for the preservation of biodiversity (IUCN, WWF, OCEANIUM) and local associations for the defense of nature, awareness of the scarcity of some species has also been raised due to fishing practices considered destructive. However, these protection policies, having not been inclusive enough, ultimately remained without a future.

3.2.2. The Era of MPAs, a Participatory Approach for the Integrated Management of Marine and Coastal Resources

In 2003, IUCN set up a model for a larger protected area that integrates the participation of all actors in order to avoid exclusive state control. Thus, the notion of participatory is inescapable in the governance of biodiversity and the environment. Also, the quality of governance in relation to conservation is determined by the type of governance in place and a range of key associated factors (Beuret *et al.*, 2021).

The State of Senegal has integrated participatory management into its environmental institutional system, taking into account the local and traditional knowledge of local communities. Among these fisheries resource management policies, a first generation of MPAs has emerged, five of which were created by presidential decree n°2004-1408 of November 4, 2004. Accordingly, the desire of the State to continue this policy is manifested by the establishment of the Department of Community Marine Protected Areas (DAMCP) by decree n°2012-543 of May 24, 2012. In Senegal, the creation, extension, and networking of MPAs are now designed as tools of control (and inclusion) of fishermen. These are indeed tools for the shared and sustainable management of marine and coastal resources (Cormier-Salem, 2013; Thior *et al.*, 2021).

Between 2014 and 2016, a second generation of MPAs was created to address the various challenges and issues of biodiversity conservation, as well as the degradation of marine and coastal ecosystems (Figure 3). Having become a reference model in terms of resource conservation, new protected areas were created from 2019 to increase the coverage rate of the national network of coastal protected areas (MPA and RNC: Community Nature Reserve) and thus improve the management of MPAs in terms of participatory governance of resources with strong involvement of local communities (MEDD, 2018).

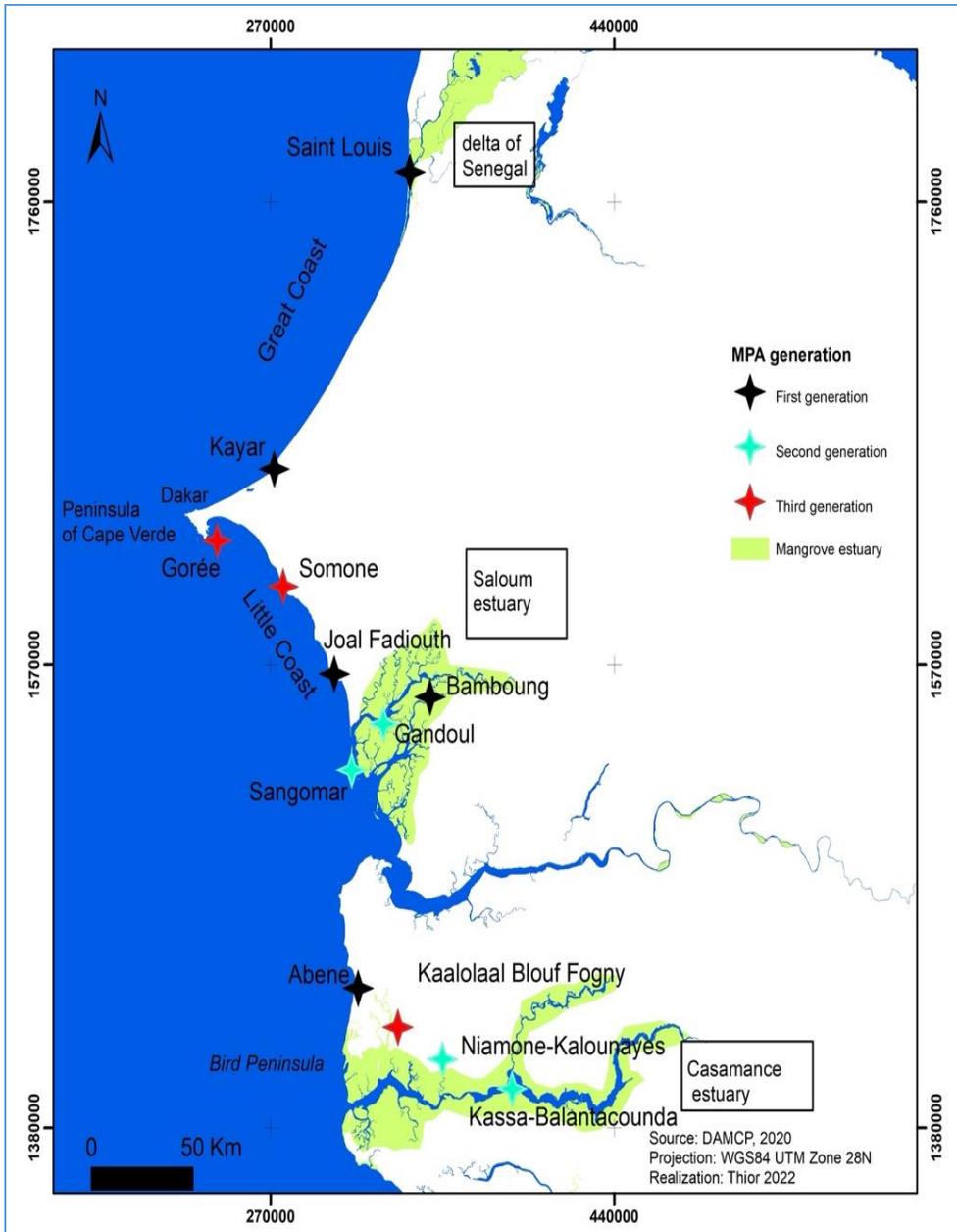


Figure 3. Mapping of Marine Protected Areas in Senegal. There are 3 generations of Marine Protected Areas. The first generation was created in 2004, the second generation between 2014 and 2016, and the third generation in 2020.

Currently, the involvement of the populations in the management of the environment is considered to be a success.

Table 1. Main Marine Protected Areas in Senegal

Generation	AMP	Année de création	Purposes
First Generation	Saint-Louis	2004	Exercise control over abusive fish exploitation resources
	Cayar	2004	
	Joal Fadiouth	2004	
	Bamboung	2004	
	Abéné	2004	
Second Generation	Niamone Kalounayes	2015	Address the various challenges and issues of biodiversity conservation, as well as the degradation of marine and coastal ecosystems
	Kassa Balantacounda	2016	
	Gandoul	2014	
	Sangomar	2014	
Third Generation	Gorée	2020	Strengthen public policies and promote economic and social development of local communities
	Somone	2020	
	Kaalolaal Blouf-Fogny (KBF)	2020	

3.3. Case Studies in Casamance: The Differentiated Governance of MPAs and APAC

Through the mayors of the three municipalities, the populations asked the Ministry of the Environment to delegate an expert mission of ecological value. A diagnosis is carried out after two years of participatory approach including socio-professional actors, elected officials, village chiefs, elders, customary chiefs, community organizations, and women to proceed with the development plan and the management plan. For each group and each commune, there are two delegates from the village chiefs: six for fishing and six for the promotion of women. Thus, the management committee becomes the office in charge with the technical commission of setting up the strategy of planning and management. The main objective is to raise public awareness with consensual management rules (internal rules created by the management committee) to publicize, authorize/prohibit. The supervision commission is made up of mixed patrols, sworn officer, and fisherman. The MPA is accompanied by a program of income-generating activities for the purpose of social acceptance in the fields of oyster culture, fish farming, beekeeping, and the development of fair tourism, with walking tours and eco-guides. Job creation is based on donors IUCN (small financing) and ORESEA (West African MPA network). However, there are no private sector donors.

3.3.1. MPAs in Casamance: Result of an Increasingly Pressing Need

The management of natural resources in the coastal environment is still a challenge for the development of the Casamance coast. The resources have

been under pressure due to the development of traditional sea fishing practiced by migrant fishermen along the coast, as well as industrial fishing with very poorly controlled boats. These types of fisheries, considered to be at the origin of overexploitation, have prompted public bodies to take regulatory measures. Participation allows local populations of MPAs in Casamance to truly appropriate these tools by restoring the power of initiative and decision-making in the design and implementation of actions. At the same time, the technical structures are gradually transferring their skills in order to leave autonomy to the local population. In this context, the main problem remains the lack of support from migrant fishermen often from Saint-Louis (dominant on the Casamance coast) who are excluded because of their random mobility. Thus, they do not enjoy the advantages of the MPA since they do not appropriate it.

Despite the State's desire to make the MPAs of Abéné, Niamone-Kalounayes, Kassa-Balantacounda, and Kaalolaal Blouf-Fogny tools for the concerted and sustainable management of marine and coastal resources, the creation of the last two still remains unfinished. In addition, the MPA of Niamone-Kalounayes and Kassa-Balantacounda (the second generation created to reinforce the MPA of Abéné), as well as Kaalolaal Blouf-Fogny (the last generation) have not produced results yet. It is therefore important to strengthen these MPAs while drawing inspiration from other MPAs for autonomous functioning.

Beyond the incantatory formula, the participatory approach must be reinforced by co-management, consultation, and negotiation in order to integrate the complete governance of MPAs. Without a real predisposition to a coherent construction of the local governance framework, the MPA management committees are struggling to assert themselves as the only MPA management framework within the local administrative (Deme *et al.*, 2021).

3.3.2. *Responsibility of Local Actors*

As the primary beneficiaries of natural resource management projects, local actors must be at the heart of the governance approach and ensure its continuity. In the case of the Abéné MPA, where the majority of operators are seasonal migrants, it is necessary to involve them in the implementation of policies for the co-management of natural resources while taking into account their mobility. Thus, organized in a management committee, these actors benefit from additional training that will enable them to be up to date for environmental management. In addition, other actors such as Non-Governmental Organizations (NGO) are involved in the process of governance and participatory management (Oceanium, Caritas, NCD). They facilitate the search for funding for the committees while the private partners

benefit from the results of the policies put in place within the framework of the management of natural resources.

In Casamance, the MPA of Abéné is one of the natural resource management tools that adopts a participatory governance approach despite the complexity of the interplay of actors at the origin of confusion in the responsibilities and prerogatives, which could pose constraints for good concerted coastal management. Innovative initiatives to promote seafood products (improvement of processing techniques, traceability, labelling), when they are supported or even initiated by producer groups (GIE, CLPA, etc.), can constitute a sustainable alternative to resource exploitation. In the same way, modernization projects for fishing quays, which is the centerpiece of the integrated and participatory management of the coast, can follow the example of Mbour to constitute spaces for consultation between the players in the sector and promote the supply chain value (Cormier-Salem, 2013).

3.3.3. From the Failure of MPAs to the Idea of Traditional Systems of Governance and Resource Management: The Area of Indigenous and Community Heritage Area (APAC) of Mangagoulack

Since the Durban conference in 2004, many MPA models have failed to function properly or have not achieved the expected results during the evaluation of the Ministry of the Environment. However, these MPAs should allow populations to have more resources to benefit from them effectively. It was therefore necessary to learn from the shortcomings of these first MPAs by relying on the sanctity of the resources. In addition, the sacralization of natural sites means that the practices linked to them consolidate and reinforce traditional forms of governance (Badiane & Coly, 2017). Certainly, in the Lower Casamance region, predominated by Diola culture, some spaces retain a sacred character linked to traditional initiations such as sacred woods. In Mangagoulack, the village elders had established laws based on their empirical knowledge to ensure the sustainable use of certain fishery resources. Local naturalist knowledge is more and more often considered as elements of tradition, with strong identity and heritage value that must be preserved and valued in the same way as the various components of biodiversity (Cormier Salem & Roussel, 2005; Faye, 2020). It is in this context that the Mangagoulack indigenous and community protected area (APAC) was created in 2008 under the initiative of the Association of Fishermen of the Commune of Mangagoulack. The mangrove represents the main landscape unit (Figure 4). It covers an area of about 6 927 ha.

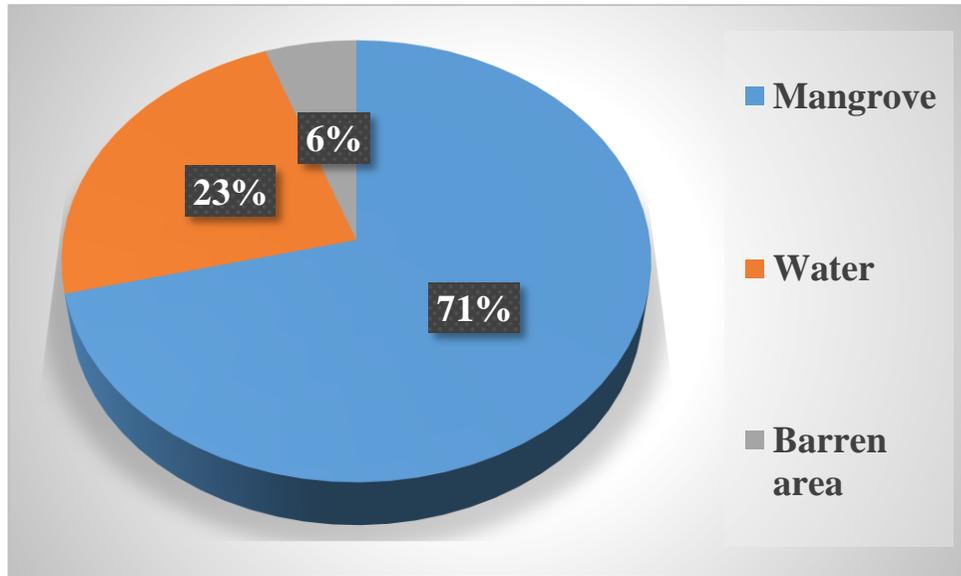


Figure 4. Percentage distribution of hydro-ecological units in the Mangagoulack indigenous and community heritage Area. Mangrove forest is the dominant unit (71%).

According to Faye (2020), six (06) species of mangroves have been identified, namely; *Rizophora mangle*, *Rizophora racemose*, *Rizophora harisonii*, *Avicenia germinans*, *Laguncularia racemose*, and *Conocarpus erectus*

Long before the recognition of the APAC of Mangagoulack, the bolongs of Mitij and Kiling-kiling were considered sacred natural sites where supernatural beings lived. These had a dissuasive role for anyone who tried to fish there. Interestingly, these legendary stories told over several generations were a means of deterring abusive exploitation. According to the elders, Kiling-kiling means “one by one” in the local language; that is to say a fish with each catch. This was the Djinn's answer whenever a fisherman asked him if the area is full of fish. Furthermore, the ancients had established laws based on their empirical knowledge to ensure the sustainable use of certain fishery resources. These laws are translated into prohibitions on any abusive exploitation activity in sacred natural sites (Faye, 2020). It is for these reasons that the constitution of an APAC took on its full meaning in Mangoulak because there is a match between the experience of the territory and its possible governance on the principles of the sanctification of traditional places.

Having understood the threat to the resource early on, local fishermen launched the idea of an association. This resulted to many discussions with all the villages (fishermen, chiefs, notables, men, women),

and agreements were given by the fishermen in 2006 to set up the association project.

Thus, actions have been carried out such as the reforestation of the mangroves in 2006 and the creation of dykes in 2008. The idea of protecting the fishing sector led to the creation of a selected committee of 10 people, i.e., 1 person per village. This is an example of participatory democracy, which has always been the prerogative of the Diola society. In addition, the international APAC Consortium, coordinated by an Italian from Genoa who became interested in the project, played a significant role. Through her, the steering committee discovered the existence of this mode of governance. As a result, the indigenous and community heritage Area (APAC) was launched.

a). *Opportunities and Challenges of APAC*

The governance approach favored by APAC is based on a set of behaviors and requirements around the resource. For the management committee, this governance provides more guarantees and efficiency. It is a return to the traditional governance of the ancestors which, from the point of view of the exploitation of resources, is perceived as more rational and thus limits the risks of overexploitation.

Table 2.Traditional and modern governance system

Traditional governance	Modern governance
Governance by indigenous people and local communities	Shared governance
Local actors	The State and its decentralized services
Organs Mangagoulack Rural Community Council; The General Assembly of the APCM; APCRM Office; Council of Elders Conseil Scientifique	Organs Orientation Council; Scientific and Technical Committee; Management Committee and; Council of Elders
Governance proposed by KAWANA Consensual	Participatory governance between the State and the local population
Socialization	Ecology
Naturalist, empirical knowledge	Systematic and theoretical knowledge
Identity and heritage value	Components of biodiversity
Worship	Rationalization

While Casamance is experiencing illicit timber trafficking, often caused by loggers from neighboring Guinea Bissau, sacred wood is preserved. No fires or logging are allowed in these places dedicated to worship. These specific mechanisms for the use and management of spaces and resources based on mystical realities allow the survival of sacred natural sites. It also serves as essential elements for the reproduction of the material and immaterial aspects of the Diola society based on its historical and socio-economic

heritage (cultural and religious) (Badiane & Coly, 2017; Diatta, 2017). The rules of access to the sites range from total prohibition to free access, including access restricted to depository families or local residents.

In the traditional governance of these spaces, it is forbidden to fish using a motorized ship. Only rowing canoes are allowed, as well as small size nets with regulated mesh as this is in line with sustainability. The engine is only allowed to cross the area and carry passengers.

In addition, fish is sold locally and the road signs with maps mention that: “the sale of fish is compulsory in village areas and its export for sale in Ziguinchor is prohibited or regulated; except if the fishing is carried out in the big bolong”. The prohibited areas to fishermen who sell their products outside the town are delimited by fetishes posed by women. Women return at certain times from the sacred wood and prohibit the exploitation of oysters.

The development of nature tourism, which is sometimes put forward in MPAs as a means of compensating for the decline in the resource, is largely related to the preservation and provision of new jobs (guide, catering, accommodation, crafts, etc.). However, it is not often considered by the management committee. The inhabitants are afraid that tourists will distort the way of life of the populations and their identity. Recreational sport fishing activities are also prohibited. Some tourist camps are tolerated if they remain isolated from the villages so as not to modify the identity of the Diola communities. Despite their desire, the supervisors (local fishermen) are not on oath, but they are supported by the women who put the fetishes which mark temporary territorial limits.

b). *Autonomy and Recognition of APAC*

While MPAs and National Parks are recognized by national decree in the coastal zone under regional jurisdiction based on the 1992 law transferring skills, APAC are recognized at the local level (Figure 5). The creation of each APAC comes from a local desire and requires the approval of the decentralized authority. The APAC project is thus presented four times to the Regional Council before being accepted. It was not until Act III of decentralization, which was adopted in 2013, from a national perspective, that the environmental council, the economic and social council, and the council of local authorities were in favor of the recognition of APAC.

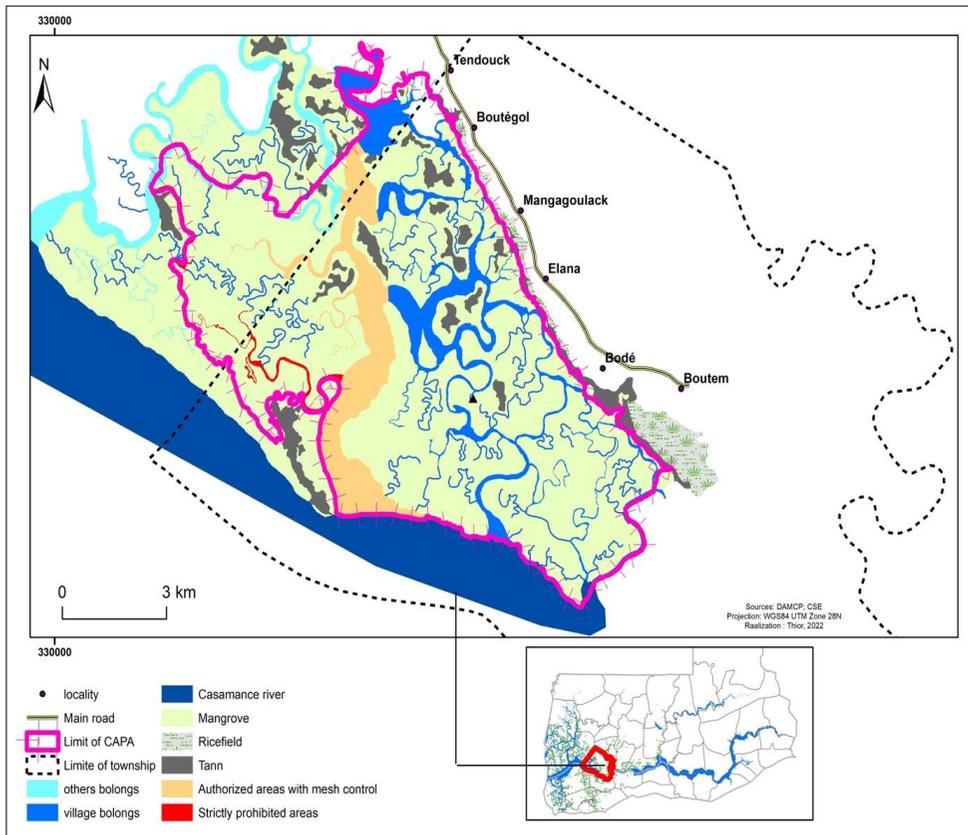


Figure 5. Land use mapping in the indigenous and community heritage Area of Mangagoulack: characteristic natural features are mangroves, tidal channels (bolongs), rice fields, Casamance river.

Till date, 25 APAC are recognized in Senegal. More so, governance bodies are administered by each APAC, including the zoning of activities, protection zones, and the supervision (Figure 5).

3.4. The Kawawana de Mangagoulack and Kapak olal de Mlomp APAC: Sacred Natural Sites and Natural Resource Conservation Sites

The Mangagoulack ICCA is one of the first initiatives in Senegal in general and in Casamance in particular. This has introduced new perspectives for more participatory, equitable, and effective conservation in the coastal marine environment. Appreciated for its contribution to the conservation of the natural heritage of the terroirs, the APAC of Mangagoulack created in 2009 inspired that of Mlomp created in 2013. Thus, unlike the State MPAs, the APAC are a form of governance by indigenous people. Its general objective is to strongly limit free access and to initiate local asset management in order to

contribute to the restoration of benefits for all users of the system, including “non-locals”.

Conclusion

The ecological and socioeconomic issues of the Senegalese coast have prompted the public authorities to put policies in place to support local initiatives for the governance and management of natural resources.

This approach was already initiated with the Rio Convention on Biological Diversity in 1992 due to the need for integrated, sustainable, and participatory management approach. The 2000s inspired the State of Senegal to integrate participatory management by taking into account the local and traditional knowledge of indigenous populations and communities.

However, despite the State's desire to make these MPAs tools for the concerted and sustainable management of resources in the coastal zone, the fact remains that this creation is still in a virtual state, thereby failing to resolve the conflicts between different users around resources. The participatory governance, which is put forward as the preferred approach by MPAs, remains controversial. Nonetheless, with regard to the territorial economic issue, a common project of the maritime space of Casamance should specifically offer the advantage to the protection of the environment by determining in an early way the potential impact of the multiple uses of the space and the perspectives that they offer. Such a common project can also offer a harmonization of competitions between sectors and the creation of synergies between the different development activities. The MPAs system in Casamance provided the opportunity for a better conservation of the marine and coastal biodiversity.

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