



# The Political Economy of Fisheries Reform in Senegal

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## 1 Introduction

This article analyzes the political economy of fisheries reform underway in Senegal, with a focus on the allocation and utilization of use rights and the establishment of a governance structure associated with these rights. Since independence in 1960, successive Senegalese governments have undertaken

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policies directed at expanding the fisheries industry. This effort has been supported by development partners—the African Development Bank, World Bank, Japan International Cooperation Agency (JICA), the French Development Agency, and the European Union (EU), among others. As an additional incentive for expansion, authorities have also offered, overtime, generous tax exemptions on purchases of fuel and fishing gear, which has led to increases in the size of the fleet and fisheries infrastructure. These developments, combined with the government's decision to grant other nations access to fishery resources through bilateral trade agreements, have contributed to the increase in fishing effort and catches. Hence, after years of ineffective regulation characterized by and an absence of a functioning governance structure for fisheries management, the sector became embroiled in an economic and environmental crisis. The quasi open access regime that characterizes Senegalese fisheries has created the conditions for overfishing, resource depletion, the erosion of ecosystems, excess capacity, and rent dissipation.

For a country like Senegal, this is a particularly alarming outcome because the fisheries sector is an important source of employment, and export revenue; and a big contributor to gross domestic product (GDP) as well as food security in the country. The fisheries sector accounted for approximately 2.7% of GDP and 21.9% of exports in 2015 (Ministère de l'environnement et du développement durable et Ministère de la Pêche et de l'Economie Maritime 2016). Moreover, fishing and associated downstream value chain linkages provided more than 630,000 jobs, i.e., about 17% of the active population in 2015 (Ministère de l'environnement et du développement durable et Ministère de la Pêche et de l'Economie Maritime 2016). And with regards to contributions to food security, the sector provides 70% of animal protein consumption in the country (World Bank 2015; Lancker et al. 2019).

Given this state of affairs, the government initiated a process of reforms since the end of the 1990s, in an attempt to address the economic and ecological crisis facing the fisheries sector. Assisted by development partners, the government embarked on a path that set out to create conditions for a robust and bottom-up regulatory system aimed at providing the right incentives to fishers to invest in the conservation of fisheries resources. To create such conditions required a strengthened and devolved governance structure that regulates access to the resource through some form of exclusionary access rights regime. It also required the active involvement of all stakeholders in the process of decision-making, elaboration, implementation, as well as evaluation of management plans.

The objective of this article is to provide critical analysis of the fisheries reform process in Senegal. The next section sheds some light on the development of Senegalese fisheries from a historical perspective. We subsequently analyze the government failure at regulating the sector as well as its causes, before examining the reforms undertaken to address this failure, focusing on the artisanal subsector—which is the largest sector by catches, and where regulatory failures are common and most challenging. Last, we offer some concluding remarks.

## 2 Development and Evolution of the Fisheries Sector

The fisheries sector in Senegal is comprised of two subsectors: the artisanal and the industrial fisheries. While there is no universally accepted definition that distinguishes artisanal and industrial fisheries, the 1998 Fisheries Act provides a distinction based on the type of technology used by the fishers. Artisanal fishers are those “*employing traditional undecked pirogues, using non-mechanized gear and only using ice and salt for the preservation of the catches*” (République du Sénégal 1998: Article 11). Therefore, any fishing activity that involves the use of a pirogue is considered artisanal. The artisanal subsector primarily concentrates on the supply of local markets with small pelagic species, while the industrial subsector is export-oriented and target high value fish such as the demersal species and tuna.

Since the colonial era, the State has aspired to modernize fishing activities in Senegal, following the model of the French industrial fisheries. This modernized sector, was thought to replace the artisanal subsector (often considered primitive, unproductive, and resistant to technological change) (Chauveau 1989; Chauveau and Samba 1990). While artisanal fishing units were typically structured around a core group that belonged to the same lineage; technological change together with rural migration to coastal areas has shifted labor recruitment to outside family circles. This contrasts with the past, as fishing was traditionally practiced by three communities; the Wolofs from Guet Ndar, the Lebous from the Cap Vert Peninsula and the Petite Côte, and the Niominka Serers from the Saloum Islands.

Despite the colonial authorities’ interventions to modernize the artisanal subsector—building of fishing infrastructure, provision of subsidies, creation of cooperatives, and attempts to organize the marketing of the final products—the latter remained unscathed throughout the colonial period. Instead, it grew considerably due to demand from both local and export markets

though the export market was dominated by European firms. During the 1950s, it became clear to the colonial administration that the small-scale pirogue fishing would not disappear as expected. As a result, given the reliance of the industrial subsector on the catches of the artisanal fishers, the colonial administration, with the support of French industrialists launched a program of motorizing the pirogues in order to increase their yield such that by 1958, 14% of the pirogue fleet was motorized (Chauveau 1989; Chauveau and Samba 1990). Similar programs would prove even more successful in the following decades.

Since independence in 1960, successive governments have undertaken policies directed at expanding fishing activities within the national jurisdiction of Senegal. These policies have been supported by numerous development partners including the African Development Bank, the World Bank, the Japan International Cooperation Agency (JICA), the French Development Agency, and the European Union, among others. Expansionist policies, which included generous tax exemptions on purchases of fuel and fishing gear, as well as lax regulation were promoted between 1960 and 1970s. However, like the colonial administration, the government gave priority to the industrial subsector at the expense of artisanal subsector, although the latter remained a key player. Despite this relative neglect, the dynamism of the artisanal subsector began to attract policy makers' interest in the 1970s. To achieve the objective of modernization, a massive program of pirogues' motorization supported by Canadian cooperation was launched in 1972. Later, in 1973, with the technical and financial assistance of the Food and Agriculture Organization (FAO), a new fishing technique to catch small pelagic, the purse seine, was introduced (Chauveau and Samba 1990). These technology adoptions had considerable impacts on the future evolution of the sector. One of the consequences being that the pirogues became larger with more powerful engines. Other government initiatives, such as the introduction of tax exemptions on engines and pooled fuel prices, as well as the creation of fisher cooperatives and increased credit facilities for financing the purchasing of equipment, resulted in a 90% motorization rate for artisanal vessels by 1983 (Chaveau 1988). As a result, fishing fleets and fisheries infrastructure and overall fishing effort increased substantially in the 1980s (Chauveau and Samba 1990). Total catches have grown considerably, from 50,000 tons in 1965 to 502,000 tons in 2017 (Direction des Pêches Maritimes 2019). Notably, the artisanal subsector has been at the forefront of this expansion. The number of pirogues in the subsector increased from 4970 in 1982 to 19,009 in 2015 and continues to grow (Direction des Pêches Maritimes 2006; World Bank 2017). The artisanal fleet became highly

competitive to the point of overshadowing its industrial counterpart. For example, between 1990 and 2008, catches in the artisanal subsector gradually increased, but decreased by half in the industrial subsector (Ministère de l'Économie Maritime 2008: 17). By 2017, almost 80% of the total catches and 65% of the total value came from the artisanal subsector (Direction des Pêches Maritimes 2019). Thus, the artisanal subsector has substantially outperformed the industrial subsector, which has been hampered by its aging fleet (the average age is 30 years). Besides this increasing capacity in the artisanal subsector, the industrial subsector has faced stiff competition from distant-water fleets from the EU, and other nations, which have been granted access to Senegalese waters through bilateral trade agreements. These trade policies account for further increases in effort and catch.

These developments coupled with the absence of accurate stock assessments and well-functioning governance structures for fisheries management have led to the crisis of Senegal's fisheries sector. The crisis is characterized by overcapacity, overfishing, resource depletion, and resource rent dissipation. The latter stems from unsustainable catches and from the sub-optimal amounts of labor and capital being used to outcompete rival vessels in the race to fish. The existence of *de facto* open access fisheries creates perverse incentives that have resulted in the decrease in the entire sector's productivity. Kinadjian and Sy (2010) estimate that, if fish resources were used in a sustainable manner and excess capacity in the sector eliminated, resource rents in Senegal's fisheries sector could potentially reach € 200 million (or US \$275 million)<sup>1</sup> annually, which in 2018 represented 7.6% of exports (World Integrated Trade Solution [WITS] 2018). The important role of the fishing sector across the Senegalese economy makes this of, particularly grave concern.

### 3 Primary Reason for the Crisis: Regulatory Failure

#### The Major Actors in Senegalese Fisheries

The 1998 Fisheries Act constitutes the legal framework regulating the fisheries sector. It stipulates that fish resources under Senegalese jurisdiction constitute a “*national heritage*.” This implies that fish resources in the Senegalese Exclusive Economic Zone (EEZ) belong to the Senegalese People as a whole, but, the State as the custodian of those resources has the obligation to manage them sustainably for food security and income generation for current and future generations. To perform its regulatory role and manage

the country's fisheries, the State relies on several agencies namely, the Directorate of Marine Fisheries, the Center for Planning, and the Directorate for Protection and Surveillance of Fisheries. Together, these agencies are responsible for the design and implementation of State policies with respect to marine resources. They provide key strategic orientations by setting the legal, sectoral and macroeconomic framework for policies. They are also responsible for undertaking impact assessment of macroeconomic policies in the fisheries sector, preparing the sector's public investment budgets, and publishing economic information and statistics. Further, they are to ensure the protection and surveillance of the EEZ and compliance with fishing regulations. Lastly, the fisheries sector also benefits from the scientific support of the Center for Oceanographic Research of Dakar-Thiaroye (CRODT), which is responsible for monitoring fisheries and fish stocks.

What is noticeable here is that while there has been a slow process of decentralization by which a number of prerogatives regarding natural resource management have been devolved to local governments, competence in fisheries management has not been adequately transferred by the State administration. As a result, fisheries policies are typically formulated and implemented based on a top-down approach where the directives emanating from the central administration in Dakar are brought down to the stakeholders with little or no consultation. This means that fishing communities are often alienated from the State because of a lack of consultation regarding decisions that directly affect their livelihood. This poses a question of legitimacy of State policies, which could render them ineffective.

In addition to State agencies, the sector also comprises of professional organizations, such as the National Collective of Senegal's Artisanal Fishers, the National Federation of Economic Interest Groups of Senegal's Fisheries, and the National Interprofessional Council of Senegal's Artisanal Fishers. The creation of these organizations reflected the willingness of fishermen to better defend their interests before the State. However, the relationship between the State and these organizations has been rather complex. Often in the past, the State has been intrusive and fostered clientelist relationships with some organizations.<sup>2</sup> Since the end of the 1980s, the artisanal subsector has witnessed the creation of numerous rival professional organizations that are primarily concerned with defending the corporatist interests of their members and in helping them pool resources to finance investment projects. Since less than 10% of fishermen are members of such organizations, the question of their representativeness remains a major issue. Therefore, while the creation of these organizations does much to democratize the participation

in the fisheries management policies, they have been unable to coordinate and cooperate effectively.

The general inability of the artisanal subsector organizations to act collectively to defend their common interests contrasts with the effectiveness of the industrial subsector major organizations. The Association of Senegalese Vessel Owners and Industrial Fisheries or *Groupement des Armateurs et Industriels de la Pêche au Senegal* (GAIPES) is the most prominent professional organization in the industrial subsector. Over the years, GAIPES has turned into a trusted partner of government agencies. Members of the GAIPES pride themselves to be long-term investors in the sector. Due to their influence, they have been able to limit entry to curb the “race to fish.”

Because of the artisanal organizations’ general inability to coordinate coherently and to formulate a vision regarding the long-term management of fisheries resources, they are typically not regarded as strategic partners unlike their counterparts in the industrial fisheries. Consequently, they have been sidelined and bypassed by both government administration and donors. As a result, they have made minimal contributions to current reforms. Their absence, however, has dire consequences as far as the success of sustainable resource management policies in the sector is concerned. Indeed, in order for the reforms to have a long-lasting success beyond the duration of most projects and the temporary support of the donors, there is a real need for strong, credible, and representative professional organizations that represent the interests of all stakeholders.

## **Weak Institutional Arrangements and Policies**

The fundamental cause of the collapse of fisheries in Sénégal and elsewhere is arguably the inadequacy of the prevailing property regime (namely open access, be it regulated or unregulated) that characterizes many fisheries and the perverse incentives it creates (Anderson and Libecap 2010; Munro 2010; and Costello et al. 2008). While access to the industrial subsector in Senegal is controlled through licensing, thus making it a regulated form of limited access, the artisanal sector, which accounts for 80% of catches as of 2017 (Direction des Pêches Maritimes 2019), operates in a “quasi” unregulated open access environment. An open access fishery has three essential characteristics. Firstly, the fishery resource is exploited by a large number of independent vessels such that no single actor can influence the total output and the market price. Secondly, entry and exit to and from the sector is free. Lastly, there is no property right or use right to the resource in its natural habitat. This has several implications. Most importantly, in the absence of

an enforceable right to the in situ resource, no one party has an incentive to *invest* in the resource by leaving it at sea for future growth. This is because any vessel is allowed to catch the fish for immediate economic returns, even at the expense of sustainable rent extraction for society as a whole. Consequently, this leads to a “tragedy of the commons” driven by the “race to fish”.

Just like the “no barriers to entry and exit” condition in competitive markets ensures the dissipation of any economic rent, the investment in increased effort in an environment devoid of exclusive access rights ensures an identical outcome. Due to their scarcity, natural resources typically generate an economic return to the resource itself, a scarcity or resource rent above the return needed to cover intermediate input costs, labor costs, and the opportunity cost of capital.<sup>3</sup> However, in the absence of limited access, the existence of scarcity induces greater investment in capital and effort, thus offsetting the natural productivity of the resource. This results in overexploitation and translates into lower return on effort. The downward trend in the average catch per trip by the pirogues since the early 1990s reflects the rent dissipation taking place in the artisanal subsector. Although total catches in this subsector have increased due to increasing volumes of fish captured in the waters of neighboring countries, the return to effort as measured by the catch per trip has decreased by more than 30% over a period of 20 years (Ministère de l’Economie Maritime 2008).

Furthermore, despite the rent dissipation, the government’s continued subsidy policy to the sector, which averages to \$17.3 million annually (Ministère de l’Economie Maritime 2008) has exacerbated the crisis further and accounts for the dramatic increase in the levels of effort. However, simply removing the subsidies is socially, economically, and politically difficult because they play an important socioeconomic and sociopolitical role. In any event, the main challenge presented by the current regulatory system is its inability to effectively regulate access to the subsector that represents 80% of all catches in the fisheries industry. Indeed, the 1998 Fisheries Act does not address the controversial issue of access to the resource by the artisanal fleet. While Article 15 of the Fisheries Act (République du Sénégal 1998) stipulates that

*any construction, purchase, processing or conversion of an industrial Senegalese fishing vessel must be subject to prior authorization of the Minister of Marine Fisheries. This decision will be conditioned by the availability of the resource stock.*

Paragraph 2 of the same article states that it is “*applicable to artisanal fishing boats under the conditions decreed by the Minister of Fisheries,*” such a decree for regulating access has never been promulgated (Seck 2004). With relatively



low entry costs, anyone willing and able to engage in small-scale fishing can become a fisher with no control from the authorities. This absence of regulation results in increased fishing effort and ultimately erodes resource rents and threatens the future survival of numerous species. This policy failure challenges the Senegalese State to undertake corrective measures that would reverse the current trend. It also poses a challenge to all fisheries stakeholders to seek an alternative approach to resource management, one that would create wealth from the fish resources in a sustainable manner.

## The Failure of the Regulatory System

Since independence, the expansionist policy of modernization and development of Senegalese fisheries has come at a high cost. Some species, once abundant, are now severely overexploited and face possible commercial extinction. The cause is to be found in the self-defeating incentives of fishers to compete in an open access environment until resource rents are dissipated. Despite imposing limited entry rules and limits on the use of inputs, the regulation has been unable to curtail these perverse incentives. Moreover, the top-down approach to regulating the sector has failed because of its inability to address the underlying causes of the socially costly and wasteful “race to fish.” By failing to engage communities in the management of the resource, the fisheries authorities, through their top-down approach, face a problem of trust and legitimacy across local fishing communities. Consequently, even environmentally and economically sound policy interventions generate low levels of compliance, which, coupled with poor monitoring and enforcement, render policy interventions ineffective at reversing the trend.

Another factor that is contributing to the regulatory failure is political interference. Politicians, at times, take discretionary measures that violate both the spirit and letter of the law or subvert procedures designed to limit access for political and/or financial gain (e.g. the illegal allocation of authorizations to fish to Russian trawlers in 2010). Another form of political interference relates to the enforcement of sanctions for non-compliance. Often, the intervention of politicians or high-level officials is sufficient to lift sanctions. This practice generates a moral hazard problem because offenders will continue violating the law so long as they have powerful backers. A major weakness of the current system is that it lends itself easily to political manipulation. As such, there should be an effort to minimize unwarranted political interference as much as possible. The impacts of such discretionary, political interventions are far-reaching because instead of the regulatory process creating expectations of certainty and trust regarding the management of

fisheries policy among participants, the opposite occurs. This subsequently may discourage the fishers to comply with the law, which in turn, has serious consequences on the sustainability of fisheries resources.

## 4 Fisheries Reform in Senegal

### The Principles of the Reform

In the late 1990s and the early 2000s, the realization of the shift from fish abundance to systemic depletion of the stock instilled a sense of urgency and a willingness to reform the management of fisheries in order to prevent an irreversible damage. The Senegalese authorities, with the support of financial and technical partners, embarked on the development and implementation of co-management initiatives that sought the active involvement of a diverse pool of stakeholders (including fishers and fishing communities) in the decision-making process. The goal of these reforms was to provide effective fisheries management and gain legitimacy by actively involving the stakeholders even in the monitoring and enforcement of rules governing resources. This approach marked a considerable departure from the conventional practice of centralized, top-down management of fisheries by national government agencies. Despite these goals, the fisheries administration retained a major role in initiating the reform because of the belief that local fishing communities were unable to steer the reform successfully due to their poor organization and lack of resources.

Notable in the reform process is the consultation that took place in 2004, during which key reform principles were defined. These included developing public policies that placed the fisherman at the heart of the reform, giving priority to tighter control over access to the resource, and disinvesting in excess fishing capacity. These steps would be necessary to generate greater wealth from the fisheries' resources. Consequently, after a wide consultation process spanning a number of years, several important documents that articulate the strategic orientations of the State regarding the reform of fisheries management were formulated. The Sectoral Policy Letter, published in 2007–2008, is arguably the most prominent. Another notable document is the Strategy of Accelerated Growth, which views fisheries reform as a potential driver of economic growth and a key component in the poverty reduction strategy. In essence, the reform revolves around the development of fisheries management plans<sup>4</sup> and the devolution of management responsibilities to the producers themselves and local communities through concession contracts

with the State. For such a decentralized concession system to be functional, all parties involved in co-management must understand and appreciate each other's rights and duties. However, making all stakeholders understand that fishing is primarily an *economic activity* that is lucrative and sustainable so long as resource rents are appropriated by producers and not dissipated (Ba et al. 2017), has proved to be a challenge—both within local communities, and within the State administration where most managers have a natural science, not an economics or management training. Although all stakeholders understand the necessity and urgency for a reform, at times, distrust and suspicion about the State's possible hidden agenda remain as a result of past State-society relations. Consequently, there has been resistance from all stakeholders.

Understandably, any reform that aims to address the ecological and economic challenges in the sector, must be grounded in the rights to access the resource in order to block or adjust the perverse incentives that are inherent in the prevailing open access regime. As such, a consensus has been reached regarding the establishment of State concessions that allocate use rights to fishers as an incentive mechanism to end resource overexploitation. Concessions are described as “*fair and transparent mechanisms that facilitate the transfer of responsibilities through a contract between the State and holders of a use right. This contract is enforceable against all parties involved- fishermen, institutions involved in the management and the State*” (Direction des Pêches Maritimes 2009). The concession system would rely on three criteria: (1) the principle of territorialization, (2) capacity restriction in order to control effort in a more effective manner, and (3) quotas on catches. However, the efficacy of concessions would depend on the particular subsector. For instance, quotas on catches held by fishers or groups of fishers can be an effective instrument for the industrial fisheries, while territorialization can be effective for the artisanal subsector when well defined groups of fishers who share common fishing zones are identified. Again, the rationale here is that by getting the economics and the incentives right, fisheries reform has the potential to play a critical role in the country's strategy for enhancing economic growth.

What follows is a discussion of some of the major reform programs initiated in the artisanal subsector, as well as the challenges therein.

## **Reform Process and Governance in the Artisanal Fisheries**

The reform process undertaken by the fisheries authorities in the artisanal subsector has two components. The first component is to facilitate the emergence of local organizational structures, namely, Councils of Local Artisanal Fisheries (CLPA), which are to become the institutional instruments for carrying out reform in the artisanal subsector. The objective is to create a platform where stakeholders and their pre-existing social arrangements that were previously marginalized by the authorities under the centralized institutional arrangement, can participate as collectives in the co-management of fisheries. The second component of the governance reform is to develop local or national initiatives that foster capacity control and co-management. Examples of such reforms include the registration of pirogues under the *Programme National d'Immatriculation (PNI)*, the artisanal fishing permit system, and the GIRMaC program.

### **Local Institution Building: CLPAs**

Pursuant to Article 12 of the 1998 Fisheries Act, 22 CLPAs were created by ministerial decree in 2008. The CLPA is both a key institutional innovation in the management of artisanal fisheries and a cornerstone of the reform process in this subsector. The typical CLPA is structured according to colleges of stakeholders grouped by profession ranging from fishers, traders, to fish processors and carpenters. Other stakeholders include local leaders, the fisheries administration, and a representative of the executive. The main goal of a CLPA is to ensure the economic wellbeing of its members while achieving sustainable resource management of the fisheries stock. In addition, the CLPA is expected to become an active partner in the governance of resources by elaborating management plans and conservation measures that contribute to sustainability, participating in the co-monitoring and surveillance of local fishing activities, providing advice regarding the award of fishing permits, and contributing to local conflict resolution. Therefore, the CLPA is envisioned as the organ of local governance where co-management initiatives are elaborated, discussed, validated, and implemented with the involvement of all relevant stakeholders.

However, while the CLPAs were designed to be inclusive organizations that involve all key stakeholders in the management of resources and foster bottom-up sustainability, this did not take place in practice from the onset. In fact, when the first CLPAs were created, the local pre-existing institutions

were by-passed as they were perceived as representing narrow vested interests as well as lacking representation and legitimacy to voice the concerns of the fishing communities. For this reason, CLPAs are at times perceived as an arm of the State, created by ministerial decree and chaired by a representative of the executive, with members of local communities merely seen as rubber-stamping participants in initiatives driven by the administrative authorities.

Out of the 22 CLPAs originally established, only a few operate effectively (Tine et al. 2018). Most have become dysfunctional and have failed to perform their intended roles due to a lack of financial, material, and organizational resources. These problems must be resolved for the CLPAs to have any meaningful role in co-managing artisanal fisheries.

### **Local and National Institution Building: GIRMaC/ GDRH Programs**

Launched in 2005, GIRMaC (*Gestion Intégrée des Ressources Marines et Cotières*) is an integrated program funded by the World Bank through a US \$10 million International Development Association (IDA) credit and a US \$3.85 million Global Environment Facility (GEF) grant. It was designed to promote sustainable fisheries management through the support of local communities in the management of coastal demersal fisheries and marine resources, as well as the protection of ecosystems, including the improvement of habitat and preservation of key species through the creation of five marine protected areas (World Bank 2015). The program aimed at promoting a local co-management system based on a participatory approach and active community involvement organized around a local fisheries committee in order to establish a system of fisheries management planning at local and national levels (World Bank 2015). The program selected four pilot sites—Ouakam, Ngaparou, Foundjoune, and Betenty based primarily on the local communities' demonstrated willingness to engage in sustainable management in areas where fish resources face a real threat of depletion. A Local Fisheries Committee (CLP) was created in each site. The composition of CLPs is similar to that of the CLPAs in that the CLP includes a variety of stakeholders such as active and retired fishers, pirogue owners, fish traders, and fish processors. But, while the CLPAs are created as an organ through which the State, together with local stakeholders give embodiment to co-management, the CLP is a private association created by GIRMaC. As such, CLPs are simply village-level associations and are institutionally subordinate to the CLPA. The main objectives of the CLPs are the resolution

of conflicts over fishery resources, the restoration and sustainable management of fish resources by restricting fishing effort or allowable catches, the protection of marine breeding grounds, and the generation of income from the sale and processing of fish products (World Bank 2015). To achieve these goals, GIRMaC was tasked to implement two major activities: (1) the revision of the 1998 Fisheries Act; and (2) the elaboration of fisheries management plans for two critical species, coastal shrimps and cymbium, relying on co-management.

The overall outcome of the program was mixed. First, the efforts to promote negotiation, conflict resolution, and consensus building forums among stakeholders with respect to the co-management of fisheries resulted in mixed results. Secondly, the proposed revision of the 1998 Fisheries Act was criticized for its inadequacy. Meanwhile, the development of national management plans for the coastal shrimp and cymbium suffered setbacks and could not be completed under the program.

The GIRMaC project was subsequently extended to eight new sites under the aegis of the GDRH program (*Gestion Durable des Ressources Halieutiques or Sustainable Management of Fish Resources*). The GDRH aimed at consolidating and expanding co-management in the fisheries sector pilot program by replicating the GIRMaC, providing additional implementation support, and deepening the impact and geographical coverage beyond the individual sites by preparing consolidated management plans across a number of co-management sites in a given area (World Bank 2015). Beyond the ecological sustainability dimension, the GIRMaC program's approach to co-management is also concerned with economic viability, that is, ensuring a sustained income stream for fishers and fishing communities.

## **Pirogue Registration and the Permit System**

In order to implement successful reform in the artisanal fisheries, certain prerequisites must be met. Firstly, a precise audit of the resource stock in each fisheries management unit by species and spatial distribution must be carried out. The role of the CRODT in assessing the stock is crucial in this regard. Secondly, the assessment of the size of the fleet of pirogues through the national program of pirogues registration (Programme National d'Immatriculation, PNI), initiated in 2006, is to be completed. Thirdly, pirogue registration must be combined with the introduction of the artisanal fishing permit system, which grants access rights. Finally, a moratorium on new pirogue construction must be imposed in order to control fishing effort and capitalization in the subsector. Achieving these initiatives would

go a long way in addressing the problem of overfishing of declining resource stock and rents dissipation in subsector. However, the implementation of these initiatives has been slow, arduous, and fraught with setbacks and disappointments. For instance, the completion of the national program of pirogues registration took no less than 10 years. By December 2015, 19,009 pirogues were officially registered (Direction des Pêches Maritimes 2015) and digitally captured in a new pirogues database. However, the inability of the administration to impose a moratorium on the construction of new pirogues during those 10 years despite tremendous effort, resulted in a 50% increase in the pirogues fleet since the CRODT's 2005 estimation of 12,619 pirogues when the reform was initiated (CRODT and ISRA 2006). The moratorium came eventually into force in January 2015 following numerous nationwide awareness campaigns in 2014–2015.

Once the pirogues are registered, it is necessary to introduce a permit system that grants the right to access the fisheries resource. The implementation of an artisanal fishing permit system, however, has been underwhelming. It was introduced in 2005 following a long process of consultation and discussion with major stakeholders under the aegis of Directorate of Maritime Fisheries. The process led to the creation of three categories of permits: The A Category which costs nearly US\$10 for standing fishermen, the B Category which costs nearly US\$30 for small pirogues of up to 13 meters, and the C Category which costs nearly US\$ 50 for large pirogues exceeding 13 meters. It is worth noting that even 15 years after its introduction and numerous awareness campaigns, the level of compliance remains low; nearly 60% of pirogues are still without fishing permits according to the latest estimates by the Department of Maritime Fisheries. More importantly, one may question the ability of such instrument to effectively regulate access to fisheries. In fact, the rules for granting the artisanal fishing permits are extremely lax, for they are not conditioned on the type of gear used, the species targeted or the fishing location. Overall, access to fisheries has remained unrestrictive despite the introduction of fishing permits. Nevertheless, there have been ongoing discussions to establish a new fishing permit that will address some of these issues (Direction des Pêches Maritimes 2015).

Recently, major milestones have been achieved such as the completion and enactment of a new Fisheries Act (République du Sénégal 2015) and the implementing decree (République du Sénégal 2016). This is an important achievement because it provides a revised legal framework that governs the reform effort. The most notable aspects of the new Act are the codification of fisheries co-management, the strengthening of fisheries management plans, the promotion of marine protected areas and the stricter penalties

against illegal, unreported, and unregulated (IUU) fishing, as well as participatory monitoring and surveillance. In addition, the long process of physical and digital registration of the artisanal fleet was completed in 2015 with an official estimate of 19,009 pirogues as mentioned earlier. There has been progress regarding the use of TURFs as the territorial basis for access restriction among artisanal fishers. Finally, half a dozen management plans have been completed: the coastal shrimps and cymbium management plans which started under the GIRMaC program were eventually completed under the PRAO-SN project.<sup>5</sup> Similarly, the deep sea shrimps, octopus, and sardinella management plans were developed recently.

## Shortcomings and Challenges of Artisanal Reform

The reform in the artisanal subsector suffers from various shortcomings. The first, and probably most significant shortcoming is the coordination failure. The process of reform has been characterized by numerous compartmented initiatives that are aimed at individual strategies to foster co-management. Many of these projects rely on the technical and financial assistance of Senegal's development partners such as the World Bank, the Japanese Development Agency (JICA), USAID, as well as NGOs like the World Wildlife Fund (WWF) or Environment Development Action (ENDA), among others. However, despite the intrinsic value of these projects, the lack of coordination among them has created confusion and frustration among some key stakeholders. Each project has its own objectives, time horizon, approach, as well as interest. Overall, there is little regard as to how they all fit together. Instead, there seems to be little coherence in so far as these initiatives contribute to the bigger picture. The fundamental problem here lies with the authorities' inability to define a long term and coherent operational co-management strategy that all donor projects must contribute toward and meet. Without such a strategy, the confusion from coordination failure will likely persist, and this will undermine the prospects for success.

Secondly, the fisheries administration (national or local) seems unable to truly embrace a bottom-up participatory process despite the co-management narrative. The creation of concessions as a primary instrument to re-shape fishers' access rights and incentives requires the establishment of a host institution that is independent, representative of grass root fishers and has the capability of managing fisheries. Since fisheries management will likely be based on territorial access rights, using pre-existing local arrangements that have developed organically would be natural and would economize on costly institutional engineering. In this regard, the creation of CLPAs in their



current form, by perpetuating the administrative authorities' preeminence in fisheries management, seems inconsistent with the aim of a localized, bottom-up reform of the subsector. Additionally, one may question the sustainability of the organizations and initiatives (e.g. the CLPs) developed by the ever-ubiquitous development partners upon project completion.

Yet, examples of successful self-organized fishing communities that bring about sustainable management exist in Senegal. The self-regulation of effort and catches in Kayar, a fishing village located 60 kilometers north of Dakar, is probably the most well-known example. In the early 1990s, the Joint Committee of Kayar-Guet Ndar was established with the support of local, traditional, and religious leaders to put an end to the violent conflict between local fishermen from Kayar and migrant fishermen from Guet Ndar. The source of the conflict was the competition for access to fish resources between the two communities (Platteau and Gaspart 2002). Because of their long tradition of migration, Guet Ndar fishermen consider the sea as an open access resource, while local fishers have a restrictive view of the access to the adjacent waters, which they consider as their own. The fishers' communities of Kayar engaged in further collective action by rationing the supply of pelagics in order to support producer prices. Thus, a regulation limiting the number of daily trips to one for any specific board involved in purse seine fishing was introduced in 1992. Furthermore, in the wake of the FCFA currency devaluation in 1994, line fishers of Kayar adopted an effort-limitation regulation by setting a cap on the number of boxes of fish a boat could land, a maximum of three boxes per pirogue. This move was probably a reaction to fish traders' practice of offering low prices in a context of rising input costs. It effectively set a limit on the amount of catches. The Committee further elaborated and implemented regulations on the size of the catches, the fishing periods, the fishing gear, and the methods allowed. It also supported the marketing of the fish products by actively negotiating with fish traders, and this eventually resulted in the stabilization of the selling price of fish. This form of regulation has been hailed as a success since both the concern for improved livelihood for the community and sustainable fishing practices were addressed. Importantly, unlike the recent co-management initiatives developed by the CLPAs or CLPs, the management initiatives carried out in Kayar, emanated directly from the fishermen themselves. And, the rules and regulations governing fisheries management were formulated and enforced without government and its development partners.

## 5 Conclusion

This article sheds some light on the economic and political dimensions of the crisis of the fisheries sector in Senegal. We sought to explain, why the current ecologically and economically unsustainable mode of appropriation has persisted, despite the implementation of ambitious reform programs. We have focused on the political economy of reform in the artisanal sector because this is the most exigent and challenging subsector in Senegal. In this article, we have argued that the cause of the fisheries crisis lies in the expansionist policies undertaken by the state authorities and their inability to regulate access both in the artisanal and industrial subsectors. Over the years these policies have led to declining fish stocks and rent dissipation as a result of overcapacity and overfishing. Given past failures to instill sustainable resource management, there was unanimity among stakeholders that fisheries co-management is the only viable solution because the inclusive nature of this approach creates legitimacy and a sense of ownership that are essential for sustainable stewardship. However, the structural reform of the sector that all stakeholders have been calling for, had been elusive until recent progress; for instance, the enactment of the new 2015 Fisheries Act, and the adoption of several key management plans (for coastal shrimps, deep sea shrimps, cymbium, octopus and sardinella management plans). This recent progress in building a regulatory framework is notable and welcome after years of a seemingly stalled process. However, the next step, probably the most challenging, is to implement this new institutional framework to shape a new and sustainable behavior from all the stakeholders.

Despite the co-management narrative, a major challenge of the reform in the artisanal subsector has been to identify and engage with representative producer organizations at the grass-root level that is capable of managing fisheries sustainably. Relative to the industrial subsector, this task is arduous because of the vast heterogeneity and lack of coordination among stakeholders. Yet, the reform underway requires well-functioning professional organizations that engage with the authorities and the development partners in a credible manner. The fact that no such organizations exist, presents the CLPAs with the opportunity to be the legitimate candidate representing producers and communities. Therefore, turning the CLPAs into autonomous and functional organizations will be critical for the ultimate success of the reform.

## Notes

1. Similar to the World Bank (2015), we have used the 2009 exchange rate of FCFA 467.98 per US dollar.
2. In the 1970s, the State facilitated the creation of numerous fisher cooperatives which served as a means to control the artisanal subsector through co-optation (Ndiaye 2004). Many cooperatives were led by village leaders, community leaders or notables who had close ties with the ruling party. By controlling access to fishing inputs and credit facilities, these cooperatives contributed to the consolidation of the ruling party's power at the local level through an effective political patronage system. It was not uncommon for cooperative officials to distribute the Socialist Party's membership cards among the fishing communities (Ndiaye 2004).
3. The rent is measured as the difference between the landed value of fish and the full economic costs of bringing a catch to port, including normal return.
4. These management plans constitute a set of measures aimed at conservation and optimization of the rent generate by the scarcity of the resources. They specify the technical and financial needs required for the implementation of the measures. The actual implementation of management plans is subject to government approval.
5. PRAO-Sénégal is a World Bank funded program aimed at strengthening governance capabilities and sustainable management of fisheries namely through the development of management plans.

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