On the Development of Territorial Use Rights in the Marine Small-Scale Fisheries of Sierra Leone

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Abstract
Sierra Leone would score highly on sensitivity to food fish insecurity scale, given the proportion (63.1%) of the population dependent on food fish as the main source of animal protein. Small-scale fisheries which could contribute up to 90 percent of the annual national catch are particularly well-placed for fish food security. However, there are existential threats that engender willingness in stakeholders to create a resource sustainability environment: overcapitalisation is facilitated by a *de facto* open access regime, illegal, destructive fishing takes place on sensitive grounds, and there are incursions by industrial fishing vessels into the Inshore Exclusion Zone (IEZ). With support from donor projects, Territorial Use Rights in Fisheries (TURFs) are being instituted via Marine Protected Areas (MPAs) for efficient resource allocation. We have chronicled the unique process of the progression towards TURFs via MPAs using scientific and local community knowledge within a co-management framework. The analysis revealed opportunities, challenges and lessons learned for other small-scale fisheries that seek to institute rights-based fisheries management.

Keywords: Small-Scale Fisheries, Marine Protected Areas, Territorial Use Rights in Fisheries, Co-management

1. INTRODUCTION

1.1 Description of the Small-Scale Fisheries of Sierra Leone

There is always the temptation to offer a definition of small-scale fisheries whenever one engages in discussions on the subsector. However, this is a temptation that should be resisted because, as Baio (2010) had insisted, there is no agreement on the characterisation of the term "small-scale or artisanal fisheries" as interchangeably used in Sierra Leone. The subsistence or locality arguments no-longer hold as catches are sold or even exported. Besides, such fisheries have differential locations and contexts; a singular definition accommodating all these variations is difficult to arrive at. The comparison to industrial fisheries with respect to the amount of capital, energy and size of vessel depiction may be too generic to fit specific situations. The small-scale fisheries of Sierra Leone have also been characterised in the language of exploitation. For example, the Fisheries and Aquaculture Bill (MFMR, 2016) explains that small-scale fisheries exploit the Inshore Exclusion Zone ("IEZ"), which consists of all waters seaward of the low-water line along the coast of Sierra Leone, to the line connecting the coordinates of latitude and longitude (Figure 1) – it covers a distance of 5-6 nautical miles (nm). This area is reserved for small-scale fishing vessels and recreational fishing, excluding semi-industrial and industrial fisheries operators. The suggestion is that the exclusive demarcation could also serve as another definition of small-scale fisheries in Sierra Leone with respect to an area of fishing operations. That is, all fishing units legally operating in the IEZ. Again, such a definition is limited because while the IEZ is reserved for the small-scale fisheries, that does not legally preclude them from fishing in waters beyond the IEZ. In fact, small-fishers operate in waters ranging from

coastal areas less than 3nm, to offshore areas within national jurisdiction greater than 12 nm. The multiplicity of contradictory definitions gives credence to the notion that definitions of small-scale fisheries lack harmony. Consequently, we limit our definition as done elsewhere (e.g. Baio, 2010), to the operation of the fishing units and gears (Table 1) designated as small-scale fisheries in Sierra Leone, gleaned from the 2009 frame survey (IMBO/MFMR, 2009).

Table 1. Distribution of Crafts and Gears in the Small-Scale Fisheries of Sierra Leone.

Diversity of Fishing Crafts in the Small-Scale Fisheries of Sierra Leone				
Craft Category	**Dimension (m) – L x B x D**	**Number**	**Crew Number**	**Mode of Construction/Propulsion**
Ghana Boat	21x2x1	219	> 10<30	Planked/Powered
Standard 5-10	18x2x1	705	5-10	Planked/Powered
Standard 3-5	13x1.5x1	1553	3-5	Planked/Powered/Sail / Paddle
Standard 1-3	7.9x0.85x0.62/6.5x0.45 x0.3	5673	1-3	Planked or Dug-Out/Sail/Paddle
Kru Canoe	5-6x0.6x0.08	1360	1	Dug-Out/Paddle
Total		**9,514**		

Diversity of Fishing Nets in the Small-Scale Fisheries of Sierra Leone	
Net Type	**Number**
Beach Seine	166
Ring net	1183
Bottom Driftnet	788
Surface Driftnet	3062
Bottom Set net	2555
Surface Set net	323
Cast net	689
Hand-line	2989
Long Line	1846
Others (Pots, Traps etc.)	544
Total	**14,145**

Source: IMBO/MFMR, 2009.

The small-scale fisheries of Sierra Leone exploit diverse ecosystems such as - coastal near shore, estuaries, intertidal zones, mangroves and the open sea. The exploit species such as *Sardinella species* (Herring), *Ethmalosa fimbriata* (Bonga Shad), *Decapturus rhonsus* (False Scad (Pollock)), *Chloroscombrus Chrysursus* (Atlantic Bumper (Kente)), *Pseudotolithus elongatus* (Bobo Croaker (Gwangwa)), *Galoides decadactylus* (Lesser African Threadfin (Shinenose)). As Baio and Sei (2017) indicated, these species are, in the above order, fully exploited, overexploited, underexploited, underexploited, fully exploited and fully exploited respectively. The small-scale fisheries of Sierra Leone accommodate fishers from multiple countries, especially Ghana and Senegal, in addition to local fisheries. The 2009 frame survey (IMBO/MFMR, 2009) indicates that 37 053 individual fishers land their catch at about 641 landing sites, by communities dotted along the coast within 20 km of fishing ground. Some 29 081 fishers are full-time operators, whereas 5,783 are part-time and there are 954 migrant fishers, along with 1 235 local migrant fishers. Even though women do not engage in the fishing operations involving the physical extraction of fish, they dominate in

the post-harvest; 85.5 percent (1 300) of this segment of the value chain (cf. Thorpe *et al.*, 2014) are women. There is evidence that only 4.3 percent (361) of boat owners are women (IMBO/MFMR, 2009).

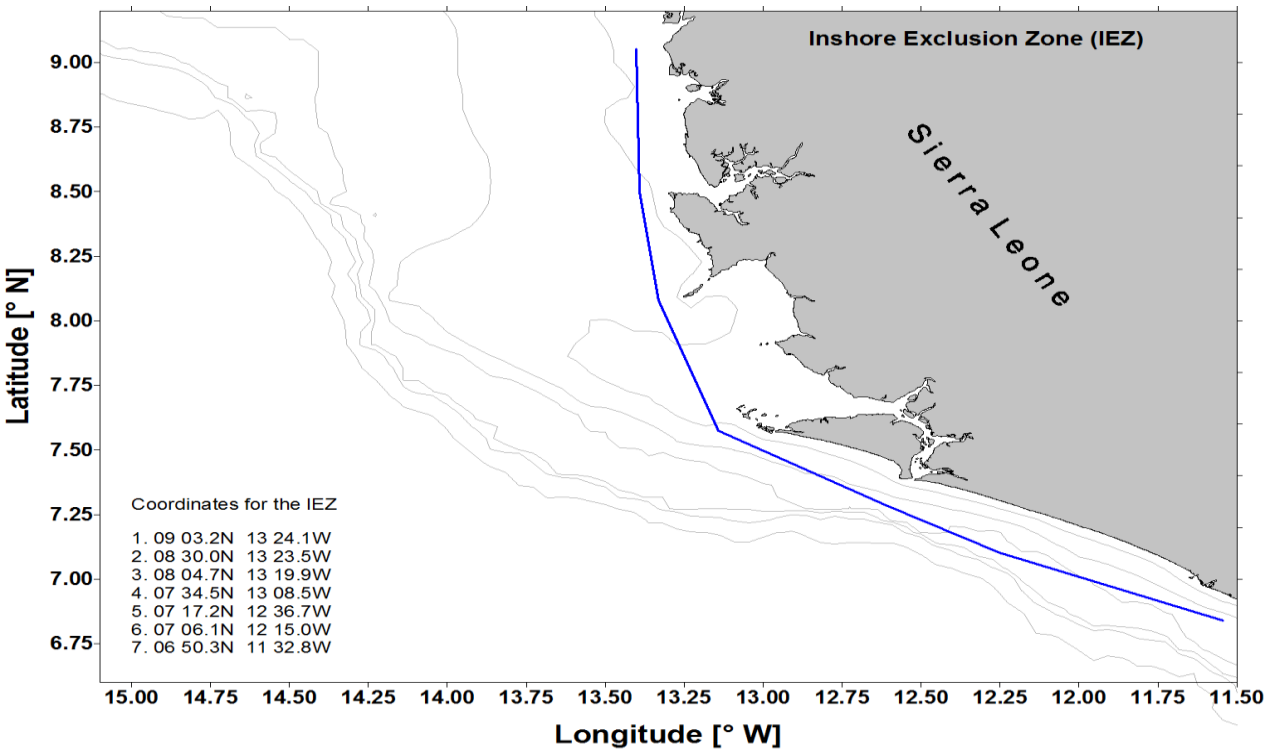

Figure 1. Inshore Exclusion Zone (IEZ) of Sierra Leone.
Source: MFMR, Fisheries and Aquaculture Bill, 2017.

Individual fishers or the fishing vessel owners may legally hold fishing rights. However, a wide range of actors (such as family members of fishers, women, communities, fisher organisations, national private organisation, processors/buys and even distant water vessels) may have access to fishing rights by teaming up with established fishers or vessel owners. Such access is influenced by ownership of fishing vessel and or fishing gears. This is the case because individual fishers do operate crafts and gears (outlined in Table 1) owned by a second party amongst the aforementioned actors. For example, the effective policing of the IEZ has seen foreign industrial fishing companies entering into joint ventures with small-scale fishers, to target species such as the Bobo Croaker (cf. Baio, 2016). In such arrangements, the companies support fishers; craft and gears are available in return for catch acquired at a reduced price. Although the averaged distance travelled to the fishing ground is between 100 m to 10 km lasting between 6-24 hrs, it is not unusual for fishers to traverse the coast in excess of 20 km on fishing trips, in order to access fishing grounds and stay for a duration in excess of one day. Light is used to attract fish as a fish aggregation mechanism.

Various conflicts occur in the small-scale fisheries of Sierra Leone. There is disagreement with management authorities, as well as the conflict between communities over resources, local communities and seasonal migrant fishers, local small-scale fisheries and national industrial fisheries, and national industrial fisheries versus illegal foreign industrial fleets. These conflicts usually involve two key externalities (e.g. Seijo et al., 1998). Firstly, technological externalities ensue when different technologies interact, and a party come out worse-off. For example, industrial fishery operators illegally fish in the IEZ

and destroy gears of small-scale fishers. This breeds conflicts between local small-scale fisheries and industrial fisheries. Secondly, crowding externalities occur when many vessels converge on a fishing ground due to overcapitalisation or competition for desired species.

The conflict resolution mechanisms that are used include legal systems/the court of justice, government management authorities, and customary systems such as tribal councils. These resolutions have been found to be moderately effective (cf. Thorpe et al., 2009; Baio, 2009) which could be addressed by effective management (e.g. Khan and Sei, 2015; Neiland et al., 2016).

Potential non-fisheries related conflicts include the following: mining, oil and natural gas exploitation; pollution from agriculture; spatial competition from tourism; coastal infrastructural development. Coastal erosion, domestic solid waste (from plastics and household material) and agriculture pollution are serious threats to the environmental sustainability of the small-scale fisheries ecosystems. Coastal erosion forces communities to leave, and agriculture pollution leads to stock mortality. The rights holders suffering from such impacts can be reached, in case of an emergency.

1.2 Economic contribution and social implications of the fishing activity

Although small-scale fisheries could account for up to 90 percent of the annual national catch (e.g. Baio, 2009), this has not been captured in the national accounts (because transactions are informal, taking place at isolated locations). Notwithstanding the failure to adequately account for the contribution of small-scale fisheries (SSFs), further indication of the subsector's contribution to economic development can be garnered from its importance in food security, income (source of both local and foreign revenue) and employment, and its direct or indirect relationship with the Sustainable Development Goals (SDGs).

As 52.9 percent of the population fall below the nationally established poverty line (UNDP, 2016) the food of fish has always been important in Sierra Leone. Some 63.1 percent of the population depends on fish for animal dietary protein (Thorpe, 2005). This renders the sector highly sensitive to the impact of external factors such as climate change (e.g. Allison et al., 2009). Food fish catch is disposed of in a number of ways, including consumption at the household level, in exchange for other goods and services, or sale - directly on the beach at the prevailing price, or at a domestic fish market. Smoked small-scale food fish catch is increasingly exported to African communities in Europe and North America; an important dimension of international fish trade worth further investigation.

As mentioned earlier, former industrial fishing operators have now been reconstituted into the processing outfit, which obtains their supply from small-scale fisheries to provide another marketing outlet. The products might then be consumed fresh (directly and with minimal processing), chilled for local/factory processing, cured, smoked, salted, or frozen for local/factory processing. Although market information is rare on catch destined for non-human consumption such as fishmeal, minimal proportions (1-25%) may be used for such purposes.

Most workers are employed in relatively low productivity jobs in agricultural self-employment (59.2%) and non-farm self-employment (31.3%) (cf. Statistics Sierra Leone et al., 2015). Small-scale fisheries as an employer of last resort (due to the safety-net role afforded by the open-access regime) are significant as a self-employer. The 2009 frame survey indicated that there are 37 053 fishers engaged in the extraction process in small-scale fisheries, estimating that fisheries employ about three percent of the total population of ten percent of the economically active population (Neiland et al., 2016). Of these portions for fisheries, industrial fisheries contribute about a tenth.

Small-scale fisheries employment of nine percent of the economically active population could be increased through the introduction of value-added facilities and other employment generating activities in the fish value chain. The majority of the full-time fishers (83.4%, 29 081) depend on fisheries for income for 90 percent of the time (IMBO/MFMR, 2009) only resorting to sand mining, mangrove woodcutting or use of a boat in travel/tourism during the lean period.

One of the challenges in the small-scale fisheries of Sierra Leone is mainstreaming the subsector into national accounts, and determining income therefore to inform planning and policy. The 17 SDGs propose desired states of human wellbeing on which a concerted global developmental effort is focused (cf. UNDP, 2015). Fisheries' role in development could be bolstered because it has the potential to connect directly or indirectly with some SDGs. For example, fish and income from fish can help eradicate extreme poverty and hunger (SDG 1& 2), while increased consumption of fish would ensure healthly lives and promote wellbeing (SDG 3). Moreover, women dominate the post-capture process, thereby providing the opportunity to promote gender equality and empower women (SDG 5). The subsector is well-positioned to promote inclusive growth (SDG 8) and ensure sustainable consumption patterns (SDG 12). The marine EEZ of Sierra Leone is 155 700 km^2, which is more than double the land area of about 71 740 km^2. Thus, the sustainable use of the aquatic zone contributes to environmental sustainability (SDG 14). Fish is a migratory and straddling resource that happens to be one of the most traded commodities. This should promote global partnerships for sustainable development (SDG 17).

2. THE EVOLUTION OF SMALL-SCALE FISHERIES MANAGEMENT IN SIERRA LEONE ONTO RIGHTS-BASED APPROACH

2.1. Management of the Small-Scale Fisheries Before the Local Government Act (2004)

The management of the small-scale fisheries of Sierra Leone has evolved from a central static management arrangement to a more participatory paradigm over the past half-century. Before the Local Government Act of 2004, the small-scale fisheries management was characterised by static management strategies or tactics. These were designed at the central government department responsible for fisheries and implemented by their protégées, with little or no involvement of other stakeholders. Extension officers levied licences when possible, but access was more or less open to anybody who could acquire vessels or nets with no monitored limit on quantity to catch, where to fish or type of gear to use. Traditional leaders and Master Fishermen did what they could to settle conflicts with limited success; conflicts between small-scale fishers and their industrial counterparts before the Ministry of Fisheries and Marine Resources (MFMR) were rarely settled to the satisfaction of the former. The bulk of the catch was sold fresh to the vendor and other buyers on the beach, after crew and boat owner catch ration had been reserved. Catch information was collected across the landing sites by extension officers that provided a time series of the development of the small-scale fisheries catch.

2.2 Management of the Small-Scale Fisheries at the Promulgation of the Local Government Act (2004)

The fisheries resource stewardship paradigm shift involved the transfer of some responsibilities of small-scale fisheries management to local councils. It can be traced to the enactment of the Local Government Act (LGA) 2004 (GoSL, 2004). The Act authoritatively instructed the devolution of certain small-scale fisheries management functions to newly forged local government councils. But, as Baio (2006) argued, this created the scenario of managing nostalgia for relinquished power and led to unprepared controlling powers and the occupancy of the perfect stranger. These things occurred because LGA 2004 followed fast implementation schedules.

Concomitantly, the unheeded government fisheries ministry was displeased with the relinquishing of power and the local fisher communities were not prepared to assume power –they lacked basic needs. The local council - that lacked knowledge in fisheries management - was put in charge of small-scale fisheries. This resulted in a mismatched setup and was a recipe for chaos, as the LGA of 2004 immediately superseded the fisheries policy of 2003. This clearly incoherent policy breakdown weighed heavily on resource management in small-scale fisheries sector. It is therefore unsurprising that catch statistics on small-scale fisheries were not collected between 2010-2016. In a rent extraction drive, the LGA 2004 focused on the licensing of canoes and collecting fees, rather than on the more traditional management functions such as the generation of management information for evidence-based decision making.

The general and persisting weakness in the small-scale fisheries is the lack of stock assessment. Baseline assessment was abandoned in 2008 due to shallow inshore areas where the vessel could not trawl. Apart from the delegation of responsibilities mentioned in the LGA, functional management of the sector persisted as it was before the Act.

2.3. Rights-Based Approach: Allocation and Characteristics

The current, more devolved, participatory arrangement involves the broad range of interested parties in the decision-making process and establishes organised stakeholder groups with built capacities to assume such responsibilities. This system was initiated by the development of Marine Protected Areas (MPAs) under the auspices of the Institutional Support for Fisheries Management Project (ISFMP) – (2007-2010).

The proposal of introducing of Territorial Use Rights in Fisheries (TURFs) with the advent of the West African Regional Fisheries Programme in Sierra Leone (WARFP-SL) in 2010 accelerated substantive actions of the declaration of MPAs expected to evolve into TURFs. The process of forging MPAs and TURFs involved eliciting stakeholder views on MPA concepts. A more conceptualised mechanism that was also implemented based on a clear strategic framework. This framework was supported through the World Bank-funded West Africa Regional Fisheries Program in Sierra Leone (WARFP-SL/MFMR, 2013) based on a process approach (e.g. Kooiman, 2005). This approach involved putting local community stakeholders at the fore to work together with fisheries managers, in combining both traditional and scientific knowledge to identify vulnerable habitats within major river systems and to declare, establish and manage MPAs that will later evolve into TURFs.

The process entailed five key aspects: (1) Development of a Conceptual and Strategic Framework (2) Declaration and Organisation of Communities (3) Delineation of Boundaries and Territories (4) Registration and Institutionalisation of Community Management Associations (CMAs) (5) Incentives for Change. The strategic framework was developed through nationwide consultations. The framework conceived a system wherein firstly the central government legitimizes the existence of MPAs and assists in their operation. Secondly, fishing communities and other stakeholders are organised and actively participate in the management process. And finally, a wide range of stakeholders (MFMR, CMAs, Private Sector, Civil Society, Navy & Police, NGOs, Local Government and Local Community Leaders) participate in MPA management with defined roles.

During the consultations, stakeholders agreed on key steps such as a preparatory phase where MPAs were identified, and extension service staff trained. A pilot project phase involved identification and organisation of fishing communities, identification of alternative livelihoods, and legalisation and enforcement of by-laws. The expansion phase fully engaged the community stakeholders holding exchange meetings and harmonizing and management activities whereas; a declaration phase delineated

MPA areas and boundaries, and MPAs declared by the Minister of Fisheries and Marine Resources as provided in the Fisheries Act.

However, as McPhail (2013) argued, the declaration of MPAs was rushed to qualify for the Millennium Challenge Cooperation (MCC) fund from the United States Government, followed by the formulation of Community Management Associations (CMAs). This may have created hiccups in the process as evidenced by continued training and organisation of stakeholders after the declaration of MPAs, with consequent delays in implementation. As part of the registration process, CMAs developed their own constitution as an input for the legal registration and institution of their organisation. This involved a name check screening by the Criminal Investigation Department of the Sierra Leone Police to issue a police clearance certificate. Registration with the Ministry of Social Welfare, Gender and Children's Affairs (MSWGCA) as an indigenous local voluntary organisation followed, after which a certificate of registration was issued. The final step was to register each CMA with the Local Governance authority. The MPA boundaries, including CMA territories in each chiefdom were delineated through a team that combined the skills of geographical information system (GIS) practitioners, fisheries scientists and community stakeholders. The local stakeholders provided knowledge on the characterisation of communities to permit access by the scientific team. This aided the use of global positioning systems (GPS) to obtain detailed coordinates of MPAs, including chiefdom boundaries around CMA localities. In order to encourage stakeholder participation in the enforcement of MPA regulations at their various localities, an incentive for change measure was employed by the MFMR'. It was supported by Government and development partners including the World Bank-funded WARFP in Sierra Leone. Under this support, fishing nets and accessories were distributed free of cost in fishing communities that voluntarily surrendered illegal fishing nets, and other large quantities sold at 50 percent reduced costs in fishing communities.

Four MPAs were established between 2012-2015 in the Scarcies River Estuary, the Sierra Leone River Estuary, Yawri Bay and the Sherbro River Estuary. 30 CMA clusters were forged in order to manage the MPAs with a distribution of 5, 6, 10 and 9 CMA clusters respectively. Five elected executives run each CMA: Chairman, Secretary-General, Public Relation Officer, Financial Secretary and Treasurer. The fisheries fall under the local or national jurisdiction management of coastal fisheries. The central government, local government and local community-based organisations are responsible for management.

The fisheries management system is a co-management operation conducted through a partnership arrangement that engages government, local communities, NGOs, research organisations and fisher organisations. The key management measures applied include area closure, area restriction, gear restriction and engine power regulation. Fishing operations are subject to licenses, but they are not taxed like in commercial businesses. Government and local communities are responsible for Community Monitoring Control and Surveillance (MCS). Clearance is required before fishing, and patrol boats and beach patrols monitor fishing activity. Enforcement measures often used to ensure compliance include economic sanctions such as fines, confiscations of gears, and peer pressure exerted by a local community. The most frequent non-compliance is perpetrated by industrial fishers who flout gear restrictions and fish in off-limit zones such as IEZ.

The fisheries management system, planned to evolve from managing MPAs to TURFs, is characterised by both legally recognised rights and traditional rights. Environmentally friendly informal and customary rights practices are maintained in the institution of rights. Legally recognised rights were initially allocated to Local councils after the LAG (2004) who were responsible for licenses. However, these rights are now

allocated to CMAs who then extend the rights to various actors or actor groups such as individual fishers, boat owners, fisher organisations etc.

Fishing access rights are restricted by community management associations (CMAs), based on the type of fishing gears used and areas fished. Industrial fishing vessels are excluded from fishing within the five to six nautical mile big Inshore Exclusion Zone (IEZ). Legally recognised rights are allocated to those who historically participated in the fisheries and to the communities represented by CMAs. The allocation was mindful of the economic viability of the fishing activity, the rights of the next generation of fishers, and sustainability of the stocks. Fishing rights are allocated for fishing with specific gears and areas; they are valid for one year, after which licenses must be renewed. Fishing rights that can be inherited are not sold but are transferable between fishers with no limit on catch. There are no limits on the number of rights that can be held. Customarily, measures used by Master Fishermen and traditional leaders who served as custodians of fishing grounds reserve the authority to resolve conflicts and levy sanctions are maintained to supplement the current right-based measures. Customary rights are allocated for all gears except monofilaments and the so-called 'channel net,' with small-sized meshes regarded as destructive. However, nowadays issues regarding allocation, duration of rights, limits on the number of rights and questions about whether rights could be inherited or transferable follow from the decision of central government and CMAs.

One important lesson is that the processes involved in the institution of rights-based management take time and should not be rushed. This is especially true when strong traditional management systems are non-existent. A full assessment of the MPAs' impact under the current management system is to be undertaken in order to inform TURF implementation. This means specific observed changes could not be reported at this stage. Nevertheless, the process of instituting TURFs has consolidated stakeholders' organisation, capacity building, and confirmed the delineated areas and approved laws. Substantive applications of the by-laws in management had just begun and are yet to be evaluated. The number of fishers and their vessels (with or without engines) is expected to surge because of the suspicion by fishers and other stakeholders that the institution of TURFs will cap capacity (Stephen Cunningham, Personal Communication, 2016). Thus, both the size composition and the quantity of fish caught are not expected to increase. Both the duration and distance covered are unchanged, but monofilament and "channel nets" are no longer in use. Fish aggregation devices are not used, and the effectiveness of lights that fishers believe to aggregate fishes is not yet established. Changes in ownership of vessels since the establishment of MPAs are yet to be fully investigated.

Government authorities and local communities are responsible for monitoring rights. Documentation and vessel clearance are used before fishing, and patrol vessels and beach patrol during fishing; catch monitoring market sales monitoring are used during the landing and post-landing respectively. As mentioned earlier, enforcement measures often used include economic measures (e.g. fines), confiscation of catch or gears, and soft measures involving peer group pressure. With the incentive for change and the policing of the IEZ by patrols, we have witnessed a decrease in the major types of non-compliance. The use of destructive illegal nets, incursion in the IEZ, and the open-access nature of the fisheries are all less common.

Conflicts existing include disagreements between fishers and management authorities, between communities for resources, between communities and migrants, and between small-scale and industrial fishing operatives. Non-fishery sources of conflicts include agriculture, tourism, coastal infrastructure projects and oil exploration. Important threats come from pollution by oil palm production company (SUCFIN) in the southern estuary and lakes, pollution from iron ore mining activities in the North, and oil

exploration in the South. The conflict resolution mechanisms are moderately effective – they include the legal system using the courts, government authorities, and customary systems such as tribal councils. Hazardous events affecting the fisheries include floods and coastal erosion, solid wastes (plastic and household materials), and agriculture pollution (pesticides, insecticides). Impacts on the rights holders (who are accessible in case of an emergency) include communities having to leave due to coastal erosion and stock mortality from agriculture pollution, reminiscent of the massive catfish mortality in the early 2000s.

3. CONTRIBUTION OF THE RIGHTS-BASED APPROACH TO ACHIEVING SUSTAINABILITY

3.1 Sustainable Use of the Resources

Although an evaluation of the rights-based system is yet to be carried out, a number of observations can be made:

- The incentive for change has ensured that legal gears are used.
- The effective protection of the IEZ means that stock rebuilding could be achieved, due to the protection of the inshore from industrial vessels.
- The vessels registration exercise, as part of the process of developing rights-based fisheries that demand documentation and vessel clearance, means that the fisheries are no longer open. With the protection of the IEZ, this measure should contribute to sustainable use of the resources.
- Empowerment of resource users has enabled the monitoring of remote landing sites where the peer group is applied to ensure sustainable management. For example, the landing of juvenile fish is not allowed at Tombo landing sites.

3.2 Economic Viability of the Fishery

As noted elsewhere (Baio, 2016), the unit cost of harvest decreases with an increase in stock size, which has a cost-saving effect. Large stock size can be maintained by effective effort and catch control in a healthy environment, which suggests limited entry from rights-based fisheries management. Reforms in the fisheries are therefore geared towards effort and catch controls to maintain a healthy stock level. The process of vessel registration with a unique number (including documentation of the gears and owners) is geared towards the monitoring of capped capacity going forward. Adjusting effort to the value of catch at the margins would sustain the economic viability of the small-scale fisheries of Sierra Leone. However, as argued earlier, the economic viability is contingent on the performance of the national economy.

3.3 Social equality

Notwithstanding the fisheries resource sustainability and economic viability threats exhibited by the pre-rights-based management, small-scale fisheries as an employer of last resort have always served as a social safety net catering for the poor and vulnerable. So, as Baio (2010) maintained, the challenge managers should face is providing livelihood security for resource-dependent communities whilst also sustaining resource health. As observed earlier in sub-section 1.2, fisheries connect with many SDGs that enhance social equity; for example, fish and income from fish can help eradicate extreme poverty and hunger (SDGs 1&2), while increased consumption of fish would ensure health lives and promote wellbeing (SDG 3). Moreover, women dominate the post-capture process, thereby providing the opportunity to promote gender equality and empower women (SDG 5). The subsector is well-positioned to promote inclusive growth (SDG 8) and ensure sustainable consumption patterns (SDG 12). The management system considers the stock sustainability and economic viability of the fishing activity, but also the needs of the poor and vulnerable, including women, and the rights of the next generation of fishers.

4. MAIN CHALLENGES AND WAY FORWARD

4.1 Challenges for the Fishery

With more than half of the population living below the national poverty threshold, fisheries are a vital safety net. This has been a major challenge to the introduction of rights-based fisheries - which will involve the exclusion of some resource users - and options for fishers' engagement in non-fisheries livelihoods are underdeveloped. The issue of sustaining effective mechanisms to detect and curb threats to environmental sustainability (such as the use of destructive fishing methods like explosives, monofilament netting materials or the so-called 'channel fishing') is an important challenge. The absence of micro-credit schemes for CMAs facilitates a speedy involvement of the community to govern fishing tenure rights effectively.

The human capacity needs to manage fisheries resources following right-based paradigm is quite significant, and transaction costs are high, requiring direct financial support. A serious issue with fisheries sector reform is that once actions have been taken to conserve fish stocks, it may be years before the full benefits are felt and the results are evident in terms of increased catches. This makes it harder for governments to institute unpopular reforms, even though they may be in the best interests of the nation, fishing communities and individuals. Fishermen and their families are used to receiving an instant 'same-day return' on their catch; they are less willing and less able to wait for gradual improvements than stakeholders in other sectors. Traditional fishing practices are quite literally a way of life for many Sierra Leoneans, having been handed down from one generation to the next. These traditions are closely interlinked with cultural practices, and power and influence reside in specific families with hereditary authority. In order to change attitudes and gain acceptance of new approaches to fishing, there is a need for major awareness-building and communications strategy targeting. Particular focus should be on the traditional leaders of the fishing communities. Without such a plan, it will be difficult to break down the internal resistance and inertia towards change.

4.2. Improving Fishery Sustainability in the Future

As the MPAs evolve in TURFs, a number of actions should be taken to improve the sustainability of the fisheries:

- More support is required to develop effective mechanisms to detect and curb threats to environmental sustainability (such as the use of destructive fishing methods like explosives, monofilament netting materials or the so-called 'channel fishing').
- Community Monitoring Control and Surveilance (MCS) programmes - designed with the full participation of resource users - will be effective because they empower stakeholders to defend their own interests and livelihoods.
- Curbing the illegal, unregulated and unreported (IUU) fishing in the IEZ represents an important step towards reducing poverty in the small-scale fisheries.
- Catch and effort data is fundamental in fisheries management and the lack of which during the institution of MPAs and TURFs was the single most challenge to the success of the nascent system.
- Co-management must be sustained because it establishes a clear line of communication between interested parties, so that the interaction process is both complementary and supplementary with respect to mapping out the desired state of affairs, formulating the rules of the game in pursuing such goals, and implementing management/governance strategies or tactics.
- MPA management demands high cooperation and collaboration/information-sharing between the interest groups. The CMAs should be empowered to participate in community surveillance and report fishing trawler incursions into the IEZ to the MFMR in order to scale up surveillance in those localities.

- Promoting and sustaining TURFs going forward will require the provision of micro-credit schemes that will pave the way for fishers and other community stakeholders to engage in alternative livelihood activities. This would enable them to effectively govern and enforce their tenure of fisheries in their communities.
- A management plan that take account of the current biological, social and economic status of the fisheries system must be developed because rights-based fisheries management introduces efficiency by specifying the quantity, type and size of fish to catch and when, where and how to catch them based on a predetermined management plan.
- In developing existing strategies and plans, it will be prudent to ensure that measures are in place to offer encouragement and practical assistance to fishers to convert to more sustainable practices, while at the same time introducing effective enforcement. The will to enforce management measures must be unwavering because, while the broad principles of tenure rights and rights-based fisheries are accepted, the majority of the fishing community simply do not believe that the new regulations will be enforced, because they have witnessed the failure of so many previous efforts to introduce firm management.
- Resource users have shown a keen interest in co-management ventures evident – this is evident from the successful process of establishing community management associations for the management of MPAs. Sustained human and material capacity development of stakeholders, including professional organisations, would put them in good stead for continued sound resource stewardship.
- The establishment of platforms for stronger participation and information sharing in the transition from resource users to stewards would enhance future sustainability.
- Sustained public reinvestment in fisheries would preserve resource sustainability gains.

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