Chapter 29
The Co-governance of Fisheries in Post-conflict Sierra Leone: Is the Transition for Better or for Worse?

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Abstract In this contribution, we examine whether current governance mechanisms for sustaining the fisheries resources are better now than they were prior to the civil conflict of the 1990s in Sierra Leone, and if they are not, what policy instruments could contribute to improving governance. The establishment of co-managed systems during the post-conflict period as a conduit for introducing territorial user rights and marine protected areas constitutes an important step towards stewardship and stakeholder involvement in decision-making. However, the process has been criticized on the basis that it was rushed, thereby jeopardizing program implementation at the local level. Using the governability concept and fish chain as analytical tools, an assessment of the transition period from top down to co-management is undertaken to understand the overall quality of governance. There is evidence that the reforms are essential in promoting participatory governance and attaining multiple co-benefits in conservation and development. Yet, the institutional capacity at the local level is inadequate for effective compliance and monitoring. As a result, there is a need to strengthen the governing capacity and build linkages between fisheries and other economic planning activities where capacity is concentrated. Such efforts and transitional changes are relevant for achieving collective action especially in fragile states that are experiencing the increasing impacts of global environmental and economic changes.

Keywords Fisheries governance • Co-management • Governability • Seafood • Fish chains • TURFs • MPAs • Sierra Leone

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Introduction

Fisheries contribute directly and indirectly to national economic development in Sierra Leone. This small West African country is found within the Gulf of Guinea in the Atlantic Ocean, bordering Liberia and Guinea (Fig. 29.1). There are two major types of fisheries, the industrial large-scale and the artisanal small-scale fisheries. The industrial fisheries sector is export oriented, and thus contributes to foreign exchange earnings and gross domestic product. Fisheries contributed about 10 % of gross domestic production in 2008 (MFMR 2008), one of the highest in the sub region (Katikiro and Macusi 2012). The artisanal small-scale fisheries on the other hand contributes directly to local seafood consumption, household income and savings, regional trade, and has spill-over effects in other sectors and to rural development. Seafood supplies 75 % of total animal protein and greatly contributes to healthy living and well-being (FAO 2014).

However in recent years the distinction between large-scale and small-scale is becoming unclear as some segments of small-scale fisheries too have become export oriented and contribute directly to the industrial sector. Fisheries also provide employment and livelihoods especially within coastal communities. The total number of people employed in the fishery sector is close to half a million (MFMR 2008). While men are usually engaged in the harvesting sector as fishers, women play a greater role in the post-harvest sectors as financiers of fishing operations as well as retailers (Demby and Leigh 2012; Thorpe et al. 2013).

As noted earlier, fisheries provide invaluable nutrition to the well-being of Sierra Leoneans. Since the outbreak of the Ebola Virus Disease in May 2014 (WHO Ebola Response Team 2014), the importance of fish became increasingly important as other protein sources such as wild game were identified as potential sources of

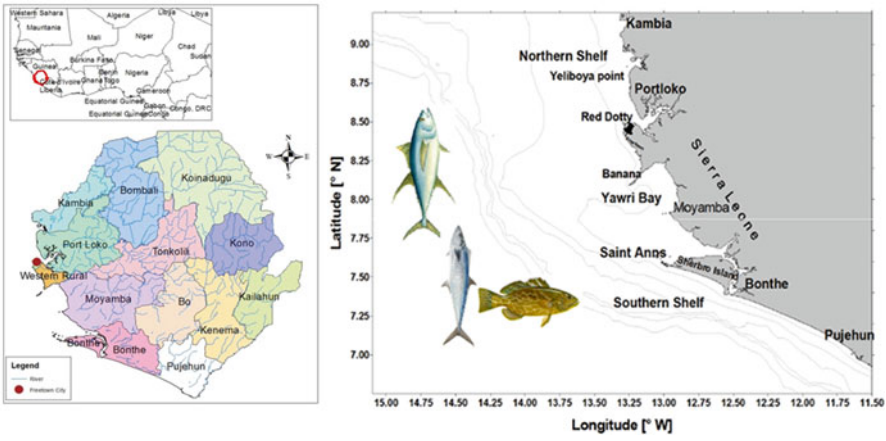

Fig. 29.1 A map of Sierra Leone in West Africa showing coastal districts (L) and small-scale fisheries fishing grounds (R)

contagion. Currently in the absence of preventive cure or vaccines, seafood serves as a major source of nutrients particularly for the sick, as it assists in rebuilding the immune systems, and also bolstering resistance for the healthy (Khan and Sesay 2015).

Moreover, the fisheries sector has generated increasing revenue in recent times. Stock assessment shows that the fisheries biomass is around 300,000 MT (Mehl et al. 2007; Turay et al. 2008) and worth values close to $735 million USD with projected annual returns of $60 million USD (EIF 2013). However, the sustainability of the fisheries has been questioned, with reports and evidence of overfishing and non-compliance to regulations mainly illegal unregulated and unreported fishing activities (Vakily et al. 2012).

From early 1990 to 2002, Sierra Leone experienced civil instability in the form of political coups and armed conflicts that stymied fisheries development (Thorpe et al. 2009). Amongst the many challenges during this time were the use of illegal and destructive fishing gears including dynamite fishing, mosquito nets, and 'channel' nets, with mesh sizes far below the minimum requirement. Fishers took advantage of a monitoring and surveillance vacuum to engage in unsustainable practices. The civil conflict also exacerbated social and ecological problems and made the tasks of the local village development committees and other initiatives such as the artisanal fisheries community development programs fruitless (Thorpe et al. 2009). These local institutions (both formal and informal) were created to integrate rural planning with fisheries development objectives (Khan 1998).

Prior to the conflict in the 1990s, fisheries management was top down and sectoral (Sei et al. 2009a; Kamara 2012). It focused mostly on industrial production with less consideration for the small-scale sectors including coastal fisheries, inland fisheries, and aquaculture (Ndomahina 2002; Seisay and Jalloh 2006). Emphasis was on export earnings through bilateral fisheries agreements and joint ventures with parastatals (i.e., public-private partnership) that targeted mostly demersal and shellfisheries and recently small pelagics for fishmeal (Khan et al. 2006).

New institutional arrangements with Local Councilors and fisher organizations after the civil conflict were meant to provide opportunities for stewardship measures as well to mainstream gender roles as women are important players in seafood marketing (Sheriff et al. 2009; Thorpe et al. 2013). The reforms focused on strengthening local management by involving communities and fisher organizations in co-management (ISFM 2009; Sheriff et al. 2009). There was also a shift towards decentralization with licensing of fishing canoes devolved to Local Councilors pursuant to the implementation of the 2004 Local Government Act. Since 2011, the government has implemented the *New Deal for Engagement in Fragile States*, as part of the Busan Partnership Agreement to ensure aid effectiveness. These measures have boosted the local economy in the last few years with great results as reflected by the sharp improvement in the Human Development Index and local entrepreneurship development. There is considerable potential for foreign trade through the development of integrated policies for regional economic integration and a green growth strategy (AfDB 2013; Kayonde et al. 2013).

The key research question is whether the governance mechanisms in place for sustaining the resources after the civil war (about a decade ago) are more effective

than those in place prior to the civil conflict of the 1990s? And if the governance mechanisms are less effective, what policy instruments and institutional arrangements could contribute to better governance? In answering this question, we employ the governability concept to assess the overall capacity and quality of governance during these transitions. We also conceptualize fisheries governance as a "wicked" problem, drawing upon Rittel and Webber's (1973) seminal article on the dilemmas of social planning. This assertion that fisheries governance is a wicked problem stems from the fact that fisheries are complex and dynamic ecosystems that are influenced by both human and natural induced factors that can hardly be managed (Chuenpagdee 2011a). As seafood trade becomes global in scope, external drivers such as climate change and increasing consumer demand exacerbate local fisheries benefits as witnessed in many parts of the world (Kurien 2005; Khan 2012). Moreover, the diversity of stakeholder interests along the fish chain makes decision-making difficult, mostly due to conflicting goals and multiple values and time preferences (Song et al. 2013). The overall aim of this assessment is to provide leverage points that could foster multiple objectives associated with the fisheries reforms.

We first provide a rationale for a governability approach and how useful it could be in understanding governance and institutional capacity for social change. Next, using the fish chain as an analytical framework, we assess changes and drivers within the fishery that could limit or promote overall governance. Finally, we discuss how this approach could improve our understanding of achieving better outcomes in the fishery, and conclude by highlighting the implications for policy development in sustaining the benefits to the small-scale sector.

Why a Governance and Governability Approach in Sierra Leone Fisheries?

Traditionally, fisheries have been managed using technical tools such as input and output control measures that restrict fishing capacity and harvest rates with the goal of attaining maximum sustainable yield (Larkin 1977). These measures have mostly failed for several identified reasons: (i) high transaction costs of monitoring and surveillance, (ii) non-compliance and lack of participation by non-state stakeholders, and (iii) other humanly-induced problems such as disempowerment and corruption (Jentoft et al. 1998; Khan and Neis 2010). As fisheries production and trade becomes global in scope (Pauly et al. 2005; Smith et al. 2010), the management role of the state becomes weak as most production activities go beyond national jurisdictional mandates and rely instead on international norms and actors (Jacquet and Pauly 2008). These developments have prompted a more critical look into the governing capacity of fisheries managers and whether stewardship concerns go beyond what management regimes can handle (Kooiman et al. 2005).

In addition, it is well acknowledged that fisheries cannot be managed using technical tools only (Degnbol et al. 2006), as the problems are "wicked" rather than "tame" (Jentoft and Chuenpagdee 2009). Diverse stakeholder demands, multiple objectives, social dilemmas, and broader cross-sectoral linkages are concerns

contributing to governing challenges. These concerns require philosophical debates on equity, legitimacy, values and overall governance (Bundy et al. 2008; Wilhere 2008; Bavinck et al. 2013; Song et al. 2013). A framework that diagnoses and exemplifies wicked attributes in fisheries is the first step in understanding the limits to governance as well as in identifying where interventions can be leveraged to improve the overall governing capacity. This is especially crucial for regions that belong to the bottom billion (Collier 2007), including fragile states and those that have undergone civil instability with limited resources for effective governance (Le Billon 2001; Thorpe et al. 2009; Wai 2012). Governability, and a holistic fish chain perspective, is essential in these circumstances (Kooiman et al. 2005; Bavinck et al. 2013). The approach involves both state and non-state actors in formulating principles and rules that guide governors and non-governors alike, in all stages of fisheries production (Kooiman 2003; Khan and Chuenpagdee 2014).

Theoretically, we rely on the interactive governance approach, which is a three-system model. It consists of the natural bio-geophysical systems, social systems-to-be-governed, governing systems, and their governing interactions. These systems are structurally diverse, complex, dynamic in nature, and with varying scales. The system attributes or properties could constrain the effective governing of fisheries, hence the concept of governability (Kooiman and Chuenpagdee 2005). Governability is the overall quality and capacity for governance, both within the systems-to-be-governed and the governing system and the ability to achieve multiple sustainability goals. These goals include healthy ecosystems, food security, sustainable livelihoods, poverty alleviation, inclusive decision-making, and gender mainstreaming (Kooiman et al. 2005).

The concept of governability can be traced to two major milestones in organizational science and system ecology. The first pertains to the shortfalls and cognitive limitations at the administrative and institutional level in decision making, often referred to as 'bounded rationality' (Simon 1947). The second relates to uncertainties and risk associated with incomplete knowledge about system properties and appropriate feedback responses for adaptive management and precautionary approaches (Walters 1986; FAO 1995). Assessing governability then entails an effort to acquire a deeper understanding of system properties along the fish chain and their interactions that may include risks and externalities. We do so by reviewing and analyzing published materials in primary and secondary literature as well as technical and project reports on fisheries and related development problems. Some necessary field data were collected on current cost and earnings across the seafood value chain. The time scale for the analysis is a decade before the civil conflict (in the 1980s), during the civil conflict (1990 to 2002), and the decade afterwards (from 2002 to 2012). The analyses and assessments proceed from the natural systems, systems-to be-governed, governing system, and governing interactions. We use a four-stage process to assess governability across the fish chain as proposed by Chuenpagdee and Jentoft (2013). This includes an assessment of: (i) degree of wickedness; (ii) prevalence of system properties; (iii) goodness of fit of elements; and (iv) quality of interactions. This approach is informed by a series of questions that shed light on the measures and indicators relevant in assessing governability across the fish chain (Table 29.1).

Table 29.1 Sample questions for assessing governability in the context of Sierra Leonean fisheries

Thematic sample questions	Metrics and indicators on system properties
How diverse, complex and dynamic are the fish stocks and their marine ecosystems?	Biophysical characteristics and geographic location for fishery resources, coastal landscape and features, biomass estimates and stock assessment highlights, recruitment & growth rates, total allowable catch, trophodynamics, critical habitats and hotspots, protected areas, fish behavior, and climatic variability on upwelling and fish abundance, large marine ecosystems, etc.
What are the threats and level of vulnerability to the harvesting and processing sectors and local livelihoods?	Costs and earnings of fishing activities, rate of return on investment, discards and post-harvest loss, illegal unregulated and unreported fishing, foreign vs local fleets, seafood imports and exports, seafood trade and globalization, etc.
What are the various strategies adopted by stakeholders post-civil conflict to improve overall governance?	Information sharing, co-management initiatives, livelihood dependency and seafood consumption, changing income by boat types or target species, community wellbeing, youth and women involvement, empowerment, partnership arrangements, etc.
Does jurisdictional scale match ecological boundaries, socioeconomic activities, and governing institutions?	Integrated management strategies for small-scale and large-scale sectors, spatial scale of management in context of LME and global economic changes, policy networks, illegal unregulated and unreported fishing, gear conflicts, initiatives for monitoring and surveillance, allocation and decision-making, regulatory frameworks, etc.

Insights on System Properties for Small-Scale Fisheries Governance

Knowing that fisheries systems are diverse, complex, dynamic, and span multiple scales; understanding the extent to which these properties are governable merits attention especially in the context of system properties, fit of elements, degree of wickedness, and level of interaction. As the quality and capacity for governance can be constrained in any of the systems, we start by taking stock of and learning about the various system properties and implications for achieving sustainable outcomes.

Natural Systems

Fisheries are part of several ecosystems ranging from marine, coastal and estuarine, and include unique attributes and characteristics across multiple scales. Although emphasis by managers is mostly on marine ecosystems, there is high connectivity within coastal and terrestrial ecosystems through estuaries and wetlands. The Sierra Leonean coastline is about 560 km; with a complex shoreline of low cliffs, rocky headlands, in addition to sandy beaches, mangroves and mud flats that enhance fisheries productivity (Scheffers and Browne 2008). The total shelf area is about 25,000 km^2 and provides habitats for species as well as enriches primary

productivity for marine food webs (Ssentongo and Ansa-Emmim 1986). This is due to nutrient flow from three major estuaries (Scarcies, Sherbro and Sierra Leone rivers) and the rich mangrove swamps that support feeding and nursery habitats as well as small-scale fisheries fishing grounds as shown in Fig. 29.1.

Mangroves represent important estuarine ecosystems due to their role in coastal buffering and flood control, nutrient recycling and critical habitats for several marine organisms. Mangroves cover about 156,000 ha providing rich biodiversity benefits as well as other provisioning ecosystem services (Johnson and Johnson 2012). For these reasons, mangroves have been the focus of protected areas research and governance assessment from both ecological and social perspectives (Jentoft et al. 2007; EJF 2011). In Sierra Leone, these coastal resources are highly influenced by the Gulf of Guinea Large Marine Ecosystem (LME) and the interaction between the Canary and Benguela Currents. These current systems create upwelling of cold nutrient rich waters with high biological productivity. This results in a rich distribution of shellfishery resources in the South, close to the Sherbro Islands and off the coast of Bonthe and Pujehun towards Liberia (Showers 2012). In addition, there are abundant inshore fish resources occurring in the major river estuaries of Sierra Leone, including catfish and Tilapia, as well as marine megafauna including sea turtles and endangered manatees (Sei et al. 2009b).

The fisheries resources are very diverse and include mostly small pelagics for local consumption (Herring, Bonga and Sardines), large pelagics for sale to augment the household economy (mackerel, tuna, etc.), shellfisheries targeting export markets (shrimp, oysters, etc.), demersal finfish for both consumption and regional trade (snappers, sea breams, catfish, etc.), and cephalopods mostly for exports (squids, octopus, etc.). The total fisheries biomass has been estimated to be in the range of 188,000–450,000 MT (FAO 2001), with reports of overexploitation of certain demersal fish stocks (Heymans and Vakily 2004; Christensen et al. 2004). The majority of resources are still considered healthy according to recent fishery abundance surveys and stock assessments, paramount being the clupeids and small pelagics (Turay et al. 2008; Mawundu 2011).

Systems-to-Be-Governed

The social systems-to-be-governed span both the human and ecological dimensions of the fish chain, as fisheries include important marine biodiversity and provide ecosystem services such as food and livelihoods to people (Kooiman et al. 2005; FAO 2014). In addition, fisheries (especially small-scale fisheries) also provide tangible and intangible cultural ecosystem services that have aesthetic and spiritual benefits (Hall 2013). Although there is a strong government push to increase fish landings through industrial fisheries development, it is actually the small-scale artisanal fisheries and inland fisheries that play an equally significant role in regional and national economic development. About 80 % of fisheries production is marine-based, with aquaculture and inland fisheries being underutilized, despite the

potential for tilapia and catfish production. The output of inland fisheries has been estimated to be around 20, 000 MT, with 75 % coming from riparian systems and 25 % from lakes (Sankoh and Jalloh 2011). Due to the multi-faceted contribution of fisheries to sustainable development, small-scale fisheries contribute tremendously to the Millennium Development Goals (Bene and Heck 2005). These entail fish protein and livelihood security, gender empowerment, maternal health, environmental sustainability, and global partnerships.

Since the mid-1990s, the artisanal small-scale fishery has surpassed the industry sector in terms of volume and value. By the early 2000s, it has grown exponentially and continues to do so. This small-scale fisheries sector focuses on small pelagics especially clupeids such as Herring (*Sardinella* spp.) and Bonga (*Ethmalosa fimbriata),* large pelagics such as Barracudas (*Sphyraena* spp.), in addition to demersals such as Sea breams (*dentex* spp.), Snappers (*Lutjanusspp* spp.), Catfish (*Ariidae latiscutatus),* Grunts (*Galeiodes decadactylus)* and Croakers including popular 'lady long neck' *(Pseudotolithus* spp.*)*. Total production of small-scale fisheries in 2006 was about 120,000 MT, with the artisanal small-scale contributing about 75 % of the catch (Fig. 29.2).

Unlike the commercial sector that includes trawlers and seiners, small-scale fisheries consists of dug-out canoes and small vessels with small outboard engines. Most of the canoes, including the Kru canoe, are manned by single fishers or several fishers employing paddles and sails. Bigger canoes include the standards 3–5 and

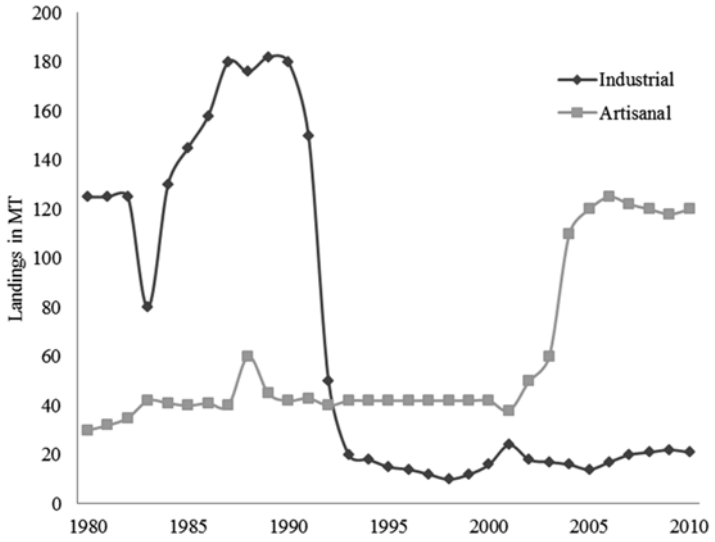

Fig. 29.2 Trends in national marine fisheries production from 1980 to 2010 (Sources: MFMR & FAO) Similarly, the annual value of small-scale fisheries has been about $1 million USD annually from 2006 to 2009, almost four times higher than the industrial sector (EIF 2013). Within recent years, there has been a sharp and progressive increase, from about $2.5 million in 2010 to about $6.5 USD in 2013 according to official statistics

5–7 Persons manned crew, and the Ghana canoe with teams of 5–10 Persons with outboard engines of 15–40 hp (Khan 1998; Thorpe et al. 2009; Mawundu 2011). The Ghana type canoe is the most expensive and used mainly for ring netting, introduced by Fante fishermen from Ghana in the 1950s (hence its name). They are fast and light weight and popular amongst migrant fishermen in the wider sub-region (Binet et al. 2012).

Artisanal small-scale fisheries gears are diverse and include drift and set nets, cast nets, hooks and lines. Fishing operations can be day trips or overnight depending on the presence of ice on board and seasonality (the Dry Season is preferable to the Rainy Season). The catches are landed at wharves, which are often the first entry point to fish chain transactions. Over 600 landing sites are found along the coast, presenting opportunities and challenges for monitoring and surveillance as well as obtaining accurate catch statistics (Mawundu 2011). The small-scale fisheries sector has changed considerably with an increasing number of fishers – both part time and full time (Thorpe et al. 2009). Despite this increase, fishers and their coastal communities are under threat, living in the poorest communities with low standards of life, and experiencing frequent conflicts over resource use (Thorpe et al. 2009).

Most of the fish is sold fresh, or frozen, and sometimes cured. Smoking and drying is the most common method of curing. This relies on the use of traditional 'Chokor' or improved 'Banda' ovens supported through overseas development projects (Khan 1998). Green et al. (2012) have emphasized on the high reliance on local seafood production for food security. There is greater access and taste towards dried fish, next to fresh fish, frozen fish and then salted fish. Amongst the Sierra Leonean coastal populations that eat fish regularly, 95 % do on a daily basis, whilst 7 % do so weekly and 5 % on a bi-weekly basis (Green et al. 2012). While there are limited marketing and value addition initiatives for local seafood products, exploring opportunities towards processing and curing for longer shelf life have been proposed to improve revenue and ameliorate food security concerns. Currently, there are high levels of 'trash fish' and post-harvest spoilage that could be better utilized to meet food security needs and various livelihood activities across the seafood value chain.

Governing Systems

The 1963 Fisheries Act is the major legal and regulatory tool that outlines institutional mandates and other decision-making approaches in Sierra Leone. Fisheries governance has mostly been hierarchical with the use of top-down management tools that focus on the biological and economic potential of the fishery. The Act explicitly states the paramount role of the state in resource governance. This role is entrusted to the Ministry of Fisheries and Marine Resources (MFMR). Management measures include the use of input and output control mechanisms (licenses and entry limitations, gear use, catch limits, total allowable catches, etc.). Very little consideration has been given to the socio-cultural and political aspects of governance, including involvement of non-state actors in decision making and placing

emphasis on food security and gender issues. Such a top down approach has led to high transaction costs of monitoring as non-compliance and unsustainable fishing practices are on the increase as well as stakeholder conflicts. As a result, most of the objectives of the fisheries (ecological stewardship, economic viability, social legitimacy, etc.) are not being met.

Awareness of these growing challenges have led the government to initiated many legal and policy amendments so as to increase user participation in management, improve compliance and stewardship, and share power with local authorities. These changes started with the reform of the 1963 Fisheries Act, an enactment of the 1988 Fisheries Management and Development Act, the 1994 Fisheries Decree, the 2003 National Fisheries Policy reforms, and recently the 2011 Fisheries and Aquaculture Bill under ratification (Thorpe et al. 2009; Sheriff et al. 2009; Baio 2010; EIF 2013). In addition, the Sierra Leone Fisheries Five Year Plan and Fisheries Assessment Framework provides long term vision and governance considerations in meeting the expectations of stakeholders (Baio and Neiland 2014). These changes were mostly spurred by a growing need to integrate fisheries into broader development planning and trade policies, to garner public participation and secure the rights and benefits of locals especially with the 2004 Local Government Act (Sheriff et al. 2009; EIF 2013). This transitional governance also signifies a higher level of awareness for stronger institutions that are legitimate and resonate with public interests (Baio 2010).

Underscoring the role of fisheries for national development, the Government of Sierra Leone in partnership with international development agencies have adopted co-management initiatives through Marine Protected Areas (MPA) and promoted a Joint Maritime Committee taskforce. The aim is to promote conservation and development as part of Territorial User Rights in Fisheries (TURFs) and to support local monitoring and surveillance initiatives. Key stakeholders supporting this endeavor include international players such as the World Bank, the Global Environment Facility, New Partnership for Africa's Development, and several other NGOs including Wetlands International and the Environmental Justice Foundation. The idea is to introduce fishing rights through co-managed MPAs that will gradually evolve into TURFs (EJF 2011). This approach, though legitimate in principle, can be characterized as an attempt to frame social policies as tamed problems and to provide instant panaceas (Ostrom et al. 2007). Such initiatives are likely to require time as excluding or restricting fishers will impact foregone revenue and may precipitate labor market and rural economy challenges.

The acceptance of such an initiative for establishing community management associations serves as an impetus for increased participation and stewardship, notwithstanding the implementation challenges that will arise. There are additional programs and projects to strengthen local institutions through village development committees and other community organizations in recognition of the livelihood and food security benefits likely to result from well-functioning local institutions. Lately for instance, illegal unregulated and unreported fishing concerns have gained widespread attention amongst local fishing communities, with approval being sought for local participation in fisheries surveillance. In the past, commercial shrimp trawlers

transgressed into these zones without any penalties resulting to habitat destruction and gear conflicts. Previous national surveillance programs failed to tackle these illegal unregulated and unreported fishing challenges, as witnessed by the demise of the Maritime Protection Services of Sierra Leone in the mid-1990s (Kamara 2012). In fact, this has spurred the recent emergence of the joint management committees for industrial monitoring and surveillance. This could be a challenging area due to the cost of policing the entire 200 nautical mile EEZ and beyond, and the difficulties of having institutional structures that are legitimate and effective.

Fisheries access and partnership agreements still remain a wicked problem and a difficult one to tame, as key stakeholders such as tuna operators are yet to agree on port states measures and other surveillance and distributional benefits (GoSL 2010; EIF 2013). Moreover, institutional capacity building and poor technical resources to improve management effectiveness alongside with local councilors pose administrative challenges for the small-scale fisheries sector.

Governing Interactions

Fisheries are part of larger systems of food production and are influenced by upstream and downstream linkages in rich estuaries as well as oceanographic processes offshore. Hence, concepts such as integrated coastal zone management (ICZM) and large marine ecosystem (LME) governance seem promising as they provide a set of tools that create synergy across sectors, stakeholders, and system boundaries at multiple scales (Khan and Mikkola 2002). Moreover, integrating fish chains and seafood production into broader sustainable development goals (e.g. food security, environmental health, livelihood, etc.) are necessary especially in the face of climate uncertainty. It has been suggested that aligning the governing processes for coastal zone planning, rural development, food production, and biodiversity conservation in a comprehensive framework will reduce implementation costs and meet multiple objectives (Turay 1996; Song and Khan 2011).

Ecosystem-based consideration and community stewardship has long since been practiced in many coastal regions in Sierra Leone. For instance, the Northern Fishing Community of Yeliboya in Kambia District, under a community stewardship arrangement, has practiced closed seasons in the creeks and estuaries during annual spawning seasons (December to April). Fishers have observed that during this time, matured pelagic and demersal fish stocks including Bonga and Croakers migrate in these creeks for spawning. The juveniles will remain in the creeks until May and then return offshore for recruitment (June to July). Building on this existing traditional knowledge to interface with fisheries co-management initiatives is a key element of participatory governance that will benefit the implementation of TURFs.

Designing the right institutional structures and inclusive policy processes to promote a community of practice and a knowledge mobilization platform for implementing these changes is critical. So far attempts at cross-scale linkages and integrated management have not been part of a broader governing framework for transformative changes in the Sierra Leonean context. Moreover, interactions amongst governors and

those governed are very scanty and often lead to contestations as trust and credibility are lacking. Given such a situation, the quality of governing interactions amongst these multiple institutions and stakeholders, and the choice of policy instruments and leadership are fundamental for sustaining fisheries benefits in the long-term.

How Governable Are Small-Scale Fisheries? A Pre and Post-conflict Assessment

Governability assessment is a useful tool for understanding small-scale fisheries as a system, as a sector, and how it interacts with other institutional mandates at multiple scales (Bavinck et al. 2013). Using the fish chain as an analytical framework, we assess the limits to the quality of governance in the various production chains before and after the civil conflict. The three stages of the fish chain are embedded in both the natural systems and the systems-to-be-governed, with the governing system consisting of policy instruments and power relations amongst the stakeholders. The fish chain for most artisanal seafood products entails three to four major stakeholder groups including managers who control access and user rights, fishers who harvest, processors and traders who market, and consumers at the household level. Depending on fishing operations, the fish chain can be quite short with fishers and direct buyers, or long involving truckers, processors, 'middlemen', and retailers or 'fish mammies' who often finance marketing operations (Fig. 29.3).

The stakeholders interact within and across the various production stages and are guided by shared values, common images, and principles that influence codes of ethics and behavior (Kooiman et al. 2005; Song et al. 2013)

The governance transition from top-down to co-governance reforms signals a common vision and shift in thinking of the role of small-scale fisheries in local communities and in regional economic development. Several challenges and opportunities can be identified in the pre- and post-conflict periods for governance and governability. Understanding these challenges through the four step process as outlined earlier, i.e., the degree of wickedness, the prevalence of system properties, goodness of fit, and the presence (or absence) of the quality of interactions, allows a broader analysis of governing capacity and its limits that consequently determine the success of the reforms. In what follows, we examine the opportunities and challenges in both periods and conclude with some thoughts on issues that require attention.

Pre-conflict Periods

The complexity and dynamics of marine ecosystems and coastal interactions present a unique challenge for adequately managing fisheries systems in space and time. Thus, the various policy instruments (shown in Fig. 29.3) in the three stages are essential in fostering stewardship and compliance as well as economic viability and

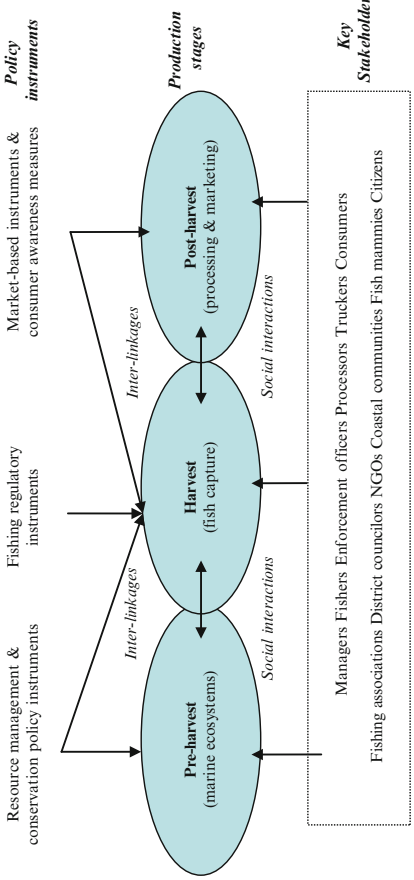

Fig. 29.3 The fish chain showing the various production stages as well as governing mechanisms and stakeholder groups (Source: Khan and Chuenpagdee 2014 as adapted from Bavinck et al. 2005)

social legitimacy. Within the pre-harvest stage, it has been acknowledged that fish stocks (especially pelagics) are highly susceptible to climatic events such as upwelling and El Nino, which affect abundance and spatial distribution patterns (Bakun 1978; Hardman-Mountford and McGlade 2003). These coastal ecosystems are highly complex and influenced by strong tides and monsoons resulting in seasonal upwelling (Johnson and Johnson 2012). The scales of interactions also point to gaps and concerns about matching ecological boundaries and fishing activities with institutional mandates and appropriate policy, instruments (Folke et al. 2007; Bavinck et al. 2013; Jentoft 2013). In the Sierra Leonean context protected areas and reserves although promoted by NGOs, were not part of the management tool-kit in the pre-conflict periods. The success of managing these resources under input control rules alone fell short of national expectations (Jalloh 2009; Vakily et al. 2012). Earlier reports of overexploitation and mis-management, and increasing concerns over distributional equity were some of the concerns raised (Kaczynski and Fluharty 2002; Jalloh 2009). There were several limitations to achieving biological sustainability, primarily in the harvesting stage and with regard to compliance to rules and fishing regulations. These consist of ineffective monitoring systems, illegal fishing activities, inaccurate catch reporting mechanisms, significant amounts of by-catch and dumping at sea (Mawundu 2011; Vakily et al. 2012). As a consequence, fish stocks declined considerably, with few management measures that protected critical habitats and stock health. From 1964 to 1990, for instance, there was 90 % reduction in the biomass of the demersal fishery, due to overfishing and unsustainable fishing practices (Heymans and Vakily 2004).

In the post-harvest stage, stewardship incentives through legitimate access rights as well as value chain development have been proposed for alleviating some of the challenges across the fish chain. A bigger concern in the past, and yet to be addressed, is post-harvest waste due to lack of product development. Addressing this challenge directly relates to achieving ecological stewardship as well as economic viability by fostering compliance and social entrepreneurships. Lack of product development is partly due to poor inputs for cold rooms and other technologies for fish processing and making trash fish and by-catch marketable and a quality food product. Moreover, this concern is associated with inadequate harbour infrastructure and seafood development opportunities (Sankoh and Jalloh 2009; Etoh 2012). This affects the potential positive contribution of small-scale fisheries to food security and national economic development.

Despite the proliferation of fisheries development projects from the 1980s onwards (Khan 1998; EIF 2013), small-scale fisheries still continue to be associated with poverty (Bene 2003; Thorpe et al. 2009). What has been lacking is a ‘home grown theory of change’, one that sits on a legacy for long-term societal transformation, in nurturing local governing structures and policy processes that put small-scale fisheries as part of broader development planning. The donor-led development initiatives are not replicable after the funding cycle and often fail in meeting long-term community needs. This is partly because the project design ignores local champions and the potential appropriation by elites through political structures and social networks (see Crona and Bodin 2010).

Small-scale fisheries, despite the limited nature and scope of their operations contribute in a number of ways to national economic development and are *too big to ignore* in the short and medium-term (Chuenpagdee 2011b). Certainly, it is becoming clear that small-scale fisheries has spill-over and multiplier effects for rural development, regional trade, and contributes to other ecosystem service benefits (GoSL 2010; Kayonde et al. 2013).

Post-conflict Period

Indeed, it has been acknowledged that regional climatic events such as El Nino and seasonal variability are persistent in the post-conflict periods in Sierra Leone (Johnson 2006; Katikiro and Macusi 2012). As such, the question becomes what management tools and resources are available to address global change impacts and to adapt to climate extremes. Several local and international programs have been initiated, as this period coincides with a global push towards national adaptation plans under the Cancun Accord on climate change (Johnson 2006; GoSL 2007). There is also a push to promote the Green Economy (and Blue Economy in this context) in response to Rio +20 (AfDB 2013). These multilateral policy interventions are driven by various institutional partnerships and stakeholder engagements on linking biodiversity conservation with poverty alleviation through market-based instruments (UNEP 2011).

In these changing governing contexts, the evolving legal and institutional changes from hierarchical to co-governance arrangements are desirable as they provide opportunities for strengthening local and regional institutional capacity for stewardship. Under this new scheme however, fishers are assigned licenses irrespective of the type of gear or fees paid to Local Councilors, and could contribute to Malthusian overfishing (Pauly 1990). With unlimited entry into the small-scale sector, over 10,000 registered canoes have been documented with increasing volume of landings as shown in Fig. 29.2. This has also spurred a chain reaction amongst actors and seafood traders and worsened power asymmetries amongst fish actors. For instance, crew members being marginalized by boat owners are prompted to explore revenue sharing mechanisms and social ties with new and emerging seafood buyers. This program often called ‘hand failure’ reflects on the human rights abuse during the civil conflict and the power of now – i.e., being able to address fair dealings through alternative economic relationships at sea. Understanding these attributes may improve the quality of governance through an agenda setting that reflects shared visions and socio-cultural perceptions. It seems the motivation for social change and governance reforms from donor agencies do not always take into consideration the interplay of local values and power disparities.

The demand for frozen fish in the hinterland has also increased in recent years, thus encouraging fish processing and trucking along the coast to meet both local and regional needs. For current local consumption, 20 kg of Bonga (*Ethmalosa fimbriata*) will cost $33 USD at wharf price. After curing (smoking or sun dried), 20 kg

will fetch for higher price from $40–50 USD depending on quality of product. For the sub-regional market in Western Africa, where there is a higher taste and preference for dried or smoked Bonga, 20 kg will fetch $75 USD. For the artisanal export of Gwangwa (*Pseudotolithus elongates*) to the Asian lucrative market, 20 kg will fetch $100–150 USD depending on size (the bigger, the better).

Current initiatives aimed at improving coastal infrastructure through functional cold storage facilities are in line with national development priorities (EIF 2013). Coordinating fish handling at sea, fish processing, packaging and marketing of quality products in support of household and diaspora economies, and EU markets are essential value chain activities to be up-scaled (FAO 2013). It is within these contexts that the West Africa Regional Fisheries Program and other related projects on infrastructure development and capacity building are filling a critical void (EIF 2013). In meeting new opportunities in the small-scale fisheries for out-sourcing, fish mammies and industrial fish processing establishments are now serving as financiers for processing and exporting local artisanal catch as in the case of the Sciaenid locally called 'Gwangwa'. Including small-scale fisheries as part of fisheries agreement deliberations within a regional trade policy context will promote dialogue and deliberations and ensure that hard choices are made by councilors and local stakeholders on trade-offs between local consumption and foreign exports (Kooiman and Jentoft 2009).

In addressing the myriad challenges and opportunities that fisheries generate, the inclusion of non-state actors in fisheries governance is an important milestone in the post-conflict era. At the national level, empowering Local Councilors as decision makers and offering fishers stewardship incentives for livelihood security through user rights meet multiple sustainability objectives. At the local and regional level, the two main fisher unions (Artisanal Fishermen Union and the Amalgamated Artisanal Fishermen Union), have the potential for gender mainstreaming through integrated value chain development that are inclusive of women entrepreneurs (Thorpe et al. 2013).

After years of decentralization and local governance reforms towards TURF, community engagement and institutional capacity building processes are still inadequate to respond to compliance and stewardship challenges (EJF 2011). Recent accounts about the co-governance arrangements indicate that the process was rushed, focusing mainly on rent extraction by Local Councils in the absence of institutional structures for managerial responsibilities and program implementation (Baio 2010; EJF 2011). If well developed and nurtured, governing reforms could trigger transformative changes and spill-over effects to other food production sectors especially agricultural and in rural planning and regional economic development.

Scholarly research is central for evidence-based policies that are interdisciplinary in scope. The Institute of Marine Biology and Oceanography founded in the 1950s as part of a regional research program, now under the University of Sierra Leone, has played a significant role in fisheries stock assessments, national frame surveys, and transboundary collaborative research programs. A recent Memorandum of Understanding with the MFMR will enable the Institute of Marine Biology and

Oceanography to conduct research under the EU funded project on institutional support to fisheries management (GOPA 2009). The project aims to support policy development and steer future directions for fisheries research at the Institute of Marine Biology and Oceanography. This will also include collaboration with the regional LME project, the FAO/CECAF working group on pelagic fisheries management, as well as the Fridtjof Nansen biomass surveys. Through these, co-learning opportunities on system characteristics and knowledge mobilization can be instrumental for improving the quality of governance through better decision-making.

Summary and Policy Implications

Is the governability of fisheries in post-conflict Sierra Leone better now or worse than before? Based on the analysis and evidence provided, we conclude that the quality of governance is improving with stakeholder involvement and institutional partnerships, which has provided opportunities for linking small-scale fisheries with broader development agenda. Nonetheless, the persistence of challenges within the various systems, as well as the quality and capacity of governance, can be improved and made more adaptive in the event of global environmental and economic changes.

In this Chapter, we underscore how fisheries resources contribute to food security, human development, and economic prosperity. We highlight how governance reforms and user participation through co-management has been embraced by stakeholders. We argue that this is not by itself a panacea, as fisheries governance are understood to be wicked due to the inherent nature of the social dilemmas associated with multiple objectives and unrealistic stakeholder expectations. Therefore, adopting the Precautionary Principles is crucial for resource sustainability in the absence of robust stock assessment data for management strategies at the local scale (FAO 1995). Similarly, designating MPAs as critical habitats and ecological niches could contribute to both climate change adaptation needs as well as resource sustainability. Protecting a good fraction of the 157,000 ha of mangroves could act as a buffer and contribute to alleviating flood risks as well as critical habitats for fisheries productivity (Johnson 2006; Johnson and Johnson 2012).

However, more needs to be done to boost governing capacity across the harvest and post-harvest stages of the fish chain. Patron-client relationships and power asymmetries between harvesters and processors as in the case of Gwangwa, has implications for livelihood security and local food security. This could be achieved through comprehensive seafood value chain development (for gender mainstreaming and food security co-benefits), information sharing amongst stakeholders for collective action, and a regional focus for integrated management. Human and technical resources need to be developed within MFMR and the Institute of Marine Biology and Oceanography to meet food and safety test particularly phytosanitary assessments for certification.

Another big concern for sustainable outcomes and effective management is 'fit'. Because small-scale fisheries are part of larger systems that are diverse, complex, and dynamic; collaborative and multi-level governance arrangements that address scale and institutional boundaries is fundamental. The lack of 'nested or multi-level' approaches to institutional innovation from municipal to district and regional levels compound the (in)effectiveness of fisheries reforms. Furthermore, the relationships amongst stakeholders, especially managers, local councilors, fisher unions but also NGOs and multilaterals, are not clearly defined and articulated in policy documents and hence may exacerbate conflicts about mutual responsibilities. Although there are several development projects that address policy gaps through public-private partnerships, these programs are not place-based and do not respond to local surveillance and monitoring challenges. Responsive regional institutions especially for transboundary pelagic resources within multi-level governance frameworks are needed (Khan and Mikkola 2002). This can be critical for fisheries productivity under conditions of extreme environmental change as well as for the livelihoods of fishing dependent communities (Lam et al. 2012). The sub regional scale is important as migrant fishers along the West African coast do not frequently comply with social norms where MPAs or TURFs are located, and may trigger potential conflicts (Thorpe et al. 2009; Binet et al. 2012).

We recognized that the drivers of change in the various systems are the result of negotiations by key actors with various levels of power to influence outcomes, including international donors, national ministries and departments, and local chiefs or councilors. However, the interests and values of stakeholders are often not well aligned and prioritized, resulting in unresolved conflicts that make the systems less governable. The value of the fishery can be understood both in terms of its *assigned value* along the supply chain as well as its *underlying value* that dictates stewardship and ethical norms (Brown 1984). On many occasions, one value trumps another but could be made complementary with co-benefits. For example, the active participation of private sector entrepreneurs especially fish mammies in local seafood marketing is necessary for increasing revenues as well as for linking seafood with traditional cuisines and healthy lifestyle.

Although much of the emphasis has been on fisheries reforms and community stewardship at the local scale, much could be done by integrating other development programs that deal with sectors such as agriculture, tourism, and forestry, where human capacity are already strengthened (EIF 2013). Successful co-governance arrangements have highlighted the importance of strengthening local institutions including formal and informal rules and norms that are resilient to global economic changes (Khan et al. 2004). Within this context, legal reforms and the delegation of tasks to local councilors are inadequate for transformative change; corresponding capacity building initiatives at the district council level are necessary for self-organization and successful outcomes (Ostrom 1990).

The broader lessons are that these wicked environmental and developmental challenges are interconnected and require cross-scale and multi-sectoral approaches, especially for fragile states with limited governing capacity. Moreover, as many scholars have argued (Sen 1999; Jentoft and Eide 2011), an integrated human-nature approach of this kind could be part of a holistic development agenda and the focus for future research.

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