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Degree of Master of Science**

**Documenting the achievements and challenges of co-management in practice: a case
study of the Grand Cape Mount County Co-management Association (GCMCCMA) in
Liberia**

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July, 2022

Vienna

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ABSTRACT OF THESIS submitted by:

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The environment is changing. This fact has created uncertainties surrounding the best management practice to address these changes and their impacts on natural and human systems. One of the most effective practices proposed is co-management, which involves sharing responsibilities between resource users and governing bodies. Using the case of the Grand Cape Mount County Co-Management Association (GCMCCMA) in Liberia, this research aims to understand what co-management is in practice and what is required for a co-management association (CMA) to transition to an adaptive co-management association (ACMA). The research documents the challenges, achievements, and lessons from the GCMCCMA as a contribution to the limited knowledge repository on co-management experiences. Finally, it provides reforms to transform the GCMCCMA into an ACMA. Lack of cooperation from the central government, finances, and leadership structure are some of the challenges of the GCMCCMA, while the achievements are uniting the fisher-groups through its establishment, conflict resolution, and leading search and rescue mission for fishers. Most of the challenges identified are linked to the establishment of the GCMCCMA. The project was established by the World Bank West African Regional Fisheries Project, which invested significant finances into establishing the CMA and hosting its activities. Now that the project has ended, the communities and the central government cannot sustain the CMA and its activities. The challenges are also linked to a lack of trust and collaboration between significant actors of the GCMCCMA. The research recommends that the CMA and its actors take intentional steps including hosting a reconciliatory meeting, widespread community awareness of the CMA process, and general elections to rejuvenate the CMA and work towards making the GCMCCMA “adaptive” by integrating the four significant elements of ACMA: collaboration, enabling environment, complex social learning, and power asymmetries.

Key Words: co-management association, adaptive co-management, socio-ecological systems, small-scale fisheries, local communities.

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List of Abbreviations

ACM: Adaptive Co-Management

ACMA: Adaptive Co-Management Association

AUC: African Union Commission

BNF: Bureau of National Fisheries

BoD: Board of Directors

CMA: Co-Management Association

EJF: Environmental Justice Foundation

EU: European Union

FAO: Food and Agriculture Organization

GCMCCMA: Grand Cape Mount County Co-Management Association

GDP: Gross Domestic Product

IEZ: Inshore Exclusive Zone

INGO: International Non-Governmental Organization

IP: International Partner

IPCC: Intergovernmental Panel on Climate Change

IUU: Illegal, Unreported and Unregulated Fishing

KI: Key Informant

KII: Key Informant Interviews

LAFA: Liberia Artisanal Fishermen Association

MA: Millennium Assessment

MoA: Ministry of Agriculture

MoU: Memorandum of Understanding

NGO: Non-Governmental Organization

NaFAA: Liberia National Fisheries and Aquaculture Authority

RoL: Republic of Liberia

SES: Social-Ecological Systems

TURF: Territorial User Rights for Fishing

TEK: Traditional Ecological Knowledge

USAID: United States Agency for International Development

WB: World Bank

WARFP: West African Regional Fisheries Project

1. Introduction

The world is heading down a trajectory of increasing uncertainties (Berkes 2004; Olsson et al. 2004; Folke et al. 2005; Ostrom 2009). Many scholars have demonstrated that this profound and unanticipated transition stems from humans' interaction with nature and vice versa (Berkes 2004; Herrero-Jáuregui et al. 2018) and has spiked irreparable damages and loss of resources (Ostrom 2009). This knowledge has necessitated studies on how humans affect nature and vice versa (Adger et al. 2006; Young et al. 2006; Herrero-Jáuregui et al. 2018) and best practices to effectively manage humans' interactions with these systems, termed socio-ecological systems (SES), build their resilience, and provide positive and equitable outcomes to the communities and societies that rely on them.

One of the best management practices that have been proposed is collaborative management (Holling 2001; Berkes et al. 2003; Olsson et al. 2004; Ostrom 2005). Collaborative (or co-) management for fisheries is defined as a “relationship between a resource-user group and another organization or entity (usually a government agency) for fisheries management in which some degree of responsibility and authority is conferred to both parties” (Evans et al. (2011, 2). This form of management shifts resource management from centralized approaches to decentralized and participatory approaches that incorporate multi-level institutions and empower communities to contribute to the management of SES. According to Pomeroy and Berkes (1997), the core benefits pursued by actors in co-management are “more appropriate, more efficient, and more equitable management.”

In Liberia, co-management is being tried to manage the marine SES. This SES supports Liberia's fisheries sector which is key to the country's national economy. The sector significantly contributes to the livelihoods of Liberia's coastal population by employing about 33,000 people involved in fishing, fish processing, and fish mongering (EJF 2019). The fisheries sector also provides dietary protein to an estimated 65% of Liberia's population (Jueseah 2021).

Though the sector has all these prospects, it is perturbed by illegal, unreported, unregulated (IUU) fishing activities and poor management structures at regional and national levels.

Grand Cape Mount County—one of Liberia's fifteen political sub-divisions— currently has the most active co-management association (CMA). This CMA was formed in 2011 by the

West African Regional Fisheries Project, funded by the World Bank in collaboration with Liberia National Fisheries and Aquaculture Authority (NaFAA) — which was referred to by then as the Bureau of National Fisheries (BNF) — as a community-based fisheries resource management organization to spearhead the implementation of the fisheries co-management plan activities embarked on by NaFAA (Boah 2019). This co-management plan was developed as a strategy for the sustainable management of Liberia's fisheries sector. Its core responsibilities include, but are not limited to, the enforcement of the Fisheries Regulation, Fisheries Management Plans, Acts, and Policies in Grand Cape Mount County (CMA 2012).

The CMA also directly manages the Territorial User Rights of Fishing (TURF) declared by the Government of Liberia in 2013 under the Fisheries and Aquaculture Policy and Strategies of Liberia. The TURF extends from the Lofa River at the boundary between Grand Cape Mount and Bomi counties in the south, extends to the Mano River at the boundary between Sierra Leone and Liberia in the north, and covers approximately 80 nautical miles (Boah 2019).

The GCMCCMA is one of many CMAs established globally (Evans et al. 2011; d'Armengol et al. 2018; Baker et al. 2021). These co-management associations have reported achievements and challenges over the years. However, there is a lack of empirical evidence on the effectiveness and outcome of CMAs worldwide (Evans et al. 2011; Nielsen et al. 2004;). This gap has made it difficult to determine “whether co-management in practice delivers on its promises as a normative concept” (Evans et al. 2011, 2). Therefore, there is a growing research need to document the experiences of CMAs to ascertain their effectiveness, identify their challenges, and communicate to others who may be establishing or developing co-management arrangements. This research contributes to fulfilling this need by documenting the achievement and challenges of the GCMCCMA, outlining lessons from its experience that can be used to guide the establishment of additional CMAs, and assessing if the GCMCCMA meets the criteria to transition from a co-management association to an adaptive co-management association.

1.1 Research Aims

The research aims to document the experiences of the GCMCCMA through its achievements and challenges and assess how it can become ‘adaptive.’

1.2 Overall Research Questions

To achieve the aim, the research asked the question:

Based on the experience of the GCMCCMA, to what degree can adaptive co-management be integrated into the GCMCCMA activities and other potential CMAs in Liberia? To effectively answer this question, the research investigates and documents the following:

- The purpose of the GCMCCMA
- Current challenges of the GCMCCMA
- The achievements of the GCMCCMA
- Lessons learned from the GCMCCMA experience
- The level of “adaptive co-management” inherent in the GCMCCMA

1.3 Research Outline

After introducing the research, case study, and research aims and questions in this chapter, the research proceeds to the **literature review and theoretical framework** (Chapter 2). This chapter establishes the literary background for this research by reviewing the state-of-art literature on this topic. The core concepts discussed in this chapter are social-ecological systems (SES), fisheries as social-ecological systems, co-management, and adaptive co-management. The chapter also delivers details about Liberia—the country under review—its small-scale fisheries sector, and the Grand Cape Mount County Co-Management Association that serves as a case study for the research. Following this chapter is the **Methodology** (Chapter 3). This chapter gives an insight into the type of research this study is, the methods used in this study to gather and analyze data, and the study’s limitations. This is followed by Chapter 4, which presents the **study’s findings** that were gathered from the interviews and archival research conducted by the researcher. The findings in this chapter are presented based on the categories and themes that were identified and created during the data analysis. **Discussion** of the findings in relation to the conceptual frameworks of the study and other studies that have been done in the area of CMAs and ACMAs is the focus in the ensuing Chapter 5. As part of the discussion, the chapter also outlines the major lessons learned from the GCMCCMA, analyses the elements of ACM identified in the GCMCCMA experience, and suggests reforms and practices that might transform the GCMCCMA into an ACMA. The last chapter (6) concludes by outlining some significant **conclusions** on the GCMCCMA and other CMAs and offers **recommendations** on how the GCMCCMA can be more adaptive.

2. Literature Review and Theoretical Framework

This chapter establishes the literary background for this research by reviewing the state-of-art literature on this topic. The chapter draws information from articles, books, and grey papers to provide an in-depth understanding of the prevailing discourses and debates about the core theories framing the research: social-ecological systems (SES), fisheries as social-ecological systems, co-management, and adaptive co-management. This chapter also enlightens the readers by providing details about Liberia—the country being reviewed—its small-scale fisheries sector, and the Grand Cape Mount County Co-Management Association that serves as a case study for the research. The chapter concludes by identifying research gaps motivating this research and how the research contributes to filling these gaps.

2.1 Social-Ecological Systems

This study is framed within a social-ecological framework, a transdisciplinary framework that integrates natural and social sciences to address environmental issues (Herrero-Jáuregui et al. 2018). A social-ecological system (SES) is a resilient “complex adaptive system” (Herrero-Jáuregui et al. 2018,2). It is the hub of ecosystem services as “all humanly used resources are embedded in them” (Ostrom 2009,1). A significant attribute of SES is the mutual and consistent interactions between their co-evolving biophysical and socioeconomic structures (Herrero-Jáuregui et al., 2018). The structures constitute several subsystems that coalesce to function as a single system. Elinor Ostrom (2009) sub-divided these subsystems into four categories: resource system, resource unit, user, and governance system. According to her, understanding these subsystems individually is key to analyzing and governing complex SES (Ostrom 2009). Providing a concise definition for SES is a challenge because, according to Herrero-Jáuregui et al. (2018,9), it is still a “concept under construction.” However, defining the term revolves around key terms like ecological systems, social systems, risks, resilience, adaptability, ecosystem services, sustainability, governance, adaptive capacity, climate change, and vulnerability (Berkes 2004; Adger et al. 2006; Folke 2006; Young et al. 2006).

2.1.1 SES as Common Pool Resources and Management Challenges

Many of the world’s SES are shared resources, called commons (Berkes and Palmer 2015). According to them, the successful and sustainable management of these commons is the “greatest imperative of our time” (Berkes and Palmer 2015,64). These commons have long

been managed by the central government to reduce externalities and increase inefficiencies (Becker and Ostrom 1995).

The most popular argument for reducing externalities in the commons was proposed by ecologist Garrett Hardin in his article titled *The Tragedy of the Commons* (1969). Hardin's (1968) major arguments were that resource users were bound to overharvest their resources for their gain; it is impossible to maximize the greater good for the greatest number, and that ruin is the final destination for a society where the interest of everyone is pursued in managing a common with "tolerance". This argument discounted the ability of users to self-organize and manage their resources and claimed that taxes, private property rights, and a rigid top-bottom approach are the most functional management approaches for the commons. Harold Demsetz (1964) also argued for property rights to be developed to manage the commons. He categorized property rights as communal, private, and state and suggested that privately-owned resources are better managed and sustained (Demsetz 1967). These prominent arguments of decades ago, though valid to an extent, have been effectively queried by many researchers (Becker and Ostrom 1995; Levin 1999; Holling 2001; Berkes 2004; Ostrom 1990, 2005, 2009) who have recognized a diversity of institutional arrangements that have been adopted to combat the tragedy of the commons scenarios.

One researcher who substantively contested these arguments was Ostrom (1990, 2005, 2009). She advocated for local communities' conservation methods by asserting that communities have depended on institutions, unlike the state and the market, to govern some resource systems, and they have achieved a considerable degree of success over time (Ostrom 1990). Using examples, she demonstrated that the tenant of effective management of the commons is neither strong top-bottom governance nor property rights, but the inclusion of resource users in management approaches. Ostrom's goals for managing SES constituted three facets: critique policy analysis applied to natural resources, promote a culture of learning, and develop better tools (institutions, social arrangements, monitoring) to understand self-governing institutions for SES management.

These arguments created a paradigm shift in the governance of the commons and formed the bedrock of participatory management of the commons. Further research (Levin 1990; Berkes and Folke 1998) demonstrated that institutional frameworks that shift resource management from centralized and sectoral-specific approaches to more consolidated approaches are needed

to intentionally steer the management of ecosystems and improve human well-being. One of these approaches that were widely proposed and recognized is the co-management approach (Holling 2001; Berkes et al. 2003; Olsson et al. 2004; Ostrom 2005).

2.2 Small-scale Fisheries

The type of common-pool resource that this research captures is small-scale fishing/fisheries (SSF). It is often known as artisanal fishing and is a type of traditional fishing that involves fishing households utilizing traditional methods, small quantities of capital and energy, small fishing vessels (if any), and short fishing expeditions close to shore. SSF can be practised as a source of food or as a source of income for profit (FAO 2021). This industry is critical to food security, nutrition, and poverty reduction. It is shared by men and women, and it encompasses all activities throughout the value chain (Etongo and Arrisol 2021). Small-scale fisheries are found in practically all countries (FAO 2021). On average, it is responsible for half of the total production consumed, both in terms of quantity and value.

2.3 Co-Management as a form of Small-Scale Fisheries Management

Co-management has been recognized globally as the most effective way to manage small-scale fisheries (Nielsen et al. 2004; FAO 2015; Tilley et al. 2019). Though the concept gained global recognition and acceptance as an appropriate measure to manage fisheries in the last two decades (Nielsen et al. 2004; FAO 2015), Onyango and Jentoft (2017) argue that co-management is not new to local fishing communities because it has been embedded in their traditional practices. Co-management was established as an alternative to fisheries management approaches that are characterized by centralized government interventions, which have been ineffective in preventing a decline in resource units, averting conflicts among users, providing markets for users, and improving their overall well-being (Nielsen et al. 2004; Silva et al. 2013). Co-management has been defined by many scholars, and though there are slight distinctions in the definitions, sharing of management authorities and responsibilities between resource users and governance bodies have repeatedly been emphasized as the core purpose of co-management (Carlsson and Berkes 2005; Tilley et al. 2019; Mullooney et al. 2020). One definition of co-management that fits the context of this study was developed by Evans et al. (2011,2), who define co-management “as a relationship between a resource-user group and another organization or entity (usually a government agency) for fisheries management in which some degree of responsibility and/or authority is conferred to both parties.”

2.3.1 Co-Management in Practice

Co-management has been experimented with to manage different aspects of small-scale fisheries in many regions (Evans et al. 2011). It was used to promote social learning in North America (Pinkerton 1994), to manage decentralization of management and increase fishers' representation in decision-making processes in India (Thomson and Gray 2009), address illegal, unreported, and unregulated (IUU) fishing in Mauritania and Guinea (Trouillet et al. 2011), increase sustainability in Ghana's fisheries (Tsmenyi 2013), enhance Australia's fisheries sector adaptive capacity to climate change (Nurse-Bray et al. 2018), address resource scarcity in Timor-Leste (Tilley et al. 2019), promote collaborative research in Newfoundland Labrador (Mullowney et al. 2020), integrate traditional knowledge into decision-making in Tanzania (Onyango and Jentoft 2017), promote stakeholders' participation in setting management goals in the Caribbeans (Pomeroy et al. 2004), and manage Territorial Use Rights for Fishing programs (TURF) in Liberia (CMA 2012).

Some countries practising co-management have reported tangible results and positive changes in their fisheries sector since they adopted the practice (Thomson and Gray 2009; Onyango and Jentoft 2017; Pomeroy et al. 2019; Mullowney et al. 2020). A detailed meta-analysis of the impacts of fisheries co-management that looked at 29 case studies in 90 sites in developing countries found that aspects of fisheries that co-management has made substantive improvements in are: inclusion of stakeholders in governance processes, capacity to control or influence decision-making, and compliance to management rule over time (Evans et al. 2011).

2.3.2 Challenges of Co-Management in managing SSF

However, co-management outcomes have been extremely inconsistent, with some communities having positive outcomes and others having little or no outcomes at all (FAO 2020). In some cases, the policies developed to promote social well-being produce opposite effects and worsen the challenges in the communities (Armitage et al. 2009; FAO 2020). Trouillet et al. (2011) also asserted that the knowledge gap, linked to lack of financial and human resources and overdependence on international donors, has undermined co-management processes in many places. For example, the formulation of a co-management association (CMA) in Lake Victoria fishing communities in Tanzania was done with scant recognition of the fishing communities' governance practices, and this resulted in the dismal performance of the CMA in its nascent stage (Onyango and Jentoft 2007).

Additionally, CMAs are affected by the increasing alterations in the environment, economy, and institutions. These shifts attenuate the efficiency of CMAs and hinder their ability to achieve their management objectives (Evans et al. 2011). Using scenarios from Guinea and Mauritania, Trouillet et al. (2011) argue that using co-management to manage fisheries is challenging because stakeholders' identification may be contaminated with prejudice and the continuity of the process is not certain due to the financial and institutional capacity of many states that have embraced the concept. Trouillet et al. (2011,159) also claim that considering co-management as the "ideal" approach to fisheries management is an "illusion," and the concept should only be seen as "complementary" to other approaches.

Another critical phenomenon that hampers co-management from achieving its goals is what Nielsen et al. (2004) referred to as "instrumental co-management." According to them, "governments have generally not perceived co-management as a means to introduce more democratic principles into fisheries management, but have recognized co-management as an instrument to reach its management objectives more efficiently by involving fishing communities in the implementation process" (Nielsen et al. 2004,154). In short, this phenomenon occurs when the government does not involve fishing communities in decision-making processes but only involves them as a conduit for implementing the decisions made. Using cases from Southern Africa and Southern Asia, Nielsen et al. (2004) demonstrated that governments have not been enthusiastic about including local communities in decision-making processes and incorporating their traditional knowledge in management practices. These cases occur because co-management is sometimes founded by the government and its partners to meet pre-defined objectives (Tilley et al. 2019), and it can be difficult to convince the government to change those objectives (Dietz et al. 2003; Waltner-Toews et al. 2004). A review of co-managements in North America shows that such changes can sometimes only be instigated through drastic legal measures (Pinkerton 1994).

These challenges mentioned above, coupled with the increasing demand (Becker and Ostrom 1995; Berkes et al. 2003) for management strategies to transcend to building human capacities, enhancing the values and skills of people, addressing human behavioural patterns that trigger environmental changes, and sharing responsibilities and rights among resource users and governance systems, have created the need for CMAs to become "adaptive" and "innovative" (Nielsen et al. 2004; Plummer 2009). It has been implied that by committing ourselves to meet

this demand, the world may learn to fully describe problems, probe for solutions, and be confident that our policies are acceptable to all parts of society (Sendzimir 2018). The pursuit of meeting these demands has led scientists and academics to coalesce the concept of adaptive management with co-management to form the distinct concept of adaptive co-management (Armitage et al. 2009; Berkes 2009).

2.4 Adaptive Co-Management

Adaptive co-management (ACM) is interdisciplinary; it merges adaptive management and co-management to create a unique approach appropriate for managing SES during periods of uncertainty (Armitage et al. 2009). The interdisciplinary nature of ACM is one of its most important features, as it is becoming apparent that addressing complex solutions requires combined knowledge and diverse skills. According to Sendzimir et al. (2018), the interdisciplinary nature of ACM stems from the knowledge that the world is changing, and managers might not always be certain of what the reality is. This uncertainty activates challenges that “no single lens can reveal all the causes and possible cures for” (Sendzimir et al. 2018, 1) hence the need for ACM, an inclusive management approach that integrates diverse ideas from academic disciplines and social experiences (Berkes 2004; Plummer 2009).

2.4.1 Defining Adaptive Co-Management

Folke et al. (2002) define ACM as the continuous testing and revising of institutional arrangements and ecological knowledge in a self-organized process of experiential and empirical learning. The Intergovernmental Panel on Climate Change’s latest report (IPCC 2022, 17.7) succinctly summarizes the dynamics of ACM by describing it as the “...interplay between top-down (institutional) and bottom-up (individual/social/community) processes, multi-scale interaction (local, regional, national, and international), iterative risk management, differing forms of knowledge, and equity...” However, a more appropriate definition for the context of this research was coined by Olsson et al. (2004, 1) who defined ACM systems as “flexible community-based systems of resource management tailored to specific places and situations and supported by, and working with, various organizations at different levels.” This definition is important to this research because it explicitly recognizes that ACM is context-based, flexible, and integrative.

The concept has been posited to be different from centralized bureaucratic governance systems because instead of command and control or top-bottom practices, it underscores participatory decision-making processes that draw knowledge from multiple views, knowledge systems, and experiences (Folke et al. 2005; Fabricius and Currie 2015). This kind of decision-making process gives stakeholders a sense of ownership of the resources (Ostrom 2009) and more fully engenders their support and cooperation (Berkes 2004). It is flexible (Armitage et al. 2009), context-specific, and supported by different actors operating at different levels (Olsson et al. 2004). It delineates resource systems, creates monitoring systems, and strengthens linkages among actors (Sendzimir et al. 2018). These linkages provide the basis for information dissemination and knowledge and problem sharing (Young 2002).

2.5 Why ACM for SES Management?

Armitage et al. (2009,1) point out that ACM “holds promise for complex social-ecological systems”. ACM has been theorized to have many aims and mandates: it has been highly recommended to reform institutional and governance mechanisms—including corruption and ineffective regulatory and accountability systems (Sendzimir et al. 2018), support sustainable development in communities (Pokorny et al. 2003), address complexities in SES (Folke et al. 2005), work out multi-scale society-environment predicaments (Armitage et al. 2009), build resilience to climate change and promote adaptation (IPCC 2022), decentralize governance of SES (Becker and Ostrom 1995; Ostrom 2009), promote sustainability of SES (Plummer and Armitage 2006), and support learning and collaboration (Armitage et al. 2019). It can also be applied to manage a broad number of SES, including fisheries and agriculture (Herrero-Jauregi et al. 2018), forestry (Pokorny et al. 2003), riverine systems (Sendzimir et al. 2018), and climate change (MA 2005; IPCC 2022).

Though science is key to managing SES, it has been argued that flexible social measures are required to devise the rules, institutions, and incentives that determine SES management in a composite and changing world (Armitage et al 2009; Plummer 2009). The need for ACM is thereby driven by the cross-scale nature of environmental challenges and ecological and social uncertainty triggered by the changing environment (Olsson et al. 2004). According to Pokorny et al. (2013), the crux of the concept is to promote high collaboration and learning among stakeholders to achieve the effective management of SES and simultaneously improve the lives of people that these systems support. These measures—learning and collaboration—can be

channelled to focus on the capacity of management systems to acclimatize SES to the fungible social, political, and scientific circumstances influencing them (Young 2002).

2.6 Core Elements of ACM

Armitage et al. (2009) presented five thematic areas of ACM: (i) institutions, incentives, and governance, (ii) learning through complexity, (iii) power asymmetries, (iv) assessment: monitoring, indicators, and outcomes, and (v) linking to policy. A more recent study conducted by Fabricius and Currie (2015) asserted that the ACM process has four core pillars: enabling environment, learning, collaboration, and continuity. Other studies on ACM and SES have identified self-organization (Ostrom 2009; Choudhury et al. 2021), resilience (Plummer and Armitage 2006), and collaboration (Pokorny et al. 2003). All of these elements are intertwined and have been mentioned directly or indirectly in most of the papers reviewed.

For this research, I focus on four core elements of ACM: collaboration, complex learning, enabling environment, and power asymmetries. These categories, discussed below, were selected because they encompass other categories that have been proposed and are the elements that I believe an efficient ACMA in Liberia needs to thrive, based on my archival review of Liberia (World Bank 2009; RoL 2018). Therefore, they will form the criteria which will be used to assess attributes of ACM that are inherent in a CMA in Liberia and any reforms that need to be made for it to qualify as an *adaptive* CMA.

2.6.1 Collaboration

Collaboration in ACM describes the interactions that exist between public and private stakeholders in daily life, work, and decision-making (Pokorny et al. 2003). These stakeholders can operate at different levels in networks (Olsson et al. 2004), some of which might even overlap (Okafor et al. 2022) or be similar (Butler et al. 2015) but, according to Ostrom (2009), what is important is that all stakeholders have a shared idea of what the management goal is. Collaboration can also be conceptualized as the institutions and guidelines which govern these interactions (Armitage et al. 2009; Sendzimir 2018). It is important to note that these interactions are not rooted in time or space, and the governing institutions differ in context (Olsson et al. 2004; Armitage et al. 2009). It is also key to note that in these interactions, every stakeholder has a role that can be self-determined (Tilley et al. 2019) or conferred (Sendzimir et al. 2018).

Olsson et al. (2004) convincingly argue that ACM relies heavily on collaboration. This reliance is spurred by the fact that collaboration recognizes that the fact that the scales on which problems develop and solutions may be discovered vary (Sendzimir 2018), and what used to be local issues caused by simple population or resource shifts now occur on a larger scale (Olsson et al. 2004). Therefore, collaboration in ACM is meant to build trust, promote institutional development, enable social learning, facilitate conflict resolutions, and broaden management decisions to encompass all levels where management challenges may arise (Nielsen et al. 2004; Armitage et al. 2009; Sendzimir et al. 2018). Collaborations in ACM are mostly facilitated by mediating organizations, and it supports management by promoting the planning and implementation of innovative and shared visions (Folke et al. 2015).

2.6.1.1 Trust

In discussing collaboration, it is expedient to mention trust and the role it plays in promoting collaboration. Trust is an important instrument in promoting collaboration and maintaining ACM as a concept (Silva et al. 2013). According to Anthony (2021, 2), it is “...often considered as the currency of a relationship.” It promotes and strengthens cooperation and interaction among many participants from various areas and organizations in the ACM networks (Sendzimir et al. 2018). It also encourages stakeholders to invest resources (Armitage et al. 2009), commit to management responsibilities (Ostrom 2009), and instigate learning and results in ACM processes (Sendzimir et al. 2018). Lack of trust can undermine collaborations and, subsequently, entire ACM systems (Silva et al. 2013). This lack of trust can arise as a result of unanticipated regulations on harvesting (Ostrom 2009), stakeholders not meeting their commitments (Armitage et al. 2009; Anthony 2021), and corruption (MA 2005; Trouillet et al. 2011). To avoid these pitfalls, Sendzimir et al. (2018) recommend that trust be built through the distribution of management, power, and delegation of responsibilities. Mullooney et al. (2020) also suggest collaborative learning increases trust as the sources of information are endorsed by all stakeholders. Berkes (2004) also asserted that whatever form this ‘trust-building’ process takes, it should include all actors and be accompanied by transparency and accountability.

2.6.1.2 Actors in Co-Management

Identifying actors or stakeholders in ACM is integral to understanding how it works (Nielsen et al. 2004; Olsson et al. 2004). These actors can enhance ACM processes by driving

innovation, building the capacity of networks within the process, and augmenting and complementing the efforts of networks toward achieving the common vision (Folke et al. 2005; Choudhury et al. 2021). Drawing on Ostrom's (2009) framing of SES subsystems and Fabricius and Currie's (2005) classification of actors in an ACM, this research has adopted four broad categories that will be used to identify actors in ACM. These categories are:

1. *Leaders*: These are the legitimate representatives of a network of stakeholders (Fabricius and Currie 2015) who have great influence and are important for the success of the ACM (Olsson et al. 2004). Leaders are instrumental in interpreting and communicating the overall vision in ways that their networks can understand (Okafor-Yarwood et al. 2022). According to Ostrom (2009), they need to be respected and demonstrate strong entrepreneurial and leadership skills. The ideal leader is expected to act in the interests of the group he/she represents and advocate for their needs to be integrated into decisions (Fabricius and Currie 2015).
2. *Governance systems*: These are branches of government and other organizations responsible for implementing regulations (Ostrom 2009). Their key role is the creation of legitimacy and accountability for the local organization and institutional arrangements (Nielsen et al. 2004). It is crucial to note that the government also has a pivotal role in co-management, especially in providing the legal basis for the functioning of co-management arrangements and ensuring user extraction rights (Fabricius and Currie 2015, Sendzimir et al. 2018).
3. *Intermediaries*: These are bridging organizations connecting local users to governance systems (Trouillet et al. 2011) and other multiple actors through planned linkages and systems (Choudhury et al. 2021). They have important roles to play in facilitating collaboration and learning, enhancing policy creation and acceptance, and building trust (Sendzimir et al. 2018).
4. *Resource Users*: These are people who rely primarily on the resource for their well-being (Fabricius and Currie 2015). They can use the resources for "sustenance, recreation, or commercial purposes" (Ostrom 2009, 420).

2.6.2 Complex Learning

Learning is an essential point of ACM (Armitage et al. 2009). What differentiates learning in ACM from other management strategies is that it is formally structured and not haphazard (Sendzimir 2018). It is done in multiple ways and requires specific and shared learning

objectives, outcomes, approaches, and risks (Folke et al. 2005). Plummer (2009) suggested that learning should be iterative. This suggestion was supported by Sendzimir et al. (2018) when they argue that the process of developing solutions that are both understandable and acceptable to diverse stakeholders requires time. However, the time spent on learning is worth it because it has been demonstrated that true participation can only be achieved when participants are provided with the information required to make decisions (Pomeroy 2003, Butler et al. 2015). Additionally, because the nature of the challenges that the learning aims to address might be ‘wicked problems’ (Ludwig 2001), it dictates that solutions developed need to be refined continuously. Therefore, Sendzimir et al. (2018) cautioned that if the process is rushed, efforts to change policy or encourage the adoption of new innovative policies and solutions are likely to be rejected by stakeholders. Butler et al. (2015), while evaluating ACM as a mechanism to resolve conservation conflicts in Scotland, also discovered that after an ACM achieves its short-term objectives, stakeholders can become lax and reluctant to continue constant engagement and learning exchange which usually undermines the ACM sustainability. These points strongly emphasize the significance of keeping the learning process going long enough to build consensus around policies and solutions.

Additionally, strong leadership needs to be practised at this point to facilitate the introductory processes and knowledge sharing. Knowledge should be shared and acquired by both technical experts (Evans et al. 2011) and indigenous and/or local peoples (Olsson et al. 2004; Berkes 2004). The tools and methods used to learn can be diverse (scientific, traditional, empirical, experiential), and learning itself can be done in many ways (single, double, and triple loop) (Armitage et al. 2009; Choudhury et al. 2021). Armitage et al. (2009, 98) also advocate for what they call ‘intentional learning strategies’. According to them, these learning strategies should be tailored to parlay lessons learned and reflections into innovative measures to promote flexible and functional institutions. It is also important to define learning objectives, determine who is learning, how institutional memory is retained, and the linkages amongst learners to enhance the learning process (Nielsen et al. 2004, Armitage et al. 2009, Fabricius and Currie 2015). One form of knowledge that is essential to deliberate on is traditional ecological knowledge (TEK). It was succinctly defined by Berkes (2012, 7) as “a cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.”

Knowledge of the resource system, which is largely gained through scientific studies and observations, has now been accentuated by TEK (Berkes 2004). Before the integration of TEK in SES management, fisher's knowledge, culture, values, and practices were not recognized as an important knowledge base for SES management (Berkes 2004). Integrating TEK has proven valuable in providing qualitative judgments for SES with high vulnerability to irreparable natural processes (Nielson et al. 2004).

Incorporating local and indigenous knowledge into fisheries management is expected to reduce negative social and environmental consequences, resulting in more socially and environmentally sustainable systems (Nielsen et al. 2004; Ostrom 2009). Disregarding TEK has led to the failures of CMAs. These associations had to be reformed to integrate local cultures, values, and traditions before benefits were achieved (Onyango and Jentoft 2007). Integration of traditional and scientific knowledge in fisheries management has been successful in Africa and Asia (Nielsen et al. 2004). Also, learning in ACM requires intentional social interactions to acquaint stakeholders and promote familiarity (Folke et al. 2005). Nielsen et al. (2004) recommend that for ACM to be successful, stakeholders must conduct meetings to discuss challenges and solutions, as well as build management organizations and institutional frameworks. Additionally, it has been demonstrated that stakeholders with regular face-to-face communication and social capital have more trust potential, allow people to express and experience emotional reactions to distrust, and minimize the cost of conducting monitoring and encouraging rule compliance (Diet et al. 2003; Folke et al. 2005). Mullaney et al. (2020) and Berkes (2004) also argue that by learning collaboratively, stakeholders can co-produce relevant knowledge superior to what either party can produce individually. However, lessons learned from social interactions might be lost because it is not always obvious, hence the need to monitor and pay attention to actions and corollary results (Armitage et al. 2009).

2.6.3 Enabling Environment

Three major enabling conditions recognized by IPCC (2022) as relevant to the establishment of ACM are governance, finance, and knowledge. These can be referred to as “enablers” because they “specifically promote or advance the adaptation process” (IPCC 2022, 17-9).

Governance can be described as the construction and design of institutions or the development of systems for sharing power and responsibility for societal collaboration, as well as the establishment of procedural standards for collective action (Folke et al. 2005). Olsson et al.

(2004) also emphasized that institutional policies and legislations are some of the key prerequisites for establishing ACM. These policies need to be flexible (Berkes 2009), transdisciplinary, applicable to all levels at which management activities occur (Sendzimir et al. 2018), and supported and recognized by all stakeholders to enhance compliance (Ostrom 2009). In this situation of ACM, they include legislation, regulation, institution, and litigation (IPCC 2022). Creating an enabling environment and linking ACM to policy necessitates policy environments to support stakeholders' networks and learning groups and reward experts and managers for being part of the network (Armitage et al. 2009). Japan and Norway are good examples of areas where ACMs have thrived because of the creation of strong policies to enable adaptive CMAs (Nielsen et al. 2004). Additionally, in an investigation of the characteristics of successful ACM in the context of conservation conflict, Butler et al. (2015) reveal that ACM can be successful in resolving conflicts with strong legal mechanisms and structures and the readiness of all stakeholders to become oriented to an alternative and novel governance approach.

The lack of strong governing structures at the appropriate scale jeopardizes natural resources and the environment (Dietz et al. 2003). This is because ACM cannot occur in what Nielsen et al. (2004, 156) refer to as an “institutional vacuum” due to the need for existing institutions to enable the formation of ACM through policies. In cases where there is no institutional vacuum, there are possible hindrances like poor governance structures and incoherent policies that still affect the ACM process. In certain circumstances, changes in institutional and environmental governance frameworks are required to generate the enabling conditions for effective ecosystem management, while in others, existing institutions may be able to meet these objectives but encounter major obstacles (MA 2005). For example, the African Union Commission (AUC 2014) identified incoherent policies and coordination as major challenges in fisheries management in Africa and recommended that triumphing these challenges requires significant reforms in national fisheries administrations and regional arrangements for fisheries management.

The AUC report also states that African countries' legal, policy, and institutional frameworks are not designed to fit the uncommon feature of fisheries—the SES focus of this research—leading to mismatches and overlaps in governance practices (AUC 2014). However, these policies can be amended to meet the current reality of fisheries management, as proven by Ghana (Tsmenyi 2013). In 2012, the country opted for co-management as the most appropriate

way to sustain its fisheries at the second National Fisheries Governance Dialogue. However, this conclusion was made without certainty of the country's existing legal framework to support co-management. To amend this, the country launched a consultation process to analyze how its laws align with the formation of a CMA. At the end of the consultation, they amended the fisheries act to accommodate CMAs, developed new policies to support the CMA, and linked the fisheries laws to other existing laws that could facilitate the implementation of CMA activities (Tsmenyi 2013).

Finance encompasses needs, sources, instrument flows, and equity (IPCC 2022). It is needed to fund social sources of learning and adaptation and bolster the early stages of the ACM (Armitage et al. 2009). Finances can be secured and allocated by innovative policies that offer incentives and provision of funds, resources, and capacity for monitoring (Barthel et al. 2005). Finance is critical in ACM processes because it has the potential to stall the implementation of ACM objectives that require the mobilization of significant resources (Becker and Ostrom 1995).

Policymakers also have an integral role to play in creating the enabling environment, but they also have expectations that need to be met (Armitage et al. 2009). The expectation cannot be met at the initial nascent stages of the ACM. Therefore, they need to be optimistic and see the long-term vision to visualize the benefits that lie ahead (Sendzimir et al. 2018; Armitage et al. 2019). Administrative agencies, which are prone to making tiny, gradual, incremental adjustments, must be enjoined to contribute to much more substantial policy reform. This will enable the government to go beyond taking “baby steps” to establishing legal rights and authorities that will endorse increased communities' involvement and participation (Sendzimir et al. 2018).

2.6.4 Power Asymmetries

It is imperative to emphasize the role of power in ACM (Armitage et al. 2009) as it determines whether or not stakeholders will participate in decision-making processes (Nurse-Bray et al. 2018). Power asymmetries can be determined by investigating the various sources and forms of power, as well as how power emerges and persists (through control, resistance, and solidarity) and its impact on collaboration and learning (Armitage et al. 2009). Additionally, how stakeholders are identified, what kinds of influence they have, and how much they

participate in or are affected by the political economy of the time are all upshots of power asymmetries (Nurse-Bray et al. 2018).

Abuse of power in participatory approaches is what resulted in the instrumental co-management phenomenon, and it needs to be avoided in ACM. During an analysis of CMAs in several countries, Nielsen et al. (2004) emphasized that to make co-management adaptive, the government should commit to sharing power and authority with local fishermen and community groups. Government institutions that are stakeholders in ACMs should be prepared to undergo changes and accept that “the empowerment process of co-management bodies is associated with asymmetric disempowerment of government agencies, which formerly had full control” (Nielsen et al. 2004, 156). These changes may necessitate the promotion of diversity by hiring new staff with both traditional and scientific knowledge and a willingness to be open to learning and cooperation (Becker and Ostrom 1995). However, though power-sharing is crucial, it is not the end goal but rather the consequence of a long-term process (Nurse-Bray et al. 2018).

2.7 Challenges in Adaptive Co-Management

Adaptive co-management is not the cure for all management challenges (Plummer 2009). While ACM has had an appreciable number of success stories, there are also many failures (FAO and WorldFish 2021). Lack of trust (Silva et al. 2003), disregard for diverse forms of knowledge (Moller et al. 2004), failed policies (Armitage et al. 2009), poor monitoring and enforcement systems (Sendzimir et al. 2018), and strong political interferences (Ostrom 2009) are all factors leading to failed cases of ACM.

Also, ACM has proven to be extremely costly in terms of both time and money invested, as well as the institutional complexities that have to be reconciled (Sendzimir et al. 2018). Because success in ACM necessitates years of sustained effort and might be difficult to detect, many people may opt for less expensive approaches (Armitage et al. 2009; Ostrom 2009; Sendzimir et al. 2018). Another major reason identified by Sendzimir et al. (2018) is what they refer to as “gaming the system.” This occurs when one network of stakeholders acquires a competitive edge by manipulating or exploiting the governing regulations that were created to safeguard everyone. This could impede joint attempts to evaluate, make policies, act, or monitor (Sendzimir et al. 2018).

2.8 Country Under Review: Liberia

Liberia is situated on the Atlantic coast of tropical West Africa. It borders the Ivory Coast to the east, Sierra Leone to the west, Guinea to the north, and the Atlantic Ocean to the south (Fig. 1). Liberia's climate is tropical, having two distinct seasons: wet and dry. The rainy season lasts from April to November, with June and July experiencing the most rain. The dry season runs from November to April and is marked by a dusty, dry West African trade wind blowing in from the south Saharan desert. Due to the low-temperature variance, the average temperature is around 30°C (Boah 2019). The country is home to 42 percent of the Upper Guinean rainforest and is rich in minerals, forest, and water resources. Moreover, it is expected that poverty will continue to rise as per capita consumption falls behind the country's economic growth.

Poverty's effects may be seen in every aspect of Liberian society. Malnutrition, high illiteracy rates, child labour, and a lack of access to adequate drinking water, education, and health facilities are all expressions of poverty in the country, according to the Borgen Project (2019). According to IDC (2018), over half of Liberians live in poverty. Absolute poverty has been on the rise in Liberia since 2014, according to the country's national development plan (2018), and "most Liberians are poor and face some kind of income and food instability and vulnerability (RoL 2018, 1)."



Figure 1. Political Map of Liberia (URL: <https://www.netmaps.net/digital-maps/liberia-political-map/>)

2.9 Liberia's Fisheries Sector

Liberia has a 570 km coastline and a fishing ground covering 20,000 km²—stretching from Grand Cape Mount County in the north to Maryland County in the south—with a range of 200 nautical miles (FWSC 2021). The subsector of fishing generates 3% of real GDP (RoL 2018) and is organized into three parts: marine fisheries, which include both industrial and small-scale fisheries; artisanal inland fisheries; and aquaculture, which is still in its infancy. Foreigners dominate the industrial and marine fisheries, which suffers mostly from IUU fishing (FWSC 2021). Locals dominate the inland fishing, which is mostly undertaken on the country's six major rivers and two lakes (FWSC 2021).

2.10 Liberia Small-scale Fisheries

Liberia's small-scale fisheries (SSF) sector plays a pivotal role in food security and fisheries production in Liberia (Sherif 2014; Jueseah 2021; Okafor-Yarwood et al. 2022). The sector is an important source of income for Liberians and other nationals; it employs 37,000 Liberians—60 percent of whom are women—who work in fishing, fish processing, and fish mongering, primarily in the country's nine coastal counties' 114 fishing towns (RoL 2018; EJJ 2019). The sector also employs an estimated 10,800 people, which is overwhelmingly more than the approximate 500 people that industrial vessels employ to serve as deckhands or labourers in their cold storage depots or units (Okafor-Yarwood et al. 2022).

The sector is dominated ethnically by the Kru and the Fanti who originated from Ghana, and the creole from Senegal. They use canoes of different sizes powered by oar, sails, paddles, and recently, outboard motors (Sherif 2014). Fishing gear used are purse-seines, beach-seines, lines and hooks, and gillnets. The sector targets demersal species and small inshore pelagics: sardinella, tuna, billfish, and bonito. Other fish species targeted are barracuda, soles, croakers, and sharks and rays (Jueseah et al. 2021).

The fishers are organized into cooperatives, with an average annual cooperative income of 66,700 USD, and the country's fish consumption capacity is 23,800 tons, with 15,800 tons imported (RoL 2018). The Cooperatives Development Authority now has twelve fishing cooperatives registered and supported, with more being formed in the communities by the government and its development partners. Recent studies show that there has been a 58% increase in the annual catch in SSF between 2018 and 2020 (Jueseah et al. 2021). In 2021,

NaFAA (2021) reported that in 2019 and 2020, SSF landed 18,187 tons and 18,086 tons of fish, valued at L\$3,675,563,000.00 (25,846,405 USD) and L\$2,459,696,000.00 (17,296,479 USD), respectively.

Amid all of these contributions to the country's economy, SSF in Liberia is greatly hampered by many challenges. According to Sherif (2014) and the National Pro-poor Agenda for Prosperity and Development (2018), some general roadblocks challenging SSF are lack of funding, limited market access and inadequate technology to increase fish quality and add value to the products, poor infrastructural landing sites, unskilled labour, insufficient infrastructure for processing and preserving fishery products, limited adoption of new fishing technologies, and high electricity costs. Currently, all fishing gears used in SSF are imported from neighbouring countries (Jueseah et al. 2020). These challenges might be compounded with more threats of overharvesting, habitat degradation and pollution, and intrusion by fishing vessels soon from other nations (RoL 2018). Additionally, SSF is usually overlooked by the central government, with fishers being viewed as “reckless custodians” of the fisheries’ resources and blamed for the overexploitation and its corollary effects on the resources (Okafor Yarwood et al. 2021,135). These challenges have rendered small-scale fishers some of the most “destitute socio-economic groups” in the country (Etongo and Arrisol 2021,2).

2.11 Small-scale Fisheries Management

The central government has been solely responsible for the governance of SSF in Liberia since the mid-1950s (FAO 2001). The institution responsible for SSF was the Ministry of Agriculture's Bureau of National Fisheries Unit until the National Fisheries and Aquaculture Authority (NaFAA) was established in 2017 to assume this responsibility. NaFAA now operates as a full-fledged independent agency under Liberia's Public Authorities Law (NaFAA 2020). Its vision is to harmonize the expectations of all the stakeholders in the fisheries sector and recognize the strength, weaknesses, opportunities, and threats in the sector. It also seeks to provide job opportunities, encourage participatory fisheries management, boost sustainable fishing practices, and contribute to National GDP, food, and security (NaFAA 2020). NaFAA primarily controls the SSF by input management and technology approaches, using vessel registration and monitoring of fishing gears and activities to control fishing activities (FAO 2001).

A local governance structure that is supported by Liberia's customary law and recognized by the central government also has a level of management responsibility in the communities. These structures were provided for in the country's fisheries regulation and are meant to sustain and preserve SSF. The structures exist at the communities' level and are led by tribal chiefs who are assisted by 'sea chiefs' from the different tribal groups in the community. These tribal chiefs and sea chiefs are tasked with coordinating the activities of small-scale fishers in the communities (Boah 2019).

Another body that contributes to the management of fisheries in Liberia is the Liberia Artisanal Fishers Association (LAFA). This group was formed in 2009 as a representative organization of small-scale fishers in Liberia. They are also an advocacy body that protects the interest of small-scale fishers. However, according to Jueseah (2021), implementing an efficient management strategy for SSF is a challenge in Liberia. This could be because the country's SSF suffers from what Okafor-Yarwood et al. (2022) referred to as 'survival of the richest, not the fittest.' According to them, this happens when fisheries governance restrains SSF and supports industrial fishing because of its economic value.

2.12 SSF Challenges in Liberia

The World Bank (2009) highlights three major constraints in West Africa's fisheries sector: lack of capacity to govern and manage the resources sustainably and prevent overfishing; inability to prevent IUU fishing; and failure to add value locally to the resource. These constraints are evident in Liberia's fisheries. According to Okafor-Yarwood et al. (2022, 6), fisheries governance in Liberia "illustrates the discriminatory nature of the political, social, and economic dimensions of fisheries governance processes." In summarizing the constraints to Liberia's fisheries sector, FOA (2001) and World Bank (2009) highlighted the following points:

- limited institutional capacity and research capacity leading to weak governance and management of the fisheries;
- high import duties and landing charges for locally produced fish;
- lack of basic fisheries infrastructure at artisanal landing sites;
- primitive fish processing methods in artisanal fisheries, which are still traditional and limited to fish smoking;
- high operational costs in artisanal fisheries because of the high costs of fishing inputs;

- high import duties on fishing gears and other inputs;
- lack of a credit scheme;
- poor road connectivity to fishing communities;
- lack of a monitoring, control, and surveillance system;
- low literacy rate amongst artisanal fishers;
- lack of sufficient trained workforce in fisheries and aquaculture development; and
- deep poverty and social fragmentation in fishing communities.

These points, which were highlighted as far back as 21 years ago, continue to stifle the sector's—especially SSF—expansion and leave it vulnerable to shocks and disruptions. These limitations are all connected to the huge data gap in the sector, as in-depth and frequent assessments of the country's marine and freshwater resources have never been conducted (FAO 2001).

2.12.1 Survival of the richest, not the fittest

This term was coined by Okafor-Yarwood et al. (2022,2) to describe “the paradox of how Africa's fisheries governance and the pursuit of economic growth through the expansion of the fisheries sectors may compromise the critical SSF sector it seeks to advance”. This phenomenon has been manifested in many ways; however, this review will highlight the following scenarios, building on the examples given by Okafor-Yarwood et al. (2022):

On May 7, 2017, former President Johnson-Sirleaf issued Executive Order 84. The order stated that the “fishery resources in the country have been underutilized (Executive Mansion 2017)” and there was a need to ensure the sustainability of the resources by encouraging investments. The order also reduced the Inshore Exclusive Zone (IEZ) from 6 to 3 nautical miles, stating, “The Inshore Exclusive Zone (IEZ) as established by the Fisheries Regulations of 2010 is reduced from 6 to 3 nautical miles to ensure that industrial and semi-industrial fishing can restart and again become viable” (Executive Mansion 2017). This mandate spurred diverse reactions in the country. Some concerns raised were about the marginalization of small-scale fishers who fish in the IEZ, an increase in conflicts between small-scale and industrial fishers, and the depletion of fishery resources.

The LAFA resisted the protocol by stating it was not in their interest, and the government attempted to ‘play on them’. They further threatened to host nationwide protests, cease all SSF

activities, and boycott elections (Harris 2017). The Environmental Justice Foundation (EJF), an international non-governmental organization (INGO) operating in Liberia, also condemned the order and argued that the government is considering short-term economic interests over the needs of its people and undermining a sector that provides “vital food, livelihoods, and incomes for thousands of Liberians” (EJF 2017). These reactions led to a revision of the order and dissuaded the government from reducing the IEZ. Even though this decision was cancelled, Okafor-Yarwood et al. (2022) state that it still demonstrates that revenue generation is usually prioritized over the well-being of small-scale fishers and the health of the overall fishery resource.

Another recent political decision that reiterates that fishery governance prioritizes economic growth over the country’s SSF is the signing of the “Protocol on the Implementation of Fisheries and Aquaculture Cooperation” by H.E. George M. Weah in 2019. The protocol was supposed to give fishing rights to 300 Senegalese fishing pirogues – 100 artisanal pirogues and 200 large pirogues – to fish in Liberia’s coastal waters up to 6 nautical miles from shore. Fortunately, criticisms from the public necessitated that the protocol be reviewed by an ad-hoc committee, which recommended that a set of conditions be met before the protocol is enacted (Gorez 2020; Okafor-Yarwood et al. 2022). According to the committee, if these conditions are not met, implementing the protocol will lower small-scale fishermen’s catch, resulting in overfishing and biodiversity loss and spark a confrontation between local small-scale fishermen and Senegalese fishermen. These decisions contradict the country’s 2010 fisheries regulations which push for increased catch for small-scale fishers, sustainability of the resource, and viability of the sector.

2.12.2 Regime Shifts

Politics also interfere with fisheries governance in Liberia through regime shifts. The President of Liberia appoints and dismisses the Director-General and Deputy Director-Generals (MoFA 2017, 10). This indicates that the management of the lead institution for fisheries is susceptible to drastic structural changes once the President decides to change the leaders and appoint them. This regime shift, which happens every 3 to 6 years, can result in the cancellation of initiatives, a loss of vision, and a halt in the implementation of certain policies and regulations. This also causes delays in project implementation and local and international discussions because new officers need time to learn about the project, policies, and people involved.

2.13 Government efforts to boost SSF

The Johnson-Sirleaf-led government introduced the six nautical miles delineation called the Inshore Exclusive Zone (IEZ) in 2010. This zone was dedicated to the SSF to increase its productivity (Jueseah 2021). The government also established a Fishery Monitoring Center to protect the IEZ from IUU fishing activities through active monitoring (World Bank 2010). Additionally, to increase small-scale fishermen's access to productive resources, services, and markets, the Liberian government, with support from the World Bank, through the West African Regional Fisheries Project (WARFP), also invested in fish landing and cold storage infrastructure, as well as facilities and landing clusters in Robertsport and Monrovia (RoL 2018). The WARFP project also led to the establishment of Liberia's first CMA to promote participatory fisheries governance. The Weah-led government is currently constructing and repairing additional landing sites with funds received from the World Bank for the Liberia Sustainable Management of Fisheries project, worth USD 40 million. President Weah's administration also announced that it was going to "support artisanal communities to increase domestic market supply from 8,000 tons to 16,000 tons annually by 2023" (RoL 2018, s55). The strategies for realizing this were not clearly outlined (2021), but it was intimated that this supply was meant to derive largely from semi-industrial, artisanal, inland, and aquaculture fisheries activities. However, the possibilities of these being achieved are slim as many artisanal fishers still lack financial and institutional support.

2.14. Grand Cape Mount County Co-Management Association

The Grand Cape Mount County Co-Management Association (GCMCCMA) was founded in tandem with component one of the West African Regional Fisheries Project funded by the World Bank. The project sought to establish CMAs to strengthen fishing communities to participate in the development and management of the fisheries sector. This co-management component of the project was inspired by the Sustainable Fisheries Livelihood Program, a project previously implemented in 25 central and western African countries (World Bank 2010). The GCMCCMA was established to meet a pre-defined objective: to manage the Territorial Use Rights for Fisheries (TURF) declared by the Government of Liberia in 2013 under the Fisheries and Aquaculture Policy and Strategies of Liberia. The TURF extends from the Lofa River at the boundary between Grand Cape Mount and Bomi counties in the south and extends to the Mano River at the boundary between Sierra Leone and Liberia in the north and covers approximately 80 nautical miles (Boah 2019; Fig. 2). It was also responsible for (i)

ensuring “...transparent and efficient monitoring of prosecution processes and the imposition of and collection of fines/penalties, as well as follow up to infractions” (World Bank 2009, 76), (ii) improve local fisheries management and contribute to “community integration and poverty alleviation”, and (iii) intended to function as an instrumental arm of NaFAA as WARFP’s project document (2010) clearly states that “in exchange for the benefits of the TURF (including increased Monitoring Control and Surveillance support from the national government in these areas), communities, through their CMA, would agree to work to enforce regulations banning the use of illegal fishing nets and other destructive fishing methods” (World Bank 2009, 77).

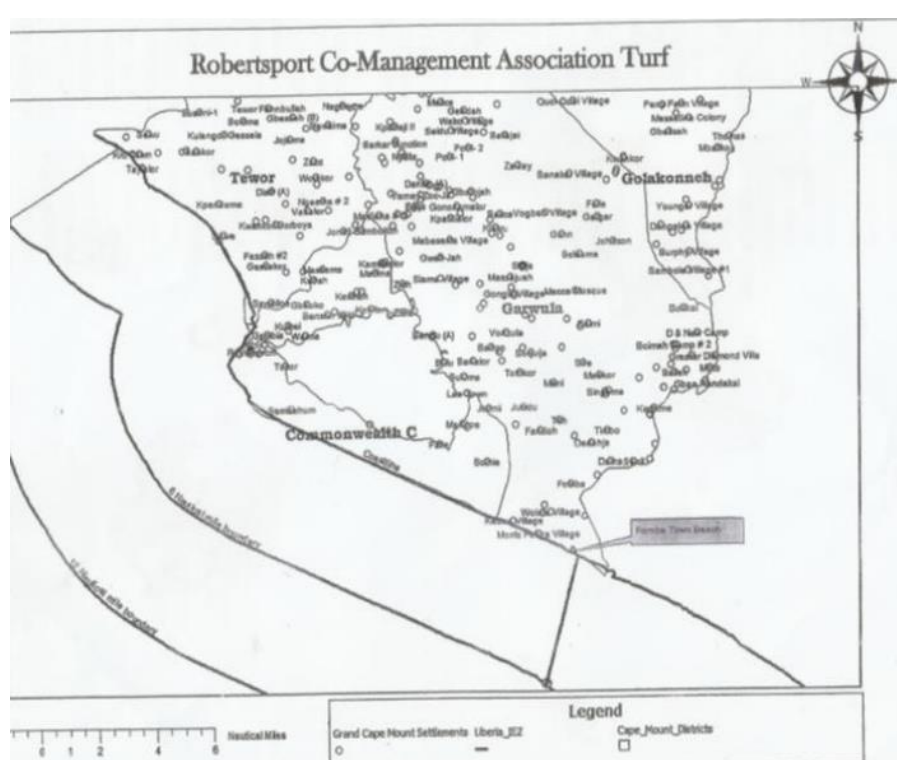


Figure 2. The area of Grand Cape Mount County CMA (previously called Robertsport CMA) TURF (Source: Boah 2019)

The CMA established in Grand Cape Mount County was a pilot project that was intended to develop as communities’ responsibility in managing the fisheries resources advanced. Experience gained from the CMA was also envisioned to inform the government to establish more TURFs and CMAs to manage them. The GCMCCMA now controls the fifteen (15) fishing communities (communities involved in both marine and inland fishing) in Grand Cape Mount County and has a membership of over 1500 people (Boah 2019). The communities are divided into three zones for management purposes. The CMA is led by local community

members who are to be elected after every three years and a board of directors who are to be appointed after every four years.

According to a Memorandum of Understanding (MoU) signed between the GCMCCMA and the central government, the cooperative partnership between the Government of Liberia and the CMA delegated formal roles and responsibilities to both parties to manage the marine resources in Grand Cape Mount County. The major roles of the CMA include:

- Representation of members in local fisheries management decision making
- Community-based enforcement and self-regulation
- Community-based monitoring and evaluation
- Participation in research, data gathering, and analysis

The major roles of the Government of Liberia role in the agreement include:

- The provision of national legitimacy and legal recognition for the CMA.
- Provide technical assistance to the Robertsport CMA, including with the application of national fisheries regulatory standards, in conducting research that is fisheries-related conflict management and appeal mechanism
- Address issues as it regards enforcement and compliance that may be beyond the scope of the CMA (Boah 2019)

A limited study by Boah (2019) claims that the CMA is effective in terms of sustainability, equity, and stewardship. The study was conducted by the CMA team and enumerators working with NaFAA on behalf of the researcher, which increases the chances of biases. Additionally, the study was conducted in only 10 of the 15 fishing communities that are easy to reach, and the “co-management seems most effective” (Boah 2019, 46). This is the only published study that has evaluated the effectiveness of the CMA since its inception in 2012. However, poor documentation of CMA activities is not peculiar to Liberia.

As there is still a huge gap in the documentation of the experiences of CMAs around the world and how effective they have been in addressing SES management challenges (Nielsen et al. 2004; Plummer and Fitzgibbon 2004b; Evans et al. 2011), there is difficulty in determining “whether co-management in practice delivers on its promises as a normative concept” (Evans et al. 2011, 2). This gap also signals a major shortcoming in CMAs as the ability to document outcomes should be a priority of all CMA processes. Moreover, the tools required to evaluate

CMAs' outcomes are limited "...and more research needs to be done to refine these tools" (Carlsson and Berkes 2005, 72). Nielsen et al. (2004, 152) recommend that the evaluation of CMAs should "move on to a more comprehensive understanding of co-management and to summarise the experiences with both the positive outcomes and the problems in actual implementation, which have been made in recent years". These challenges are coupled with an increasing demand for fisheries governance to move to a more polycentric and adaptive approach (Nielsen et al. 2004; Armitage et al. 2009).

This research attempts to address the issues raised above by studying the GCMCCMA and reporting on its successes and challenges. With plans in the pipeline to replicate the CMA in other counties in Liberia, the research aims to provide lessons learned from the GCMCCMA to inform the replication process, avoid missteps that will undermine the effectiveness of the nascent CMA, and equip the actors forming them to address challenges that may arise. This study will also contribute to the data deficit that exists in Liberia's fisheries sector. With regards to the increasing demand to transition from CMA to ACMA, this study will further evaluate if the GCMCCMA meets the criteria to join the global transition to ACMA. On a broader level, the study can be useful to other countries that are practising CMAs as it will discuss solutions that have been effective in addressing challenges in the CMA; solutions that can be adopted to other settings that are encountering similar challenges.

3. Methodology

3.1 Type of research

Qualitative research involves collecting and analyzing non-numerical data (e.g., text, video, or audio) to gather answers to the research questions through archival research and interviews with human subjects. The research applied the ‘case study’ research design by studying a Co-Management Association (CMA) functioning in Grand Cape Mount County, Liberia. It is an in-depth study to understand how the subjects see the research topic, the meanings they attach to it, how it affects their lives, what they think is wrong with it, and how they think it can be improved. The research was conducted between April and July 2022, with April dedicated to archival research, May to interviews, and June and July to data analysis and writing.

3.2 Data Collection

3.2.1 Archival Research

The researcher first collected data via archival research to understand the current state of knowledge and critical debates about the core concepts of interest: co-management, adaptive co-management, and fisheries as social-ecological systems. Legal and policy instruments that guided and enabled the formation of the CMA and now regulate its activities and unpublished papers that provide more information on the case study and Liberia’s fisheries sector were also analyzed to supplement information received from interviews.

The researcher structured and informal interviews to collect reliable field data for the field study.

3.2.2 Interviews

A total of thirty six (36) interviews were conducted and were done twofold:

- Structured Key Informant Interviews (KII)

Sixteen (16) KII were conducted. This mainly involved research participants from government institutions (regional and national) responsible for fisheries management and policy-making, the GCMCCMA leadership, and non-governmental (local and international) institutions stakeholders in the GCMCCMA. These interviews were done with experts in both traditional and professional knowledge who have worked in the field for five years and above.

- Informal Interviews

Participants for these informal interviews (20) were drawn from ten (10) of the fifteen fishing communities that the GCMCCMA covers. These participants were primarily fishermen, fish processors, and fishmongers registered with the GCMCCMA.

Six (6) of the twenty participants were interviewed via phone because of the deplorable condition of roads leading to those communities. The remaining five communities were unreachable because of the road condition, which was exacerbated by the rainy season. The researcher tried to contact participants from these communities via phone, but they were unavailable.

3.3 Coding of Participants

The different categories of participants interviewed were assigned codes, made up of the acronyms of their category and a number to ensure confidentiality. The numbers were randomly attached to the acronyms and did not indicate position or roles, as the researcher talked to people in different institutions and across various levels. Participants from Liberia National Fisheries and Aquaculture Authority are coded as NaFAA-1, NaFAA-2, NaFAA-3, and NaFAA-4, etc.; participants from the CMA leadership will be coded as CMA-1, CMA-2, CMA-3, CMA-4, etc., participants who fall under the international stakeholders' category are coded as IS-1, IS-2, IS-3, IS-4, and participants from the fishing communities coded CM-1, CM-2, CM-3, CM-4, etc.

3.4 Sampling Methods and Research Participants

Research participants were selected using the purposeful nonprobability sampling method (Merriam and Tisdell 2016). The researcher applied this sampling method because the study is information-rich. People were selected to participate based on their knowledge and experience of the topic and the meaningful contribution they could make to the study. Snowball sampling (Merriam and Tisdell 2016) was also employed as the researcher encouraged participants to recommend people who could contribute meaningfully to the study.

Additionally, these methods were selected because most of the research participants are fishers who are members of the GCMCCMA. These fishers were usually busy during most hours of the day, hence the use of sampling methods that allow available people to participate in the research once they know the topic.

The other participants were selected from the CMA's partners (Liberia National Fisheries and Aquaculture Authority, European Union Liberia, Environmental Justice Foundation Liberia, the Grand Cape Mount County Authority, and former World Bank West African Regional staff Fisheries Project, the project that established the CMA. Some of these people were no longer in the same positions; therefore, snowball sampling helped direct the researcher to them.

3.5 Data Analysis

The data were analyzed using coding, categorization, and discourse analysis methods. The researcher employed the discourse analysis method, which analyses texts and uses interpretations based on the texts and conceptual knowledge to compare perceptions of key terms and concepts in the study and how these perceptions are communicated (Shathi et al. 2015). The method requires examining the data's different elements (words, sentences, paragraphs) and relating themes and patterns relevant to the research questions (Scribbr 2021). The writer used this method cognizant that there will "always be a difference in how questions are understood...and that perceptions are subjective opinions, not concrete facts" (Wilson et al. 2010, 648).

3.6 Presentation of Findings

The research findings are presented in a descriptive and in-depth format that aligns with the research questions and theoretical framework. The researcher discusses the findings in line with the four components of ACM highlighted in the theoretical framework to determine attributes of ACM that are inherent in the CMA and the reforms that need to be made for it to qualify as an ACMA.

The findings will also be summarised in a report submitted to the Environmental Justice Foundation, the Liberia National Fisheries and Aquaculture Authority, and policy-makers. The researcher also plans to present a summary of the findings to the GCMCCMA through a report or a one-day workshop.

3.7 Research Ethics

The CEU Research Ethics guidelines guided the entire study. It prioritized participants' welfare, consent, privacy, and confidentiality. All subjects were formally asked to participate in the research, and the choice to participate or not was solely theirs. The researcher ensured that the research and its findings would not pose any risk to the participants, their livelihoods,

and their families by securing confidentiality and anonymity and protecting the data collected. The researcher further secured confidentiality and anonymity by not collecting any personally-identifying information and presenting the findings to reduce the possibility of readers attributing data to individuals. The data collected will be stored on the researcher's phone, personal computer, and google drive. All storage methods are protected by passwords and have restricted access. The data will not be shared with any third party, and the researcher will ensure that all other materials with data, i.e., notepads, are secured at all times.

3.8 Study Limitations

The study was limited by the vast research gap in Liberia's fisheries sector. Acquiring recent and extensive information on Liberia's fisheries sector was a challenge as little information is available. Most are outdated and do not correspond with the current realities of the sector. Additionally, the GCMCCMA has not documented its activities, successes, and failures, hence the need to rely on memory and oral information to collect data regarding the GCMCCMA. This method might not always be accurate as the research participants' relaying the information might overstate or undervalue the information. Another bias might be intentionally tweaking the data to protect or vilify some stakeholders or institutions.

Cultural biases might also taint the data as the participant might frame the data based on his/her personal beliefs or values. The researcher minimized these biases by interviewing different groups of stakeholders and highlighting information that three or more participants mentioned. To verify information that was received, the researcher also compared the information received against the documents and records (Constitution, MoU) available to authenticate the accuracy of the data received.

4. Study Findings

The overall question this research sought to answer was “based on the experience of the GCMCCMA, to what degree can adaptive co-management be integrated into the GCMCCMA activities and other potential CMAs in Liberia?” To answer this question, it was key for the research to investigate and document the following:

- The purpose of the GCMCCMA
- Current challenges of the GCMCCMA
- The achievements of the GCMCCMA

The results presented in this chapter are gathered from the interviews and archival research conducted by the researcher. The results are also presented based on the categories and themes that were identified and created during the data analysis.

4.1 The Establishment of the GCMCCMA

To document the challenges, achievements, and lessons learned from the GCMCCMA, the research first attempted to understand why the CMA was formed in Grand Cape Mount County, the different perceptions surrounding why it was established, and the legal framework on which it was founded.

The GCMCCMA started with a five-person committee, called the core committee. This committee was supported by the WARFP project, the national government (through the BNF at the time), and the county and city authorities. The community mobilization was done by the core committee; according to a community leader who was a member of the core committee, this is how the mobilization of communities was done: “*the core committee was going around, informing people, and telling them the outcome of the incoming CMA*” (CM-5). The other stakeholders in the CMA formation process played advisory roles and provided support to the core committee by building their capacity to implement their assigned tasks through training; “*as we were going explaining about the CMA, we were inside doing training. We did a lot of training*” (CM-5), said a past member of the committee.

In addition to awareness, the core committee and partners enabled the smooth formation of the process by uniting the Kru and Fanti fishermen and encouraged all fishermen to join the CMA:

“*We insisted that it was a consultative process and that it did not apply the theory. It was necessary to consider the theory through interviews and consultation to work out a system that*

was going to function for the Robertsport community. As you know, the R/sport community is completely divided between the Fanti and the Kru, it was essential not to do anything other than help build that relationship” (IP-2).

To maintain its promise of building the relationship between the Fanti and the Kru ethnic groups, all activities undertaken by the program were done with caution, including the construction of a fish landing cluster:

“although it practically made some sense to locate the facility where it currently is, the division that that would encourage between the Fanti and the Kru was well understood and discussed, and there was specific finance put to one side to create facilities like building the bridge over the stream in Kru town and refurbishing that old BNF office, to allow fish landed at the Kru area to be readily transported to the facility to be processed, and the management of the site was set up through the Kru Community and the Fanti Community” (IP-2).

However, according to a past member of the committee, *“to get the fishermen from Kru Town and Fanti town to unite and get on board was a big challenge” (CMA-8).* This challenge was surmounted through consistent dialogues with the two groups:

“We were able to talk to some people. People from Kru Town were talking to the Kru people, the Ghanaian leaders were talking to the Ghanaians and other people in the city of Robertsport, and I was talking to the people from Grassfield, Bomoja, etc. and in the end, we all got together to work” (CMA-8).

After this challenge was surmounted, communities began to embrace the process. According to a past committee member, it was easy for communities to grasp the concept because the concept was relatively not new. According to him, *“from time in memorial, the community knew about collaborative management because if you look at the onset, the community themselves put themselves together to manage this area (CMA-6).”* Another reason is that the communities saw the need to manage the fisheries to sustain and improve their livelihood *“we embraced the idea because we saw out there in Senegal, what fish is doing for people. It changes people's lives... Our wives, our sisters, our mothers, only depend on fish and that is why some of us stayed on the vanguard, we convinced them, we talked to them, and we all encouraged them to join the CMA” (CMA-8).*

Once the communities were organized, the WARFP project then took the following steps:

“We assisted them to do their by-laws and using the by-laws, we then developed an arrangement between them and the BNF. We had to arrange for an agreement to be signed to show clearly that the government administration in charge of fisheries was willing of ceding its authority to the local and the CMA. So, there was this formal agreement signed and we had to state the various roles to be played because CMA is about sharing responsibilities.

Then the next thing was to legitimize their existence. We then went through the registration process through the ministry of foreign affairs. We have a department there that then registered organizations, so we got the certificate of incorporation from there and so legally they could exist as an entity in the Republic of Liberia. The next procedure was—then the BNF was under the Ministry of Agriculture (MoA)—and to be able to work as an organization we had to register them as an NGO because that was the only instrument through which you could be recognized by MoA, so we had to register them as an NGO.

The last thing that we did was to declare their TURF. We had to demarcate the area and we used some maps to do the zoning to show that this is their territory. We did that because we knew that it was going to extend to other counties, so, it was necessary to define their boundaries so that there are no future conflicts” (IP- 4).

These steps indicate that the CMA formation process was an organized, collaborative, and legitimized process. One important point to note was that the GCMCCMA was established as a pilot project:

“It was a pilot project; it was intended to work out how it would operate on a trial basis, learn these lessons, and hopefully be able to expand them to other communities in Liberia” (IP-2).

4.1.1 The purpose of forming the CMA

Participants had different reasons why the CMA was founded. But the central idea expressed was that CMA was established to make fisheries management effective through decentralization. This concept was known and shared by the different categories of research participants and was expressed in their answers to “why was the CMA established?” A staff of NaFAA while answering this question said the “*we felt that the fisheries governance in operation was done in the absence of community involvement, so based on that, we decided that govern fisheries efficiently, we need to involve the community at which these operations are taking place, so there the idea of forming a collaborative management association came from, to have the full participation of the community within the operation or governance of*

the fisheries activities” (NaFAA-2). This decision to include fishers in the management of the resources was also directed at getting fishers to comply more with fisheries laws:

“If a fishery must be managed effectively, those practitioners involved in catching the fish must be involved in its management. If you use top-down laws, you would do this, you would do that, and fishermen would find a way to go against that. But if you use laws partly made by themselves, in their interests, then there is a much better chance that they would be followed” (IP-2).

These answers aligned with the purpose outlined in the CMA’s constitution, which states that the CMA was established to sustainably manage the fisheries sector of Liberia collaboratively (CMA 2012). The CMA arrangement also required *“NaFAA to share power with the fishers to govern the resource at the community level and then pass that information onto the national level to inform decision-making to take up activities like monitoring IUU, to ensure fishers do not use bad fishing practices”* (IP-3).

The participation of fishers was expected to be beneficiary to both the fishers and other stakeholders: *“the fishers were to participate in the management of the resources and also to help us in implementing project’s activities such as extending help, financial assistance and training to the fisherfolks”* (IP-4). Their participation was also intended to get them to *“manage the facility that was given to the community and their TURF”* (CMA-2).

However, there are still perceptions that the CMA was established as an implementing arm of NaFAA: *“even though they have so many things that they have to do, but primarily, they are there to assist NaFAA. CMA is like an implementing organization for NaFAA...there to implement NaFAA’s policies or activities”* (NaFAA-3).

Other perceptions coming solely from community members were that CMA was an entity that was going to provide material and financial benefits. According to the participants, when the CMA was being established, they were told that the CMA would have dispensed loans to fish mongers and processors to help them grow their businesses and distributed engines, nets, and boats to the fishermen. A fishmonger in one of the fishing communities said that it was based on these commitments that she joined the CMA: *“as for me, I joined the CMA for business, but for two years now I registered, they said they were giving us loans, but it is not happening”* (CM-9). A representative council member from another community said that *“from the beginning, they told us that we were going to benefit, but we are not benefitting anything”* (CM-15).

Despite these perceptions, the majority of the community members still understand that the CMA is a “*community-owned initiative*” (CM-11) and what it aimed to do is to “*wholly and solely bring the fishing communities together to work*” (CM-5) and “*to help to see to it that fishers and their stakeholders work together to uplift the sector*” (CMA-6).

4.1.2 Legal Documents and Policies that guided the formation of the CMA

The CMA has its by-laws and constitution that guide them as an entity and enable them to operate legally as an institution in Liberia. They also have their Article of Incorporation as they were registered as and non-governmental organization (NGO), for them to be recognized by MoA at the time. Another important document that guides the activities of the CMA is the Memorandum of Understanding (MoU) between the central government and the community that dictates the relationship and interaction between the two stakeholders. This MoU was signed “*to show clearly that the government administration in charge of fisheries was willing of ceding its authority to the locals and the CMA...and we had to state the various roles to be played because CMA is about sharing responsibilities*” (IP-4). Another legal document that guided the establishment of the GCMCCMA was the National Fisheries Law of 2010.

Now, more laws and regulations are supporting the activities of the GCMCCMA: the National Fisheries and Aquaculture strategic plan, and the National Fisheries and Aquaculture Authority Law, section 3.2 are a few of these laws.

4.2 The Major Challenges Faced by the Grand Cape Mount CMA

A myriad of major challenges currently faced by the Grand Cape Mount CMA, according to the research participants are narrated below.

4.2.1 Lack of Political Will and Cooperation from Central Government

According to one of the founding members of the CMA, this challenge exists because the government does not want to devolve power to the local communities (NaFAA-6). This reluctance to devolve power has resulted in constant interference from the central government in all the activities of the GCMCCMA (IP-3). All the international partners, and staff of NaFAA and the CMA who participated in the research also alluded to this as a major challenge and agreed that the CMA is still heavily controlled by NaFAA.

Another KI held NaFAA responsible for the dysfunctionality of the CMA by saying that the CMA has not been able to work because it is not being supported by the central government (IP-2). The participant also said that *“if NaFAA does not make CMA central to its management of fisheries and provide the necessary support, training, financial support, etc, then the entire CMA process is not made functional”* (IP-2).

The interference is substantial to the extent that some community members think that the CMA has been replaced by NaFAA or is only an implementing appendage of NaFAA. A Sea Chief from one of the fishing communities while describing the changes in the CMA said that *“when the CMA was here, we were working fine with them, but since NaFAA took over, we are not understanding anything again”* (CM-20). Another staff of the CMA, a KI who works closely with the CMA summarised the relationship between NaFAA and the CMA this way: *“CMA is just here to say yes to NaFAA when NaFAA calls from Monrovia... I think that the only reason why they are dealing with the CM is that they are organized in the communities and that makes them kind of useful to them”* (IP-1).

The participants described this challenge as “persistent” and according to them, this challenge started in 2017 when BNF became autonomous (was changed to NaFAA) and began to breach the MoU with the CMA. A member of the CMA mentioned this when he said: *“we have the MoU that we signed with the government and all of those things, we have lived up to our part, but the government has not lived up to their part as we speak”* (CMA-6). When asked what are some of the areas of the MoU that NaFAA has breached, (CMA-5) answered that *“NaFAA is supposed to do development and implementation of capacity building programs including training the CMA leadership, but they are not doing it. Resolution of problems and issues beyond the scope of the local CMA, particularly local monitoring and surveillance efforts and enforcement is also lacking from their side.”* NaFAA also breached the MoU with the CMA by withholding the 30% of the revenues collected that were supposed to be given to the CMA to run their activities (NaFAA and CMA 2012). According to a participant, the CMA has not received this money since 2017 and this has hampered its ability to operate as an institution.

However, a KI from NaFAA said that this is not the case and that the change in administration did not affect the CMA negatively. What the change in administration did instead was to add value to the fisheries sector by promoting accountability and transparency, which threatened the CMA because they are not accountable and transparent (NaFAA-7). According to this participant, the new administration of NaFAA began questioning the activities of the CMA and

the financial reports they were making on the collection of revenues they were responsible for because of “*loopholes in the report*” (NaFAA-7)—it is key to note that NaFAA has the authority to ensure accountability in the GCMCCMA (NaFAA and CMA 2012), and this gives them the right to question the CMA. Another KI said that these loopholes in the reports brewed distrust between the CMA and the central government and made the central government withdraw its support for the CMA (NaFAA-3).

Notwithstanding, other research participants still insisted that the major reason why NaFAA does not support the CMA is that “*they did not agree for the fisheries to be managed through the CMA, they wanted to manage it from Monrovia. So, they have systematically not supported the further development of the CMA*” (IP-2).

4.2.2 Ownership and Management of the Fish Landing Cluster

While investigating the central government’s interference in the GCMCCMA process, a key factor that arose repeatedly as a point of contention and a tool used by the government to interfere in the CMA process is the landing cluster built-in Robertsport by the WARF-Project. There are disagreements regarding whether the landing site was supposed to be used and managed by the CMA or by the government directly.

During the interviews with the community members and KIs who were instrumental in forming the CMA, it became apparent that the plan of the WARFP project was for the CMA to manage the Robertsport fish landing facilities themselves, to raise revenue to support its activities:

“The principal form of revenue was to be, the leases and the structures provided by the infrastructure...it was accepted that the community would take some time to build up their skills and their management processes to ensure that they got proper revenues from the facilities that they were managing” (IP-2).

The members of the CMA are cognizant of this and it is based on this that they are claiming ownership of the facility:

“Initially, before this project started, it was said that CMA will have a certain portion of the benefits from here, the county will have a certain portion, and the national government will have a portion. Then the CMA would claim ownership of the place and anything regarding the facility, and CMA will get involved. From the onset, that is what was in our minds. So, even if NaFAA is not here, CMA is still in charge of this place” (CMA-6).

However, a staff of NaFAA explained that this is not the case and the members of the CMA must have misunderstood the management plan for the facility:

“But I know, down the line, they misunderstood that they were the ones who were going to manage it, they have told me that before, that it was built for them to manage it, but they do not have the skills to manage it. They do not even have the resources to manage it” (NaFAA-7).

Other partners of the CMA also think that the facility belongs to the central government, and they are using this to control the CMA. One participant stated that *“the building the CMA is occupying is owned by NaFAA and that is a stronghold on them”* (IP-3).

This conflict over who has the right to own and manage the facility was fuelled by NaFAA’s actions and threats to vacate the CMA from the facility. According to a member of the CMA, *“NaFAA’s boss came and said that the facility belongs to NaFAA, to the extent that she even threatened us to throw us out of the place where we occupied now as our offices (CMA-3).”* In an interview with a community member who works at the facility, he expressed that *“NaFAA broke our hearts by not embracing the CMA, because we expected her to embrace this CMA because no matter the circumstances, people have labored under rain and sun, to see this facility in good condition”* (CMA-2). This entails that by threatening to throw the CMA out, the CMA members saw it as a form of disrespect and an act of discrediting the efforts they have exerted to keep the facility in a good condition.

Another form of interference according to some of the research participants was the assignment of NaFAA employees at the facility to manage the facilities. According to the CMA leaders, they did not have an issue with co-managing the facility, but the issue arose when for six months, all the funds collected from the cluster were taken to Monrovia and they at the “lower-level” never knew how much was turned over to the government (CMA-3). Another reason why the CMA was dissatisfied is that financial resources from the facility were to be managed by the CMA for the development of the fisheries, and before the deployment of NaFAA’s staff at the facility, money generated from the facility was what they were using to support the CMA and maintain the facility.

When asked about the deployment of staff at the facility to manage the site, an employee of NaFAA stated that this was done to determine the economic viability of the facility. According to the participant:

“That facility is intended to generate revenue, but it cannot be managed by the CMA. They do not have that expertise. So, we intended to make it what we call a Private Public Partnership venture, that is what we wanted to do. And the CMA was supposed to work with the government and the private person to ensure that that place is economically viable for commercial purposes” (NaFAA-7). The plan by NaFAA aligns with what was recommended by the development action plan for the landing cluster (Baio 2014), but it does not give any right to NaFAA to own or manage the facility. Instead, the plan states that:

“While the landing site cluster will be part of the Robertsport CMA infrastructure, the authority/mandate to charge/levy and collect market tolls/fees is by ordinance the prerogative of the Robertsport County Authorities. Therefore, for the landing site cluster to be managed as a self-financing enterprise, it will require an arrangement for the county authorities to consent to divest authority and accept a revenue-sharing system whereby profits after expenses will be shared based upon agreed ratios at specified time intervals (quarterly, half-yearly or even yearly basis) between the managers of the facility and the county authorities. However, options exist for the CMA itself, the custodians of the property (the landing site cluster), either will agree to join the revenue sharing system above or grant the use of the landing cluster to the management/firm/entrepreneur on a lease basis in which case it will reap its dividends once on yearly basis” (Baio 2014).

This clarifies that the CMA is not the owner, but the custodian of the cluster. It also clarifies that the management of the cluster is not the prerogative of the CMA or NaFAA, but the county’s authorities. Therefore, only the county’s authorities can divest authority to NaFAA or other private entities to manage the cluster, while the CMA has the option of joining the management plan or not.

4.2.3 Financial Challenge/Lack of Funding

This was reiterated by all the research participants as a challenge of the CMA. This challenge is largely a consequence of the lack of support from the central government. The major sources of funding for the GCMCCMA were supposed to be:

- dues paid by members
- money raised from the fish landing cluster
- 10% remittance on license payments
- canoe registration fees
- seasonal fishers’ fees

However, these payments are no longer being made to the CMA, and this is crippling their ability to operate efficiently. For the due payment, the communities gave two reasons why they are no longer paying dues to the CMA. According to them, the first reason is that they are not seeing the benefits of the dues they are paying and the second is because they do not know what the money is being used for. The leadership of the CMA is aware of why the communities are not paying their dues. According to one of them *“if you can’t meet the needs of the people but you are going to them for meeting dues and things, it becomes frustrating, because why is the person paying dues to you when they are not benefiting anything in the first place (CMA 6)*. However, in their interviews, they did not mention or address the second reason, which needs to be addressed to encourage the communities to start paying dues again. These reasons are transparency and accountability. The CMA has not been accountable to the communities regarding the funds being raised (regardless of the amount), and this has made the communities distrust the CMA and renege in the payment of their dues.

The next source of income, which is the landing cluster, was the only stable source of income for the CMA. Money was raised from the cluster in the following ways:

“We have certain areas there that we could generate funds from. The landing sites where the canoes come and berth, they gave a certain amount of money, where we have the smoke shells, women pay to dry the fish and we generate funds from there, and we have some of the facilities that are out for lease, like the school and the stores...and the money was used to compensate staffs managing the facility, and fund activities like rescue missions” (CMA-3).

However, this was also hijacked by NaFAA when they took over the facility as discussed in the above section.

The remaining three sources of income as stipulated above are no longer generating funds for the CMA because of the central government’s interference. As mentioned previously, the CMA has not received the 30% remittance since 2017. They tried to resolve this challenge by informing the government that they have waived some of the money. According to CMA-6, they told NaFAA to *“forget about 2018-2019, but 2020 to 2021 we have to receive it, but since then, we have still not received anything” (CMA-6).*

For canoes’ registration and migrant fisher’s fees, NaFAA gave a mandate that the CMA should cut off the collection of all revenues from fishers (CMA-3, NaFAA-7). A member of the CMA expressed dissatisfaction over this decision by saying:

“The CMA has a by-law and constitution, enshrined in that by-law is that every registered member of the CMA should pay a registration fee, but now the Authority head called us to the meeting in Monrovia at their technical office and told us we should cut off, since the government is collecting revenues, the association should not collect revenues” (CMA-3).

In the contrast, a staff of NaFAA claimed that this decision was made because the current CMA leadership is being audited by NaFAA’s internal auditors, therefore, they have decided to suspend all of the CMA’s activities and collection of revenues, including the license payments that were collected by the CMA in the past. This is conflicting because though NaFAA has the mandate to ensure accountability in the CMA (MoU 2012), the CMA also has the right to collect these dues and payments as per its constitution (CMA 2012).

4.2.4 Reliance on Donor Support

Another source of funding, especially at the beginning of the CMA was the West African Regional Fisheries project, under which auspices the CMA was established. When elaborating on the financial situation of the CMA, a partner mentioned that:

“the CMA does not have funds; they are not able to generate revenues to run their activities. I think this is also an attestation to how they were set up; they were done with donor funds and they were not oriented to raise money on their own or undertake projects at no cost, for them, everything must come with a budget” (IP-3).

According to a KI, during the WARFP project, under which the CMA was established, there was constant support, both technical and financial. Some financial and technical support given by the WARP was money to fund meetings and workshops and other capacity-building activities. According to a founding member of the CMA *“WARFP used to fund activities, mostly workshops. They were also taking the executives on workshops and training. At a certain time, they sent some members to Senegal; they did some training and came back” (CM-5).*

But since the end of the WARF-Project, the CMA has virtually not been able to do anything, including hosting their elections. This indicates that the high reliance on funds provided by the WARF Project made the CMA unable to generate funds or do some activities at no cost.

4.2.5 Legitimacy in the Community

The CMA cannot operate as an effective institution if it is not recognized by the communities which they represent. This was identified by three of the KI as one of the CMA challenges.

According to one of the KI, *“the CMA is there but it is not recognized by communities. Even though it is supposed to be a collective need of the community coming together to manage the resource, the community sees the CMA as an external agent that is intruding into the community structure”* (IP-3).

However, based on the interviews in the community, this is not a challenge that stemmed from the way the CMA was set up, because communities, sea chiefs, local authorities, and all stakeholders in the community were subsumed under the CMA process from the onset. Therefore, the CMA has always been recognized by the communities they manage and these communities call on the CMA when they have conflicts or issues with fisheries management.

While investigating this at the community level, it was unraveled that this challenge arose in the last two years because of the central’s government interference with the CMA. Community members who recognized the CMA before began to question its legitimacy because of the way NaFAA interacts with the CMA. A staff of the CMA said, *“when the big people from NaFAA come to the cluster here, the way they can be talking to our boss men, we can be wondering if they working together or not”* (CM-16). According to the community members and staff of the CMA, NaFAA has “degraded” the CMA and *“given the community members reasons to question the legitimacy of the CMA”* on several occasions. The first one according to a staff of NaFAA was during a visit to Robertsport in September of last year where the head of NaFAA questioned a decision they made in the presence of the staff of the CMA and other community members. According to this participant, it was when *“she threatened to throw the CMA out of the structure if they continue to implement decisions that she does not approve”* (CM-20). Another instance was at a meeting in NaFAA’s technical office where representatives of the CMA leadership along with the sea chiefs from the communities in Robertsport and the women leaders were present. According to a KI, NaFAA questioned the CMA’s authority by asking them who /what gave them the right to collect dues from their members and migrant fishers. At that meeting, the leadership of NaFAA also asked the fishers for their constitution, when they responded it was the constitution that supported that decision. After the meeting, a sea chief who was present said that it was at that point that he started to question the legitimacy of the CMA, because according to him, *“if NaFAA is not aware of the CMA constitution and does not have a copy of it, then it means that the CMA has been doing their own thing in the communities”* (CM-14).

Another reason why the communities are beginning to question the legitimacy of the CMA is its inability to give back to the communities what they promised them at the beginning of the CMA process. A staff of the CMA said that:

“Looking back at the scope of the association, it is so wide and burdensome that we are not able to give back to our members You know and we are not in that position to give back. That is one of the major challenges that we have. Like helping to build toilets, there were requests to help build toilets in the communities, we started in RobertSPORT but because of some problems we have been restricted to RobertSPORT and you know CMA does not exist only in RobertSPORT, we have other collaborating communities, some have made requests to us to help them with handpumps, to help renovate their mosques, and what have you, and all of these things are very challenging” (CMA-3).

This has made some members in the collaborating communities recuse themselves from anything regarding the CMA. According to a representative council in one of the communities, *“even the identification (ID) cards business, more people said that they are not even taking the ID cards because they are not benefitting anything from the CMA” (CM-7).*

There is also a perception that *“only a few people are benefitting from the CMA (CM-9)” and these people are the people in RobertSPORT because “they can go for workshops and meetings, but they are forgetting to know that CMA is not only in RobertSPORT” (CM-7).*

These benefits discussed by the community members are financial benefits that they will sometimes get from workshops and meetings. However, they said that those activities just stopped happening and they did not know why. They also mentioned capacity-building workshops that they attended at the start that they are no longer being invited to. The communities are not considering conflict resolutions or rescue missions that the CMA usually assists with, they are looking at personal gains and benefits, which the CMA cannot address.

However, this challenge mostly stems from poor information dissemination. The communities are not being informed of the current situation of the CMA and their incapacity to host these meetings, assemblies, or training for their members. Because this information is not being filtered down to the communities, they still think that the CMA is receiving financial support from WARFP and other partners, and they are intentionally leaving them out of activities and focusing only on the communities in the capital city, RobertSPORT. A member from one of the collaborating communities said that *“if we are in an organization, I want to benefit and you*

want to benefit too. So, anything that is going on, inform me, and I will take part and be in that organization. But without the information, I cannot work with you again” (CM-3).

With all these challenges, the leaders of the CMA said that there is still hope because “by the grace of God, at least the fishermen can still see the face of the CMA, they can still call the CMA if they face any challenge and we can also render help to them” but they are also aware that this situation can get worse and cause the communities to completely lose confidence in the CMA and not recognize it as their representative institution.

4.2.6 Information Dissemination

There is currently no organized flow of information from the CMA leadership to the communities. The communities outside of Robertsport complained that the CMA does not inform them of any activity or engagement. “We do not know anything. We can’t get any information from them, they are not calling us on meetings, what is happening, what is not happening, we do not know anything about it. We are just sitting down here” (CMA-7) said a representative council member of the CMA as she complained about the deficiencies in the flow of information in the CMA. According to the communities, they only see or hear from the leadership of the CMA if they call them to resolve issues in the communities, or when they go to collect money for ID cards or canoes license fees.

According to a leader of the CMA, information is still being shared with the communities. When asked how, it was explained that firstly, the CMA is not making decisions right now. But when decisions are made and when they receive information from NaFAA, they usually have an executive council meeting (the executive council only has three active members currently) to discuss the information received and then share the information with the zonal coordinators who are responsible to circulate the information in their different zones, which consist of five (5) communities each. However, in an interview with one of the zonal coordinators, he explained that “it is hard to go from community to community with information. I do not receive transportation or any help. So sometimes, I just call some people in the communities to share the information.” This is not an effective means of sharing information, as it does not ascertain that the information reaches the people in the communities.

The inconsistency of meetings is also fuelling this challenge. With no meetings being held and the CMA's inability to reach the communities due to logistical challenges, far-reaching communities will continue to feel exempted from the CMA process.

4.2.7 Decision-Making Practices

The highest decision-making body in the CMA is the general assembly (CMA 2012). This general assembly converged all members of the CMA in the fifteen (15) collaborating communities and was hosted annually in December. The functions of the assembly were to review and approve CMA work plans, annual budget, and proposed projects for implementation (CMA 2012).

Next to the general assembly is the Board of Directors (BoD). Members of this board are supposed to serve for four years and meet three times a year (CMA 2012). However, the current board members were appointed in 2014 and they do not meet regularly. The appointment and endorsement of the BoD are supposed to be done at the general assembly, along with an amendment in the constitution if necessary (CMA 2012). Unfortunately, because the general assembly has not been meeting, new board members have not been appointed or endorsed since 2014 and there has been no amendment in the constitution since then.

But according to the constitution, when a decision is made at the general assembly, it is to be passed over to the board for revision and approval. Once the board approves, it is communicated to the executive committee that runs the day-to-day activities of the CMA to supersede the implementation of the decision. The executive will then share the information with the zonal coordinators and the representative council members as well as the working committees: membership recruitment, business, community science, monitoring, control and surveillance, planning committee, and conflict resolution committee, for implementation in the communities.

However, the general assembly has not been hosted since 2014, and according to the members of the CMA, all decisions that have been taken have been decisions that were taken by the executive committee and communicated with the communities. According to them, they resolved to make decisions this way because the general assembly is very cost-intensive. According to their financial budget, the budget for the last general assembly, which was only a one-day event was approximately \$25,000 and was funded by the WARF-Project. The current leadership of the CMA said that on two different occasions, they tried to reduce the cost and host a general assembly but they *“just cannot cover the cost associated with hosting the assembly.”*

Currently, the CMA leadership admitted that they are no longer making decisions as a body and that all the decisions that are made in the TURF are currently being made by NaFAA. They

also said that these decisions are not being made collaboratively, as they are usually just called to Monrovia to receive information regarding decisions that have been made by NaFAA and need to be implemented by them. According to them, they were told from the beginning that decisions should be made using the bottom-to-top approach, but since the inception of NaFAA's new administration, *"everything has been coming from the top to the bottom"* and they think *"they are missing the mark of the establishment of the CMA"* (CMA-6). While discussing this, a staff of the CMA said that,

"Everything comes from Monrovia these days and you won't say anything against them, if you say it, it is a big problem. Even for example, when they increased the taxes, we made a series of attempts to meet some of the managerial staff at NaFAA to talk and see if they could reduce it but they did not listen to us."

However, the decision-making in the CMA was not designed this way as the CMA was entitled to make their own decisions, and *"nobody else was authorized by law to go there and make decisions for them as far as the management of the resources are concerned"* (IP-4). Decisions made by NaFAA were supposed to be done through participatory approaches that involve the full representation of the CMA and the CMA has the right to participate in the planning, design, and implementation of all the decisions and activities (NaFAA & CMA 2012).

4.2.8 Poor Involvement of Women

The core committee that was formed to set up the CMA was comprised of two women, who actively contributed to the successful establishment of the CMA. Additionally, one of those women ascended to the Vice Presidency after the CMA had its first elections. According to the community members, women were encouraged to join the CMA from the onset. They were engaged constantly and told of their importance and roles in the fisheries sector, at the start. The majority of the RC members are women as there is a women leader in every community, who form part of the CMA, and the current treasurer of the CMA is a woman. However, the reason why women's participation in the CMA persists as a challenge is *"because they were afraid and not educated, so they were afraid to take the lead"* (CM-5). This suggests that women are not actively engaged in the CMA process because the majority of the women are uneducated, and many of them have not been oriented in the area of leadership or decision-making. Another reason flagged was the time-consuming activities they are engaged in as fishmongers and fish processors. A KI who works closely with them said that *"getting the women to leave their dryers and come for the meeting is not an easy task"* (IP-1).

4.2.9 Leadership Structure

The CMA has not had elections since 2017 due to its inability to raise funds to support the activity. Its current leaders have served in that position for five (5) consecutive years, though its constitution explicitly states that “they shall serve for a period of not more than three (3) years” (NaFAA 2012). All of the participants mentioned the need to have an election. A current leader of the CMA admitted that *“the leadership should not have been in power for all this time, this means that it is not democracy and we are preaching democracy that no leader should go above 2 terms, because other leaders need to come in”* (CMA-3). Also, according to them, another reason to have the elections is that only three (3) of the seven (7) executive council members are active while the majority of the representative council members are inactive. Therefore, it was believed by the research participants that elections will *“bring on board people with fresh ideas and commitment who might help to rejuvenate the CMA”* (IP-1); some community members are confident that *“election is the only way forward”* (CM-13).

Another key point flagged by community members regarding the need for election is because according to them, *“the leadership of the CMA has been in the hands of few people. For example, the current co-chair was the first CMA president and the secretary-general has been in that position since the CMA’s first elections”* (CMA-5). This point was also supported by another participant who believes that elections are to be held regularly so that the members of the CMA can circulate through the senior management positions and that they can all have the chance to take on leadership roles.

According to many of the participants, there were efforts to resolve this challenge by the Communities for Fisheries Project last year April, but the process was halted by NaFAA. Their reason for halting the process was to conduct an audit on the current CMA leadership. A member of the community criticized this decision by NaFAA by asking *“why did they not conduct the audit ever since? Why did they wait for the elections first before conducting the audit”* (CM-12)? However, according to NaFAA, the audit was required to track some funds that were unaccounted for and to hold the CMA accountable and they think that *“the audit should be conducted before the current leadership leaves power”* (NaFAA-7).

4.3 Achievements

Since its formation, the CMA has worked together to achieve the purpose for which it was founded. Though there were several challenges mentioned by the participants, they also

acknowledged some of the major achievements of the CMA and the impacts that the CMA has made in the sector since its establishment.

4.3.1 Establishment of the CMA

This was recognized as the first achievement of the CMA. According to the participants, setting up the CMA itself is an achievement. According to a KI *“to be able to have a structure you call a CMA and to be able to identify people who are a party of it is an achievement in itself”* (IP-3). In setting up the CMA, they have also succeeded in recording the numbers and types of canoes operating in their TURF, and this information is key in the management of the TURF (NaFAA-7). Another reason why this was considered an achievement is that forming the CMA united the fishermen, the fish processors, and the fishmongers and increased their participation in fisheries management.

4.3.2. Addressing IUU Fishing

Another achievement is the instrumental role played by the CMA in combating IUU fishing in their TURF. *“I will say this is one of the biggest achievements of the CMA. They play a leading role in helping to fight IUU in the country, through them, we were able to track a lot of trawlers down, and enforce the regulations on these trawlers”* (NaFAA-3).

4.3.3 Rescue Missions

The CMA has helped lead and fund search and rescue teams to go out for *“fishers who would lose their way while on the sea. They would usually make an SOS call and the CMA would send gas, manpower, and supplies to go and look for those fishermen that are missing”* (IP-1). According to another participant, the CMA has been very active in doing this at the local level as *“some local fishermen are not too sophisticated over the water and sometimes, they go missing, sometimes they lose direction, and the CMA has been in the vanguard to search for them, rescue them, and bring them back on shore, that I know, so they have been very successful in that”* (NaFAA-3).

4.3.4 Conflict Resolution

This achievement was highlighted by the communities themselves. They applauded the CMA for this achievement and said that the CMA has been *“helpful in helping them to talk cases, especially the cases amongst fishermen”* (CM-10). According to a Kru Governor, since the establishment of the CMA, the conflicts that used to exist between the Fanti and the Kru have reduced, because whenever there is a misunderstanding, the CMA steps in and helps them to resolve it.

4.3.5 Managing the facility

The CMA has been committed and diligent in managing the Robertsport Landing Cluster. According to a KI, the CMA cherishes the facility (NaFAA-7) and they proved their commitment to maintaining the facility by “*not leaving the entire facility open, even when the donor and NaFAA abandoned the place*” (NaFAA-2).

4.4 Summary

This chapter presented the findings of the research, which were gathered from interviews, and archival research. It first presented how the CMA was founded and why. It shows that the GCMCCMA was founded as an alternative to the central government’s management of the fisheries in Liberia by the West African Regional Fisheries Project. It introduced the communities by the WARFP and the central government. There are discrepancies surrounding the aim of the CMA but a majority of the actors understand that it was established to encourage decentralized and participatory resource management. Since its formation, the CMA has been plagued with challenges that hinder its effectiveness as an organization. The challenges identified by this study are lack of political will and cooperation from central government, lack of funding, reliance on donor/external support, legitimacy in the community, information dissemination, decision-making practices, poor involvement of women, and leadership structure. The challenges categorized as the most prevalent ones are the lack of cooperation from the central government, lack of funding, the reliance on donor aid, and the leadership structure. It is also key to note that most of the challenges are linked to the lack of cooperation from the central government and the reliance on donor funding, which stemmed from the way the GCMCCMA was established.

The achievements of the GCMCCMA were also presented in this chapter. Though there are many challenges, the organization has succeeded in achieving milestones that are worth documenting, including the establishment of the CMA, its role in addressing IUU fishing, leading and facilitating rescue missions, conflict resolution, and managing the fish landing cluster which hosts their office. These challenges and achievements will be discussed in the next chapter along with the pathways forward for integrating ACM within the GCMCCA, and similar contexts elsewhere.

5. Discussion

This chapter discusses the research findings in relation to the conceptual frameworks of the study and other studies that have been done in the area of CMAs and ACMAs. Next, it compares the establishment, challenges, and achievements of the CMA to other CMAs formed globally and discusses the similarities the study's findings share with other CMAs. The chapter then proceeds to outline the major lessons learned from the GCMCCMA since its establishment. The last part of the chapter analyses the elements of ACM identified in the GCMCCMA experience and recommends reforms and practices to transform the GCMCCMA into an ACMA.

5.1 Discussion of Research Findings

Globally, states have established CMAs to decentralize resource management (Pomeroy and Berkes 1997). A systematic review of academic literature to examine the context and attributes of co-management initiatives in small-scale fisheries by d'Armengol et al. (2018, 217) reported that 77% of the cases reviewed answered that CMA is usually established to fulfil one or all of these goals: "to increase participation in management, to increase legitimacy and/or compliance with fishing rules, to define or enforce fishing rights, and to incorporate customary management norms in formal management." This confirms that the GCMCCMA follows the trend of why CMAs have been established globally. However, where it diverts from this trend is *how* it was established. The GCMCCMA was established by a donor organization (World Bank), as compared to other CMAs established through the self-organization of communities who saw the need to protect their natural resources, based on some or all of the conditions identified by Ostrom (2009). These self-organized CMAs have been reported to achieve more participation and collaboration with the government and face fewer challenges with legitimacy (Olsson et al. 2004; Tilley et al. 2019).

In the cases of CMAs that have been organized by donor organizations, devolution of power by government institutions might be forced due to the economic and development incentives involved (Nielsen et al. 2004; Ballet et al. 2009). This leads to temporary commitments of the central government that last only for the duration of the projects. As a result, these projects lose their ability to function after the funding is withdrawn—like in the case of the GCMCCMA—due to a lack of institutional and democratic support. The economic incentives also encourage community members to get on board and embrace the project. This embrace is usually driven by the individual benefits gained from the project and not by the need to genuinely contribute

to the fulfilment of the purpose of the CMA, as community members sometimes view conservation efforts as opportunities to make money (Ballet et al. 2009). This kind of embrace is short-lived and usually ends after those economic incentives are no longer being received. That is why according to Ballet et al. (2009), these projects lose their ability to function when the funding is withdrawn.

Another shortcoming identified by Ballet et al. (2009) is the drawing up of plans to implement the project. These plans are usually drawn up by experts (in the GCMCCMA case, these experts were hired by the World Bank) using “technocratic administrative procedures that are beyond the grasp of rural communities” (Ballet et al. 2009, 38). After the plans are drawn up and reviewed by people who sometimes only visit the project site twice a year or have never been to the project site, communities are belatedly asked to give their opinions so that it can be viewed and termed as a ‘consultative process’. In reality, this method is more akin to advising participants exactly how and in what they should participate and advertising the possible benefits of full participation, rather than genuine participation from the communities. For those outside these processes, it can be challenging to determine the proper amount of political will and self-mobilization (Tilley et al. 2019). Pomeroy et al. (2015) warned that this participation model could hinder the local community’s ability to implement management plans or enforce rules against outsiders.

These shortcomings above undermine the project’s sustainability from its nascent stage and set it up for challenges that gradually lead to dismal performance and subsequent failure.

5.1.1 Challenges

The major challenge faced by the GCMCCMA is what Nielsen et al. (2004) referred to as “instrumental co-management.” This occurs when government institutions perceive co-management primarily as a means of achieving their management objectives rather than as a partner or decision-maker. This was evident by participants’ complaints that the CMA is no longer involved in decision-making processes but is only called upon to implement the decisions after NaFAA has made them. This also resonates with another point raised during the interviews: that the central government only works with the GCMCCMA because they are organized in the communities and assist them in reaching all fifteen (15) fishing communities they control. This challenge, if not resolved, can severely undermine the independence and

democracy of the CMA and deliver the opposite of what the CMA seeks to achieve—a relapse into the top-bottom and command-and-control approaches which might worsen Liberia’s challenges with fisheries management, as these approaches have been criticized for completely excluding the fishing communities from decision-making processes and creating barriers between the fisheries administrations and the fishing communities (Nielson et al. 2004). For instance, the pressure exerted on the leadership of the GCMCCMA from the communities stems from their inability to deliver promises made at the start of the project and their incapacity to maintain some of the activities that were also held at the start of these projects. However, these reasons are also coupled with decisions made by the government, i.e., the increase in license fees. Though the government made this decision without the participation of the GCMCCMA leadership, the government is free from social pressures exerted by fisherfolks in communities, and the pressure is directed at the GCMCCMA, and this is because the communities do not have access to the central government (Ballet et al. 2009).

Additionally, the reluctance of the community members to pay their dues and engage with the CMA stems from their frustration and disappointment in how the GCMCCMA has turned out. Nielsen et al. (2004) observed that when co-management is first implemented, there are usually high hopes for real empowerment and community participation. However, it sometimes becomes business as usual and not an institutional reform (Nielson et al. 2004). This twist of events can lead to what the GCMCCMA is currently experiencing with its members.

The challenges of the CGCMCCM are similar to the challenges of many other CMAs that have been studied (Nielsen et al. 2004; d’Armengol et al. 2018; Okeke-Ogbuafor and Gray 2021; Baker 2021). For example, a CMA established in Sierra Leone under the WARFP project flagged challenges similar to the ones identified by the study as its major challenges. The only challenge in Sierra Leone’s case that is not present in Liberia’s is the accusation that the CMA leaders were breaching its regulations by engaging in illegal fishing. The GCMCCMA does not have such issues. Also, in reviewing co-management and diagnosing its challenges across Africa, Baker (2021)—who reviewed 91 articles written between 1999-2020—found eight (8) top-level diagnoses as the significant challenges of co-managements in Africa. All of the challenges identified are inherent in the challenges identified by this study. From 1999 to 2020, these challenges have been persistent in CMAs established in Africa, yet, it has not been resolved. The persistency of these challenges leaves these questions lingering: could it be the case of mental models perceived by donors as the best form of management that do not fit the

contexts of the communities they are introduced to? Could it be attributed to the central's government reluctance to devolve power to communities as they feel like it attenuates their control over those communities and the resources being managed? Could it be that people are hopeful that the outcomes will be different, but there are no accompanying incremental and monumental changes in the necessary structures that support co-management? There are many questions, but whatever the issue, more research needs to be done to discover why CMAs are not working in Africa and how this can be addressed.

5.1.2 Achievements

It has been advised that local and aggregated data on the effectiveness of co-management be regularly gathered, collected, and empirically analyzed to advance theory and generate strong recommendations for community-based and co-management arrangements (Wamukota et al. 2012). CMAs may have many challenges and drawbacks, but it has proven to be effective in some areas: conflict resolution, enhancing fisher's participation in fisheries management, defining or enforcing fishing rights, and addressing IUU fishing (Pomeroy and Berkes 1997; Nielsen et al. 2004; d'Armengol et al. 2018).

By managing the TURF, the CMA is also addressing the intrusion from neighbouring countries and changing the narrative about SSF being viewed as "reckless custodians" (Okafor Yarwood et al. 2021, 135) of the fisheries' resources. Also, compared to Sierra Leone's CMA, which was also set up under WARFP, the GCMCCMA has had considerable success addressing IUU fishing. This finding also aligns with Chapos et al. (2019) study, which recommended that local fishers can effectively address IUU fishing.

Conflict resolution as an achievement is also important. Usually, in fishing communities, different fishers categories use different fishing gear. Conflicts in those communities usually arise from competition between different groups (Pomeroy and Berkes 1997). CMAs resolve these issues both directly by facilitating conversations and indirectly by choosing the best course of action (Nielsen et al. 2004). By resolving conflicts, they manage access to and harvesting of the resources and also maintain social interactions that are pertinent in preventing division in the communities.

It is vital to note that social-economic outcomes are not core benefits of CMAs. d'Armengol et al. (2018), in a review of 91 co-management cases across 37 countries, reported that socio-economic outcomes were the least reported in all of the cases they reviewed. Therefore, members of a CMA need to be oriented on CMA benefits from the onset to avoid the misconception that CMAs will enrich people through monetary compensation. They also need to be taught that although CMAs might increase catches (d'Armengol et al. 2018) it is up to them, the fisherfolks, to manage the income they gain from the increased catches if they want to see fundamental socio-economic changes in their lives. Donors and government agencies who implement co-management, especially in developing countries, should be cautious of how they introduce the concept to the communities. Financial benefits should not be heralded as the core benefits of CMA, and they should not be used to motivate people to join the CMA because by doing so, they may be setting the CMA up for failure (Ballet et al. 2009).

5.2 Lessons Learned from the GCMCCMA Experiences

The GCMCCMA was intended to be a pilot project from which lessons would have been acquired and used in replicating CMAs in other communities. Therefore, this research also collected information on the lessons learned from the GCMCCMA since its inception. These lessons were collected for two reasons: to assess the level of complex social learning being carried out in the CMA and to identify possible recommendations for the establishment of additional CMAs in Liberia.

The first lesson that has been learned from Robertsport based on the interviews is the importance of cooperation from the central government in the CMA process. Before forming the CMA, it is critical to ensure that the central government is willing to support the institution and share power and responsibilities with them (Evans et al. 2011) through a consultative and collaborative approach. A KI who was instrumental in forming the CMA succinctly summarised this lesson when he said:

“the Robertsport experience has been a value in other countries in that respect; we have been able to show that despite investment in big infrastructures, in people, in systems, in landing sites, in fuel supplies, in clean fish processing activities, in cool stores, in icemaking, in all of the things communities need to scale up the value they can take from fisheries if there is no political support, it is all wasted” (IP-2).

A second lesson from the GCMCCMA is to ensure solid binding policies that enforce compliance and implementation. Research participants concluded that NaFAA had not been committed to the MoU with the CMA because it is not binding on them. The MoU also gives the central government the authority to act against the MoU if necessary (NaFAA and CMA 2012).

Third, implementing development projects that the communities can manage themselves, in the absence of donors or external support, was demonstrated to be of importance. This lesson was acquired from the gigantic facility that was built by the WARFP, especially the cold storage that is costly to maintain. The motive underpinning the construction of the facility is good: it was recognized that for the CMA to be self-efficient, there needed to be channels and activities that would guarantee a flow of income to the communities. However, due to the size of the facility, maintaining it has become a burden to the CMA instead of the assistance it was intended to be. Emphasis was placed on cold storage because it is a need in the communities, but because of how it was constructed, it cannot serve its purpose and meet that need. This has resulted in the GCMCCMA's high dependence on external funding.

The CMA leadership complained that some of their challenges, precisely information dissemination, stem from the number of communities that form part of the CMA. As an institution barricaded with financial and logistical challenges, meeting its purpose and serving all the fishing communities is a serious hurdle for them. The lesson learned here, according to a leader of the CMA, is to reduce the scope of the CMA so that it is not burdensome or provide logistics and finances for the CMA and its leaders, including the zonal coordinators, to be able to engage with all of the communities under their jurisdiction.

Next, encouraging CMAs to be independent and proactive in raising funds is noteworthy. This includes teaching them to create linkages with external institutions, conduct needs assessments, write project proposals, and implement activities independently. To do this, a session of the MoU (Count 8 of the Responsibilities of the CMA) which limits the CMA to solicit funds only through NaFAA (NaFAA and CMA 2012), needs to be amended. This will enable the CMA to raise funds independently, control their finances themselves, and determine the kinds of projects they want to implement based on the needs of the communities.

The principle to start small and expand as you grow was seen to be foundational. Do not start by hosting extravagant meetings, events, or activities that the CMA will not be able to continue

without external support. An example of an extravagant gathering is the General Assembly. The assembly was immensely costly, providing lodging, feeding, transportation, and sitting fees for all the participants. Now that the CMA cannot host the assembly, it has created tension between the CMA and its members because they saw the assembly as an opportunity to ‘benefit from the CMA’, and by not hosting the assembly, they think that the current CMA leadership does not want them to ‘benefit’ anymore. Based on the interviews, it was also realized that the majority of the people who attended the assembly attended it because of the amenities they received at the event, not the primary purpose for which the meeting was convened.

A further lesson involved creating continuous awareness in the communities to ensure that community members are constantly reminded of the roles and responsibilities of the CMA. The communities the CMA covers are many, hence the need for consistent awareness and engagement to ensure that they are on par with the CMA rules and regulations and are included in decision-making and implementation processes.

Lastly, organizing different engagement activities for fishers, fish mongers, and processors was crucial, as they have different needs and require different capacity-building initiatives. The different engagements should target gaps in participation, leadership, roles in fisheries management, and livelihood opportunities. This can also facilitate increased women’s participation in the CMA process.

5.3 Identifying and Integrating the Elements of Adaptive Co-Management in the GCMCCMA

Sustainability is the instrumental rationale of adaptive co-management (Plummer and Armitage 2007). According to Pokorny et al. (2003), the goal of the concept is to enhance high collaboration and learning among stakeholders to manage SES effectively and simultaneously improve the lives of people these systems support. Integrating ACM into GCMCCMA and other CMAs needs to be done with the knowledge that ACM is not the answer to all fisheries management systems (Armitage et al. 2009) and that it does not automatically cure all the challenges that the fisheries sector faces. This integration should also be approached with the knowledge that recommending change is much easier than actually implementing it, particularly in co-management systems where legal implications may arise from invoking changes (Mullowney et al. 2020). This indicates that ACM will have shortcomings in managing natural resources. However, this study posits that, due to its learning-by-doing nature, even

with those shortcomings, it can still be better at managing the resources than other management practices.

This study focuses on four core elements of ACM: collaboration, complex learning, enabling environment, and power asymmetries. These elements formed the criteria which were used to assess attributes of ACM that were inherently practised by the GCMCCMA and any reforms that need to be made for it to qualify as an *adaptive* CMA.

5.3.1 Collaboration

Collaboration in ACM describes the interactions that exist between public and private stakeholders in daily life, work, and decision-making (Pokorny et al. 2003). This element of collaboration is currently lacking between two key stakeholders in the GCMCCMA: the central government and the GCMCCMA. However, according to the research findings, some level of collaboration still exists in the CMA. This collaboration is between the CMA and its international partners, the Environmental Justice Foundation and the Icelandic Government; the CMA and the Grand Cape Mount County authorities; and the CMA and the Robertsport city authorities. The collaboration at the start of the ACM process was facilitated by the WARFP, which served as a mediating organization between the community and the central government. Unfortunately, at the end of the project, there was no institution to play the mediating role, and this severely undermined the collaboration between these stakeholders, confirming Sendzimir et al.'s (2018) argument that mediating or bridging institutions have important roles to play in the CMA process. Collaboration also entails that all stakeholders have specific roles that can either be self-determined (Tilley et al. 2019) or conferred (Sendzimir et al. 2018). In the case of the Robertsport CMA, the roles of the CMA were determined based on consultations held at the beginning of the process. Each stakeholder was conferred their roles and responsibilities in the CMA process.

To build and strengthen the collaboration between the two key stakeholders in a CMA, Pomeroy and Berkes (1997, 469) recommend that fishers “must not feel threatened if they criticize existing government policies and management methods. As a second step, fishers must be given access to government and government officials to express their concerns and ideas. Fishers should feel that government officials will listen to them.” This must also come with an organized structure to support information flow between the fishers and the government. This

structure can be regular meetings and workshops, where information is shared, and decisions are made. At these meetings, participants' inputs, especially the fishers, should be respected, heard, and considered credible sources of information that will be mainstreamed into the decisions made.

5.3.1.1 Trust

The element of trust in the GCMCCMA is dwindling in the GCMCCMA. All the stakeholders interviewed, except for the international partners, are experiencing issues of distrust in the CMA process. The central government and the communities do not trust the CMA leadership because they do not see them as accountable leaders. For the central government, this scepticism stemmed from disparities in the CMA's financial reports. This has affected the fishers' ability to meet with government and government officials to express their ideas and grievances, which is essential for nurturing the relationship between the central government and local communities (Pomeroy and Berkes 1997).

The community's distrust sprouted from poor information dissemination and reporting strategies. It was also spurred by the inability of the CMA to keep the promises made to the communities at the beginning of the CMA process. The communities blame the CMA for not fulfilling the promises made by the WARFP and think that the CMA leadership has control of the situation but is intentionally holding on to the benefits they are supposed to be receiving. Furlong (2005) warned against this kind of situation, and Mishra et al. (2017) posited that it is best to avoid a situation like this by refraining from making promises and creating expectations that cannot be fulfilled. From the end of the CMA, their trust in the central government deteriorated when the government began to lag in delivering and fulfilling its responsibilities as stipulated by the MoU both parties signed. This is a valid reason for distrust that has been identified in several studies (MA 2005; Armitage et al. 2009; Anthony 2021).

It is paramount for each actor to prioritize fulfilling their commitments to rebuild the trust between stakeholders. Promises made to communities at the beginning of the CMA process should be fulfilled; if they cannot be fulfilled, the communities should be informed of the barriers obstructing the fulfilment of these promises. There should also be a structured financial reporting template for the CMA leadership to report both to the central government and the community members. This will give all stakeholders an insight into how the finances raised by the CMA are spent. The CMA leadership should also prioritize sharing information with all

the fifteen (15) collaborating communities. The information dissemination strategy should be practical and have a mechanism to ascertain that the information reaches all the collaborating communities. There should also be regular meetings, as social interactions promote trust and collaboration (Armitage et al. 2009).

5.3.1.2 Actors in Co-Management

The identification of actors is essential in understanding how the ACM process works and achieving the institution's shared vision (Nielsen et al. 2004; Folke et al. 2005). The GCMCCMA possesses this element of ACM. The constitution (CMA 2012) and the MoU (NaFAA and CMA 2012) identify the different actors in the CMA process and their roles and responsibilities. Though some actors are not actively playing their roles, they are still aware that they are actors in the process and they have responsibilities to uphold. To boost this element, Nielsen et al. (2009,101) recommend that crucial individuals be identified to "maintain a focus on collaboration and the creation of opportunities for reflection and learning." They also recommend that individuals fit for this role are those who have "a long-term connection to "place" and the process resource, or, within a bureaucracy, to policy and its implementation" (Nielsen et al. 2009,101).

5.3.2 Complex Learning

Learning in ACM is formally structured, intentional, and iterative (Folke et al. 2005; Plummer 2009; Sendzimir et al. 2018). The GCMCCMA does not formally practice complex learning. Complex learning requires social interactions and regular meetings (Folke et al. 2005). The major meeting to accommodate this learning strategy in the GCMCCMA has not been held since 2014. Other regular meetings at the zonal, county, or national meetings are also not being held. This is a major gap as collaborative learning can encourage stakeholders' participation (Pomeroy 2003), help address wicked problems, integrate TEK in decision-making (Berkes 2004), and drive the institution to achieve its purposes (Butler et al. 2015). There have been lessons learned from the GCMCCMA. However, these lessons were all identified by individuals, and there has been no platform for these lessons to be shared and integrated into the CMA process. Creating these platforms requires strong leadership practices (Waltner-Toews et al. 2004), and the GCMCCMA currently does not have that capacity.

5.3.3 Enabling Environment

At the start of the GCMCCMA process, WARFP, the central government, and the communities recognized the need for an enabling environment for the CMA to thrive. They created the legal framework by registering the CMA as a legal institution in Liberia, drafting and adopting a constitution, and signing an MoU between the government and the communities. The WARFP also erected the Fish Landing Cluster to support the CMA financially and conducted capacity-building training for them. However, as the CMA began to operate, some of these enablers instituted from the onset are no longer active, and some are not being adhered to. This has resulted in an environment that no longer supports the operations and growth of the CMA. Support from the central government, financial support, and solid legal backing are all key to creating an enabling environment for the CMA, and they are all not being given to the CMA. In addition, policies and regulations that limit the CMA can also hinder its ability to thrive (AUC 2014). For example, Section 3.2 of the National Fisheries and Aquaculture Law (MoFA 2019) establishes the CMA as more like an implementing arm of NaFAA and gives NaFAA the authority to ‘control’ instead of cooperating with the CMA.

To boost the creation of an enabling environment in which a CMA can thrive, attention should be paid to government agencies as a target of reform instead of assuming that the government is aware of co-management and their roles in the process. In some cases, these agencies are “chronically understaffed, underfunded, and uneducated and uncooperative about the co-management system” (Baker 2021, 17). Hence, the need to educate them continuously on their role in the process and build their capacities to play those roles thoroughly. Also, policies and regulations that limit the CMA and restrict its ability to function as a partner to the central government should be amended. Those policies can also be supplemented by National CMA policies and laws that will give the CMA more independence and eliminate the government’s interference in its affairs.

Additionally, there needs to be sustainable income generation for the CMAs to be self-sufficient. One way this can be done is by embedding business ideas into CMA formation, businesses they can maintain. An example could be introducing them to restaurants, hotels, and other businesses. The CMA can serve as the sale agent between the fishermen and these businesses for a percentage of the total income that will be raised. Leaders of the CMA can

also be trained to navigate the internet and find grants and other funding that they are eligible to apply for. These recommendations are primarily abstract, but when practised, they might hold the solutions to some of the problems impeding the creation of an enabling environment for the CMA.

5.3.4 Power Asymmetries

Recognizing the sources and forms of power in collaborative management processes can determine the opportunities that will be available for stakeholders to participate in decision-making processes (Armitage et al. 2009; Nursey-Bray 2018). However, power asymmetries are usually not given in-depth consideration in the studies of CMAs (d'Armengol et al. 2018).

Power in the GCMCCMA currently derives from the central government. This influence is strong and has reversed decision-making processes to the top-to-bottom approach instead of bottom-up that collaborative management promotes. In wielding their power, the central government has suspended all the activities of the CMA, rendering them inactive. They have also excluded them from decision-making processes and relegated them to only the stages of implementing these decisions.

There are many ways through which power can be derived and exerted in co-management processes. For example, some actors might exert their power through regulations, information use, and decision-making processes. To understand power asymmetries in CMAs, Armitage et al. (2009, 99) recommend that it is “necessary to examine the many sources and manifestations of power, how it emerges and persists (through control, resistance, and solidarity), and its influence - good and bad - on collaboration and learning.”

5.4 Summary

The discussion compared the study's findings to similar studies. These comparisons were made through the lenses of the study's conceptual framework. The chapter also presents lessons that are key to meeting one of the fulfilments of the GCMCCMA, which is to provide a roadmap on how other CMAs should be established in Liberia based on the lessons learned from the GCMCCMA experience. The significant lessons presented are the importance of government's cooperation in CMA arrangements, strong binding policies that ensure compliance, the importance of implementing or introducing development projects that can be sustained by local

communities independently, defining the scope of the CMA, the principle of starting small and expanding as the organization grows, the need for continuous awareness, and the development of gender-specific capacity building programs for the CMA actors, specifically the resource users. The chapter also assessed attributes of ACM (collaboration, enabling environment complex learning, power asymmetries) present in the GCMCCMA experience and provided recommendations on how these elements can be integrated into the GCMCCMA to resolve some of its challenges and boost its effectiveness.

6. Conclusion and Recommendations

Co-management associations have been proffered as socio-ecological systems' most effective management strategy. However, this management strategy has had inconsistent outcomes; some areas have reported positive changes, some negative experiences, and others are unknown as some areas are not documenting outcomes and experiences of CMAs. This gap has sparked the need to document the experiences of CMAs. Researchers (Nielsen et al. 2004; Evans et al. 2011; d'Armengol et al. 2018) have posited that documenting experiences of CMAs can reveal the gaps that are present within CMAs, and trigger the process of addressing these gaps. It is also important because it tracks the progress that CMAs have made and the areas where they have seen growth and improvement. The reported progress proves that CMA is an effective fisheries management strategy and justifies why more countries and communities should replicate CMAs. Furthermore, documenting the experiences of CMAs can also be used to guide the establishment of other CMAs, even in different regions.

The research concludes that the challenges the GCMCCMA faces originate from two sources: how it was established and the lack of support from the central government. These two sources have manifested into the other challenges hampering the CMA's progress. The challenges occurring from how the GCMCCMA was established reiterate the importance of using caution in initiating CMAs processes and ensuring that it is tailored to meet the community's needs and can be sustained by the community. The research also discovered a strong need to engender and maintain the central government's support throughout the CMA process, as seen throughout chapters three and four of this thesis. To engender this support, the central government should be committed to devolving authority to the local communities. Local communities should strive to maintain the central government's trust by being transparent and accountable. The central government also needs to recognize and respect the roles of the local communities in the fisheries process and the importance of equity among the different CMA actors. Additionally, mediating institutions that establish CMAs should ensure that the central governments and local communities' commitment to the CMA process is hinged on the need to promote sustainable fisheries management and not on the financial or developmental benefits they receive from these institutions.

For the achievements of the GCMCCMA, they align with the achievements of CMAs in other areas (Pomeroy and Berkes 1997; Nielsen et al. 2004; d'Armengol et al. 2018). This entails that the CMA has the potential to achieve its goals and meaningfully contribute to the

management of fisheries in Liberia. However, harnessing this potential requires the empowerment of the communities, and commitment and support from the communities and the central government, in addition to other stakeholders.

Regarding the effectiveness of the CMA and its transition to an ACMA, there is still a huge possibility for the CMA to be revamped. The GCMCCMA has aspects of ACMA (collaboration, complex learning, enabling environment, power asymmetries) inherent in its constitution and operations; all stakeholders can build upon these areas to ensure a smooth transition to an ACMA. Additionally, its actors are still interested in working with the CMA when the reforms recommended in **sections 5.3-5.3.4** and **section 6.2** are made. They also still believe that when appropriately implemented, the GCMCCMA has immense benefits for all the collaborating communities, so they are willing to participate in rejuvenating it.

6.1 Recommendations

Rejuvenating the GCMCCMA requires intentional steps and actions. It also requires the collaboration and commitment of all stakeholders. These recommendations given below were provided by the interview participants and built upon by the researcher. It represents the reforms that the GCMCCMA's actors perceived as important and necessary to address the challenges faced by the CMA.

- It is recommended that a *general reconciliatory meeting* be held for all the major stakeholders of the CMA to strategize a way forward and renew the commitment of the stakeholders. Grievances and complaints should also be expressed in the meetings and lessons learned over the past years. Gaps that have been noticed and their instigating factors should also be discussed. Some of the major outcomes of the meeting can be a comprehensive work plan for the CMA, a revised MoU with the national government, a management plan for the facility, and the renewed commitment of all stakeholders to work towards the effective operations of the CMA.
- *Conduct Community Awareness.* The majority of the communities that form the CMA are not actively involved in its activities. This stems from misconceptions about how the CMA is being operated and the benefits they are supposed to acquire from the CMA. Therefore, there needs to be a general awareness and sensitization on what the CMA is, why it was established, and the roles of the communities in the process. This awareness also needs to reassure the communities that the CMA is now committed to promoting

transparency and accountability to regain their trust. The awareness should be extensive and be led by members of the communities and the central government.

- The *general assembly is essential*. It serves many purposes necessary to promote trust and collaboration—attributes of ACM in the GCMCCMA. However, there need to be changes in how it is organized. The following are recommended to reduce the cost associated with hosting the general assembly, thereby making it feasible for the CMA and its stakeholders to host it regularly:
 - Participants should be limited to the leaders of the CMA—the board members, executive committee, representative council, zonal coordinators, central government, other stakeholders like EJJ and the Icelandic Government, representatives from the county authority, and the leaders of the host community if necessary.
 - This assembly should be held annually and rotated to communities outside Robertsport. This will promote decentralization and participation from all communities.
 - The central government and the leadership of the CMA should commit themselves to fund this activity. This is important to ensure continuity of the event in the donor’s absence.
- The GCMCCMA and its partners *need to conduct general elections*. This has been recognized as an urgent need and a catalyst for revamping the GCMCCMA; therefore, it should be prioritized. NaFAA should release the audit report preventing the electoral process and the corollary actions that need to be taken, be taken so that the general elections can be held.
- NaFAA should *assign a financial officer* to the CMA’s team to collect revenues and ensure that the collection is done transparently. This financial officer can be an observer on the revenue collection team during the collections and be responsible for reporting the money collected to NaFAA and ensuring that the CMA gets its percentage.
- The central government should *draft a National CMA policy*. This national policy needs to be clear on the rules of CMA, where their authority starts and where it ends, where NaFAA’s begins and ends, and where they coincide. This policy should be a legal

document that binds all stakeholders to withhold their responsibilities in the GCMCCMA process.

- The GCMCCMA should independently take on *initiatives to show their level of independence and responsibility*. The cleaning of beaches and landing sites are some of the activities that the CMA should implement without external support. These activities will convince their partners of their partners that they are independent and innovative. The GCMCCMA should also strategize other means of raising money, like applying for grants and developing sustainable business strategies. However, it is critical to note that accountability will be key to any revenue-generating activity that the GCMCCMA undertakes, as this value will convince other actors to support them.

References

- Adger, N.W. 2006. Vulnerability. *Global Environmental Change*. 16: 268–281.
- Amoutchi, A., Mehner, T., Ugbor, O., Kargbo, A., Paul, K. 2021. Fishermen's perceptions and experiences toward the impact of climate change and anthropogenic activities on freshwater fish biodiversity in Côte d'Ivoire. *Discover Sustainability*. 1-18
- Anthony, B.P. 2021. Paying for the Past: The Importance of Fulfilling Promises as a Key Component to Resolving Human–Wildlife Conflict. *Sustainability*. 13. <https://doi.org/10.3390/su13137407>
- AUC. 2014. Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa. Assessed on April 6, 2022. URL: https://au.int/sites/default/files/documents/30266-doc-aubiar_fisheries_policy_framework_and_reform_strategy.pdf#:~:text=May%202014%20African%20Union%20Commission%20POLICY%20FRAMEWORK%20AND,create%20equitable%20C%20social%20and%20economic%20development%20in%20Africa
- Armitage, D.R., Plummer, R., Berkes, F., et al. 2009. Adaptive Co-Management for Social-Ecological Complexity. *Frontiers in Ecology and the Environment*. 2: 95-102
- Baio, A. 2004. Enterprise Development Action Plan for Fish Landing Cluster at Robertsport, Liberia. Prepared for the West African Regional Fisheries Project Liberia.
- Baker, C. 2021. Learning from 20 Years of Small-Scale Fisheries Co-Management in Africa. Master's project submitted in partial fulfillment of the requirements for the Master of Environmental Management degree in the Nicholas School of the Environment of Duke University
- Ballet, J., Koffi, K. and Komana, K. 2009. Co-management of natural resources in developing countries: The importance of context. *Économie internationale*. 120: 53-76. <https://doi.org/10.3917/ecoi.120.0053>
- Barratt, C., Seeley, J. and Allison, E. 2015. Lacking the means or the motivation? Exploring the experience of community-based resource management among fisherfolk on Lake Victoria, Uganda. *Eur J Dev Res*. 27: 257–272 <https://doi.org/10.1057/ejdr.2014.33>
- Becker, C.D., Ostrom, E. 1995. Human Ecology and resource sustainability: the importance of institutional diversity. *Annual Review of Ecology, Ecosystem and Systematics*. 26:113–133.
- Berkes, F. 2004. Rethinking community-based conservation. *Science* 302:5652
- Berkes, F., Palmer T. 2015. Managing shared resources collective community action is the best way to close the curtain on the tragedy of the commons. *Alternatives Journal*. 41:66-68
- Boah, T.J. 2019. The Effectiveness of Co-Management on Small-scale Fisheries in Robertsport, Liberia: Master's Thesis, School of Environment and Natural Resources University of Iceland, Reykjavik.
- Butler, J.R.A., Young, J.C., McMyn, I.A.G., Leyshon, I B. et al. 2015. Evaluating adaptive co-management as conservation conflict resolution: Learning from seals and salmon. *Journal of Environmental Management*. 160: 212-225.

Carlsson, L. and F. Berkes. 2005. Co-management: Concepts and methodological implications. *Journal of Environmental Management* 75:65-76.

Chapsos, J., Koning, J., Noortmann, M. 2019. Involving local fishing communities in policy making: Addressing Illegal fishing in Indonesia. *Marine Policy* 109, <https://doi.org/10.1016/j.marpol.2019.103708>

Choudhury, M., Haque, C.E., Doberstein, B. 2021. Adaptive governance and community resilience to cyclones in coastal Bangladesh: Addressing the problem of fit, social learning, and institutional collaboration. *Environmental Science and Policy* 124: 580–592.

Grand Cape Mount County CMA. 2012. Constitution of The Collaborative Management Association CMA Of Robertsport and its Environ. Available from the Grand Cape Mount County CMA Secretariat.

Corral, S., de Lara, D. 2017. Participatory artisanal fisheries management in islands: Application to the Canary Islands (Spain). *Marine Policy* 81:45-52 <http://dx.doi.org/10.1016/j.marpol.2017.03.011>

d'Armengol, L., Castillo, M.P., Ruiz-Mallen, I., Corbera. E. 2018. A systematic review of co-managed small-scale fisheries: Social diversity and adaptive management improve outcomes. *Global Environmental Change* 52: 212-225

Demsetz, H. 1964. The exchange and enforcement of property rights. *The Journal of Law and Economics* 7: 11–26. <http://www.jstor.org/stable/724917>

Dietz, T., Ostrom, E., and Stern, P. 2003. The struggle to govern the commons. *Science* 302: 1907-1912.

Ebel, S.A. 2020. Moving beyond co-management: opportunities and limitations for enabling transitions to polycentric governance in Chile's territorial user rights in fisheries policy. *International Journal of the Commons* 14: 278–95. <https://www.jstor.org/stable/27016566>.

EJF. 2017. <https://ejfoundation.org/news-media/ejf-liberian-government-decision-cut-inshore-exclusion-zone>

EJF. 2021. *Communities for Fisheries Liberia*. Accessed on March 10, 2022. URL: <https://ejfoundation.org/what-we-do/ocean/communities-for-fisheries>

Etongo, D., Arrisol, L. 2021. Vulnerability of fishery-based livelihoods to climate variability and change in a tropical island: insights from small-scale fishers in Seychelles. *Discover Sustainability*. 2:48

Evans, L., Cherrett, N., and Pems, D. 2011. Assessing the impact of fisheries co-management interventions in developing countries: A meta-analysis. *Journal of Environmental Management*. 92: 1938–1949. <https://doi.org/10.1016/j.jenvman.2011.03.010>

Executive Mansion, President Sirleaf issues Executive Order No. 84 pertaining to the Management of Liberia Fishery Resources, Press Release, 2017. Accessed 6 September 2019. URL: https://www.emansion.gov.lr/2press.php?news_id=4038&related=7&pg=sp

Fabricius, C., Currie, B. 2015. Adaptive co-management. Pages 147–179 in C. R. Allen and A. S. Garmestani, editors. *Adaptive Management of Social-Ecological Systems*. Springer. Netherlands.

FAO. 2001. Fishery Country Profile: Liberia (Accessed on April 30, 2022) URL:<http://omap.africanmarineatlas.org/BIOSPHERE/data/fishes/fisheries/CountryCatches/Fishery%20Country%20Profiles/FAO%20Fishery%20Country%20Profile%20%20THE%20REPUBLIC%20OF%20LIBERIA.htm>

FAO. 2015. Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Accessed April 6, 2022. URL: <http://www.fao.org/3/i4356en/I4356EN.pdf>

FAO. 2020. Implementing the SSF Guidelines in Sub-Saharan Africa, Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication. Accessed on April 6, 2022. URL: <http://www.fao.org/voluntary-guidelines-small-scale-fisheries/news-and-events/detail/en/c/1295596/>

FAO. 2021. *Fisheries & Aquaculture*. Accessed December 7, 2021. URL: <https://www.fao.org/fishery/en/ssf/en>

Folke, C., et al. 2005 Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources*. 30, 441-473.

FWSC. 2022. *Liberia*. Accessed on March 10, 2022. URL: <https://fcwc-fish.org/about-us/member-states/liberia>

Gorez, B. 2020. EU-Liberia SFPA: what should a potential future protocol look like? Brussels, 2020.

Hardin, G. 1968. The tragedy of the commons. *Science*. 126; 1243-1248

Herrero-Jáuregui, C. Arnaiz-Schmitz C, Reyes, M. F., Telesnicki, M., Agramonte I., Easdale M., Schmitz, M. Aguiar, M., Gomez-sal, A. and Montes, C. 2018. What do we talk about when we talk about social-ecological systems? A literature review. *Sustainability*. 10:1-14

Holling, C.S. 2001. Understanding the complexity of economic, ecological, and social systems. *Ecosystems* 4: 390-405

IDC. 2018. National Adaptation Plan in Focus. Lessons from Liberia. Accessed on March 6, 2022. URL: http://www ldc-climate.org/wp-content/uploads/2018/07/liberia_nap_country_briefing_final_online1.pdf

IPCC. 2022. Sixth Assessment Report: Impact, Adaptation and Vulnerability Assessed on April 20, 2022. URL: <https://www.ipcc.ch/report/ar6/wg2/>

Johnson, M.N.P., Mclean, E. 2020. Discourse analysis. *International Encyclopaedia of Human Geography*. 2: 377-383. <https://doi.org/10.1016/B978-0-08-102295-5.10814-5>

Juseah, A.S., Knutsson, O., Kristofersson, D.M., Tomasson, T. 2020a. Seasonal flows of economic benefits in small-scale fisheries in Liberia: A value chain analysis. *Marine Policy*. <https://doi.org/10.1016/j.marpol.2020.104042>

- Jueseah, A.S. 2021. A critical review of the Liberian fisheries sector: A technical report.
- Kassah, J.E., Asare, C. 2022. Conflicts in the Artisanal Fishing Industry of Ghana: Reactions of Fishers to Regulatory Measures. In: Jentoft, S., Chuenpagdee, R., Bugega Said, A., Isaacs M. (eds). *Blue Justice*. Mare Publication Series, vol 26. Springer, Cham
- Levin, S.A. 1999. *Fragile Dominion: Complexity and the Commons*. Reading, MA: Perseus Books.
- MA. 2005. Ecosystems and Human Wellbeing: Synthesis Millennium Ecosystem Assessment, World Resources Institute, Washington, DC, USA Island Press: Washington, DC, USA. accessed 6 August 2019. <http://www.millenniumassessment.org/en/Synthesis.aspx>
- McCombes, S. 2021. How to write a methodology. URL: <https://www.scribbr.co.uk/thesis-dissertation/methodology/>
- MoFA. 2017. An Act to Create the National Fisheries and Aquaculture Authority.
- MoFA. 2019. An Act to Amend the National Fisheries and Aquaculture Authority Law by Adding therto the Fisheries and Aquaculture Management and Development.
- Mullowney, D.R.J., Baker, K.D., Zabihi-Seissan, S., Morris, C. 2020. Biological perspectives on complexities of fisheries co-management: A case study of Newfoundland and Labrador snow crab. *Fisheries Research*. 232.
- Mutumukuru-Maravanyika, T., Asare, C., Ameyaw, G., Mills, D., and Agbogah K. 2013. Ghana Coastal Fisheries Governance Dialogue: Developing Options for a Legal Framework for Fisheries Comanagement in Ghana. USAID, Coastal Resources Center of University of Rhode Island and WorldFish Center, 59 pp. FAO 2010
- NaFAA & CMA. 2012. Agreement between the National Fisheries and Aquaculture Authority and The Collaborative Management Association of Robertsport and its Environs.
- NaFAA. 2021. *Research and Statistics Division, National Fisheries and Aquaculture Authority Republic of Liberia 2019 & 2020 Annual Report*. Assessed January 6, 2022. URL: <https://nafaa.gov.lr/index.php/medias/publications/research-and-statistics-annual-report-2019-and-2020/viewdocument>
- Nielsen, J.R., Degnbol, P., Viswanathan, K.K., et al. 2004. Fisheries co-management—an institutional innovation? Lessons from South East Asia and Southern Africa. *Marine Policy* 28; 151–160
- Nurse-Bray, M., Fidelman, P., Owusu, M. 2018. Does co-management facilitate adaptive capacity in times of environmental change? Insights from fisheries in Australia. *Marine Policy* 96: 72-80
- Okafor-Yarwood, I. 2019. Illegal, unreported and unregulated fishing, and the complexities of the sustainable development goals (SDGs) for countries in the Gulf of Guinea. *Marine Policy*. <http://dx.doi.org/10.1016/j.marpol.2017.09.016>

- Okafor-Yarwood, I., Kadagi, N. Belhabib, D., Allison, E. 2022. Survival of the richest, not the fittest: how attempts to improve governance impact African small-scale marine fisheries. *Marine Policy*. <https://doi.org/10.1016/j.marpol.2021.104847>
- Okeke-Ogbuafor, N., Gray, T. 2021. Is community-based management of small-scale fisheries in Sierra Leone the answer to their problems? *World Development Perspectives*. <https://doi.org/10.1016/j.wdp.2021.100292>
- Olsson, P., Folke, C. and Berkes F. 2004. Adaptive co-management for building resilience in social-ecological systems. *Environmental Management* 34:75-90
- Ostrom, E. 1990. *Governing the Commons. The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- Ostrom, E. 2005. *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press.
- Ostrom, E. 2009. A general framework for analysing sustainability of social-ecological systems. *Science*. 235:419-42.
- Onyango, P.O., and Jentoft, S. 2007. Embedding co-management: community-based fisheries resource management regime in Lake Victoria, Tanzania. Conference Paper 14. Accessed April 6, 2022. URL: https://www.researchgate.net/publication/23550982_Embedding_co-management_communitybased_fisheries_resource_management_regime_in_Lake_Victoria_Tanzania/citation/download
- Pinkerton, E. 1994a. Economic and management benefits from the coordination of capture and culture. *North American Journal of Fisheries Management* 14: 262–277.
- Plummer, R. 2009. The adaptive co-management process: an initial synthesis of representative models and influential variables. *Ecology and Society* URL: <http://www.ecologyandsociety.org/vol14/iss2/art24>
- Plummer, R., Armitage, D. 2007. A resilience-based framework for evaluating adaptive co-management: Linking ecology, economics and society in a complex world. *Ecological Economics* 61: 62–74
- Pokorny, B., Cayres, G., Nunes, G., et al. 2003. What is Adaptive Co-Management? Center for International Forestry Research Accessed April 6, 2022. URL: <https://www.jstor.org/stable/resrep02023.6>
- Pomeroy, R.S., Berkes, F. 1997. Two to tango: the role of government in fisheries co-management. *Marine Policy*. 21: 465-480
- Pomeroy, R.S., McConney, P., and Mahon, R. 2004. Comparative analysis of coastal resource co-management in the Caribbean. *Ocean & Coastal Management*, 47, 429-447.
- RoL. 2018. *The Pro-Poor Agenda for Prosperity and Development*. Accessed on March 6, 2022. URL: <https://emansion.gov.lr/doc/Pro->

Poor%20Agenda%20For%20Prosperity%20And%20Development%20book%20for%20Email%20sending%20(1).pdf%20-%20Compressed.pdf

Sendzimir, J., Magnuszewski, P., Gunderson, L. 2018. S. Schmutz, J. Sendzimir (eds.), Riverine Ecosystem Management. *Aquatic Ecology Series* 8, https://doi.org/10.1007/978-3-319-73250-3_16

Sherif, S.A. 2014. The development of fisheries management in Liberia: vessel monitoring system (vms) as enforcement and surveillance tools: national and regional perspectives. World Maritime University Dissertations. 462. http://commons.wmu.se/all_dissertations/462

Silva, C.N.S., Broadhurst, M.K., Medeiros, R.P., Dias, J.H. 2019. Resolving environmental issues in the southern Brazilian artisanal penaeid-trawl fishery through adaptive co-management. *Marine Policy*. 43:133-141

Steffen, W., Grinevald, J., Crutzen, P., McNeill, J. 2011. The Anthropocene: conceptual and historical perspectives. *Phil. Trans. R. Soc. A*. 369: 842–867

Thomson, K., Gray, T. 2009. From community-based to co-management: Improvement or deterioration in fisheries governance in the Cherai Poyil fishery in the Cochin Estuary, Kerala, India? *Marine Policy* 33:537-543

Tilley, A., Hunnam, K. J., Mills, D.J, et al. 2019. Evaluating the fit of co-management for small-scale fisheries governance in Timor-Leste. *Frontiers in Marine Science*. 6:392

Trouillet, B., Guineberteau, T., Bernardon, M., Le Roux, S. 2011. Key challenges for maritime governance in West Africa: Fishery-based lessons from Guinea and Mauritania. *Marine Policy*. 5: 155–162

Tsamenyi, M., 2012. Analysis of the Adequacy of Legislative Framework in Ghana to Support Fisheries Co-Management and Suggestions for A Way Forward. Accessed on April 6, 2022. Url: https://Henmpoano.Org/Wp-Content/Uploads/2016/06/Hm_analysis-of-the-adequacy-of-legislative-ramework-in-Ghana-to-support-fisheries-co-management-and-suggestions-for-a-way-forward.Pdf

Waltner-Toews, D., Kay, J., Tamsyn, P.M., and Neudoerffer, C. 2004. Adaptive Methodology for Ecosystem Sustainability and Health (AMESH): An Introduction. In: Midgley, G., and Ochoa-Arias, A.E. (Editors). Community Operational Research: Systems Thinking for Community Development. Kluwer and Plenum Press, New York, NY, USA.

Wamukota, A.W., Cinner, J.E., and McClanahan, T.R. 2012. Co-management of coral reef fisheries: a critical evaluation of the literature. *Marine Policy*, 36, 481-488.

Wilson, P. M., Petticrew, M., Calnan, M.W., Nazareth, I. 2010. Disseminating research findings: what should researchers do? A systematic scoping review of conceptual frameworks. *Implementation Science*. 5:91

World Bank. 2009. Project Appraisal Document for the West Africa Regional Fisheries Program.

Young, O. 2002. *The Institutional Dimensions of Environmental Change: Fit, Interplay and Scale*. Cambridge, MA: MIT Press.

Young, O.R., Berkhout, F., Gallopin, G.C., Janssen, M.A., Ostrom, E., van der Leeuw, S. 2006. The globalization of socio-ecological systems: an agenda for scientific research. *Global Environmental Change*. 16: 304-316.