Ocean Country Partnership Programme

Analytical review of Marine Protected Area (MPA) implementation policies, legislation, and strategies in Ghana

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List of Acronyms

CITES	Convention on Trade in Endangered Species
CSIR	Council for Scientific and Industrial Research
EPA	Environmental Protection Agency
EEZ	Exclusive Economic Zone
FC	Fisheries Commission
FEU	Fisheries Enforcement Unit
FMOC	Fisheries Management Operational Committee
GCTPA	Greater Cape Three Points Area
GDP	Gross Domestic Product
GFRA	Ghana Fisheries Recovery Activity
GMA	Ghana Maritime Authority
GNCFC	Ghana National Canoe Fishermen Council
GPSMU	Ghana Police Service Marine Unit
ICFG	Integrated Coastal and Fisheries Governance Initiative
IUU	Illegal, Unregulated, Unreported
JNCC	Joint Nature Conservation Committee
LUSPA	Land Use and Spatial Planning Authority
MESTI	Ministry of Environment, Science, Technology and Innovation
MLNR	Ministry of Lands and Natural Resources
MoJAGD	Ministry of Justice and Attorney Generals Department
MoFAD	Ministry of Fisheries and Aquaculture Development
MMDA	Metropolitan, Municipal, and District Assemblies
MPA	Marine Protected Area
MPA-TAC	Marine Protected Area Technical Advisory Committee
MCSD	Monitoring, Control and Surveillance Division
NDPC	National Development Planning Commission
UNCLOS	United Nations Convention on the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change
WD	Wildlife Division of the Forestry Commission

1. Introduction

1.1. Contribution of Ghana's marine environment to national development

Ghana's coastline spans 550 km with an Exclusive Economic Zone (EEZ) of 228,000 km^2 (MoFAD, 2022). The country's territorial waters extend to 12 nautical miles, while the EEZ extends to 200 nautical miles, both from the low water mark. The marine and interconnected coastal environment encompass diverse habitats such as mangrove forests, lagoons, estuaries, sandy shores, rocky reefs, and sandy substrates. These habitats host a wealth of marine biodiversity and also support fisheries, which are critically important for the livelihoods and food security of coastal communities. There are four coastal administrative regions that encompass these marine habitats: the Western, Central, Greater Accra, and Volta regions (see Figure 1). While the coastal zone makes up nearly 6% of the country's total land area, it is vitally important for national development as it is occupied by 30% of Ghana's 30.8 million population (NDPC, 2021).

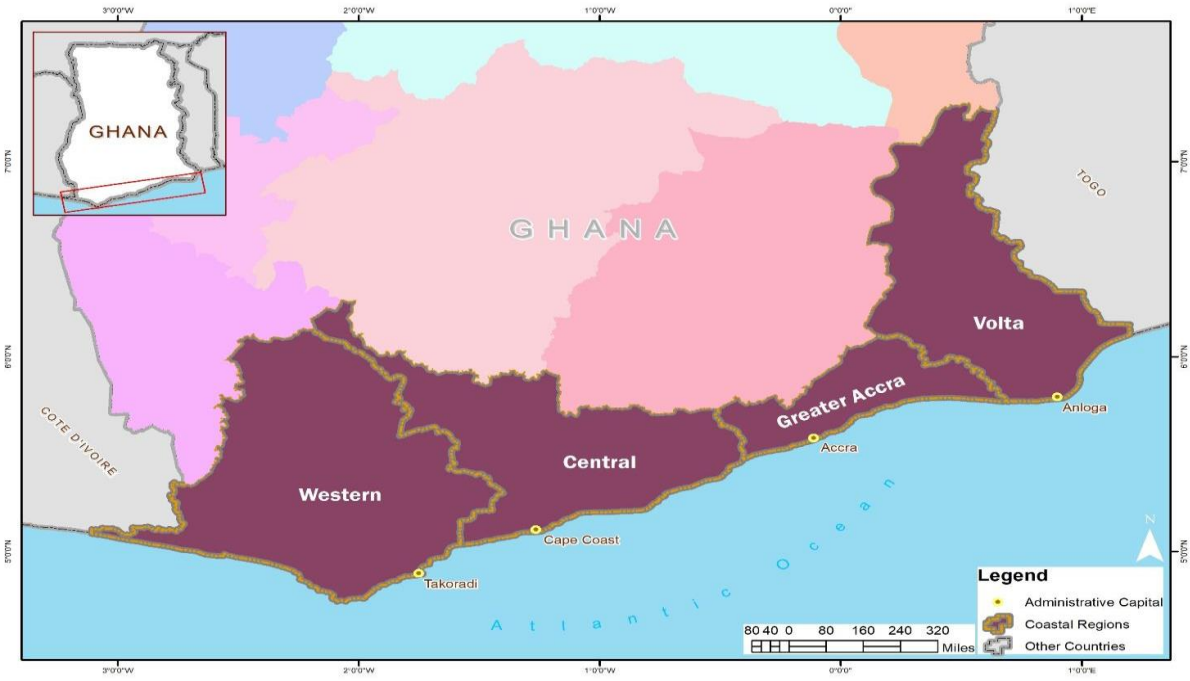

Figure 1: Map of Ghana's coastal regions.

Ghana's marine resources are a significant source of revenue for the country, comprising foreign exchange earnings through trade and income generation from commercial and artisanal fisheries. The fisheries sector accounted for 1% of Ghana's Gross Domestic Product (GDP) in 2023 (GSS, 2023). However, these official GDP statistics are known to underestimate the contribution of the sector to the national economy by approximately 5%

as they do not reflect the full value of artisanal fishing and subsequent value chains (Sarpong, Quaatey & Harvey, 2005). The fisheries sector contributes significantly to the economic and social development of the country, it provides jobs for approximately 20% of the active labour force (2.7 million people), including women who engage solely in processing and distribution (Akpalu, Eriksen & Vondolia, 2018). Fish is the main source of animal protein consumed in Ghana, accounting for 60-70% of all protein rich foods (Sumberg *et al.* 2016; Asiedu, Iddrisu & Failler, 2023). However, this proportion and the per-capita consumption of fish are declining partly due to the reduced productivity of marine fisheries. Maritime trade and transport have increased over the past decade, with data from the ports indicating a significant increase in maritime traffic, with rising vessel calls largely due to oil and gas activities.

There is an active offshore hydrocarbon industry encompassing several oil and gas production fields, with ongoing exploration activities contributing to 4.8% of the national GDP in 2023 (GSS, 2023). Marine-related tourism and recreation, including turtle watching and bird-watching, have also increased over the past decade.

1.2. Threats to Ghana's marine environment

Despite the foregoing benefits, Ghana's marine resources and environment are threatened by a variety of factors, including overexploitation, habitat destruction, pollution, climate change, urbanisation, and coastal erosion, resulting in the loss of marine biodiversity and ecosystem services. Over the past three decades, Ghana has seen a significant depletion of marine fisheries resources due to overfishing from excessive fishing effort and a lack of management. Furthermore, weak enforcement of existing fisheries regulations and inadequate monitoring of catches have led to widespread Illegal, Unreported, and Unregulated (IUU) fishing (Akpalu, Eriksen & Vondolia, 2018; Asiedu *et al.,* 2021; MoFAD, 2022). While environmental fluctuations may cause variations in catch levels, especially for small pelagics, the potential for further increases in catches from Ghanaian marine waters is limited given the ongoing downward trajectory in landings despite increasing fishing effort (Asiedu *et al.,* 2021). Small pelagic resources, the mainstay of the artisanal fishing sector, are on the verge of collapse, with current fishing efforts exceeding sustainable levels (Lazar *et al.,* 2020). Destructive fishing practices (such as dynamite fishing) and pollution from land and sea-based sources are leading to irreversible and irreparable damage to critical fisheries habitats, including rocky reefs, mangrove ecosystems, sandy substrates, estuaries, and lagoons.

Climate change is increasingly affecting small-pelagic fisheries due to a northward migration of these fish species and changes in the predictability of the most productive fishing grounds and seasons (Pabi *et al.,* 2015; Sarre *et al.,* 2024). This in turn directly impacts the livelihoods of small-scale fishers and fish processors who depend on these resources and also impacts food security for the wider population. Climate change also impacts various coastal habitats along the coastline of Ghana, with sea level rise

increasing coastal erosion and flooding mangroves and wetlands (deGraft-Johnson *et al.,* 2010; CRC & Friends of the Nation, 2011).

Other threats to marine environment, especially in the Western region are detailed in the report by deGraft-Johnson *et al.* (2010). In summary, these include the by-catch of endangered species from fishing activities, wetland reclamation for development and waste disposal, excessive harvesting of mangroves for fuel wood, mining of beach sand and gravel for infrastructure development, pollution from industry and agricultural wastes, solid waste pollution such as plastics and textiles, sewage contamination to local waterways, coastal erosion from human-induced deforestation, algal blooms, invasive species introductions, and the expanding offshore oil and gas industry that poses significant risks from oil spills, but also noise effects on aquatic mammals and the effects of lights on turtle and fish movements.

1.3. International and national obligations for marine conservation and management

Ghana has signed a number of instruments related to the conservation of the marine environment, including those related to fisheries management and regulation. Among others, Ghana is a party to the United Nations Convention on the Law of the Sea (UNCLOS), Ramsar Convention on Wetlands of International Importance, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on the Conservation of Migratory Species of Wild Animals (CMS), The Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West and Central Africa Region (Abidjan Convention), United Nations Framework Convention on Climate Change (UNFCCC), FAO Code of Conduct for Responsible Fisheries, and the United Nations' Convention on Biological Diversity (CBD).

However, these instruments are not automatically applicable under Ghanaian law until they are implemented as domestic legislation under Article 75(2) of Ghana's Constitution. Consequently, international instruments applicable to marine conservation and management have been implemented through national policies, legislation, plans, and strategies. Key among these are contained in the Fisheries Act, 2002 (Act 625), Fisheries (Amendment) Act, 2014 (Act 880), Fisheries Regulation, 2010 (L.I. 1968), Environmental Assessment Regulations, 1999 (L.I. 1652), Land Use and Spatial Planning Act, 2016 (Act 925), Wildlife Preservation Act, 1961(Act 43), Wetland Management (Ramsar Sites) Regulations, 1999 (LI 1659), Petroleum (Exploration and Production) Act, 2016 (Act 919); Environmental Protection Agency Act, 1999 (Act 490); Land Use and Spatial Planning Act of 2016 (Act 925) and the Wildlife Resources Management Act, 2023 (Act 1115). Other relevant policies and plans are the Fisheries and Aquaculture Policy, Fisheries Co-Management Policy, Marine Fisheries Management Plan (2022-2026), National Biodiversity Policy, Strategy, and Action Plan. These policies, legislations, plans and

strategies along with their linkages to national and international priorities are examined in more detail in Section 3.2.

Over the past few decades, there have been national concerns over dwindling fish stocks and a lack of effective fisheries management. The artisanal fishery is the backbone of the fishing industry in Ghana, supplying approximately 55% of the total marine fishery catch (Asiedu *et al.,* 2021; MoFAD, 2022). However, it has been operating as open access without restrictions on catch or the capacity of the fleet. One particular issue in recent years was the emergence of '*saiko'*, whereby industrial trawlers use illegal nets to harvest small-pelagic fish, the mainstay of the artisanal fleet, and illegally tranship them to specialised artisanal canoes (EJF & Hen Mpoano 2019). This, as well as other shortcomings in effective management, attracted international attention, and the European Union issuing Ghana its second yellow card (a warning for non-compliance) under the EU's IUU fishing regulation (European Commission, 2024). These issues and others have triggered important sectoral reforms in recent years. For example, the implementation of closed fishing seasons for 1-2 months each year, registration of all fishing canoes with the overall objective of capping the number of canoes in the fleet, a moratorium on new canoe fishermen entrants, Ministerial Directives on trawling gear to reduce the catch of juvenile and pelagic fish, and the implementation of Electronic Monitoring Systems (EMS) to monitor the fishing activity of all trawlers and tuna vessels by 2025 (MoFAD, 2022).

In 1994, Ghana ratified the United Nations' Convention on Biological Diversity (CBD) and in 2022, negotiations between the parties culminated in the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF). Known as the '30x30 target', Target 3 of the GBF contains an ambitious commitment to conserve 30% of terrestrial, inland water, coastal, and marine areas by 2030. Ghana has established 313 protected areas covering an area of approximately 15% of the terrestrial and inland waters (Protected Planet, 2023). Ghana does not currently have any MPAs, but it does have 5 inland coastal protected areas with mangrove forests in Ramsar sites including the Songor lagoon UNESCO Biosphere Reserve (Merceron *et al.,* 2024). In April 2024, it was formally announced that the Government of Ghana is committed to establishing the country's first MPA by 2026 in the Greater Cape Three Points Area (GCTPA).

The purpose of this review is to analyse existing policies, frameworks, and strategies for post-designation MPA implementation in Ghana. Section 2 of this report traces the historical evolution of policy discourses on MPA implementation in Ghana, highlighting key decision timelines and progress made towards MPA designation. Section 3 presents the analytical framework for the review, highlighting the scope, context, and criteria (management, monitoring, and assessment) for assessing documentation relevant for MPA implementation in Ghana. In Section 4, the policies, legislative frameworks, plans, and strategies underpinning MPA implementation in Ghana are presented and analysed. Section 4 also includes a further analysis of pertinent institutional mandates, arrangements, and approaches to future MPA management with particular reference to the suitability of coordination mechanisms, funding, capacity, and enforcement. Finally, Section 5, presents the gaps and challenges in MPA implementation and puts forward

recommendations for addressing implementation barriers, including priority actions to improve the effectiveness of MPA implementation in Ghana.

2. Evolution of MPA designation decision-making in Ghana

Establishment and management of a network of MPAs requires a high degree of vertical integration, from the grass-roots users to the highest level of national decision-making.

At each level, four factors are essential:

1) having a clear legal mandate
2) having the skills to act
3) having the resources to act
4) having the motivation to act

There has long been interest in the establishment of MPAs in Ghana. The first attempt at official gazettement (designation) of coastal and adjacent marine areas occurred under the Wetland Management (Ramsar Sites) Regulations in 1999 with the designation of the Densu Delta, Sakumo, Songor Lagoon, and Keta Lagoon Complex, Muni-Pomadzi and Owabi Wildlife Sanctuary Ramsar Sites. The Coastal Resources Center at the University of Rhode Island developed an Integrated Coastal and Fisheries Governance (ICFG) initiative for the western region of Ghana, which aimed to establish an MPA based on recommendations of biodiversity threats and critical habitat assessments conducted in the Western region (Ateweberhan *et al.,* 2012). In 2010, the Fisheries Commission with the support of the United States Agency for International Development (USAID)-funded ICFG established and chaired an *ad hoc* MPA inter-ministerial committee, which was charged with the elaboration of a roadmap to guide MPA establishment. However, this process was truncated at the completion of the ICFG project.

In 2018, the Fisheries Commission with funding support from the West Africa Regional Fisheries Programme (WARFP), commissioned an assessment on MPAs in Ghana: Strategies, Action Plan, and Implementation Framework (Nunoo, 2018). This report stated the goal of establishing and managing MPAs in Ghana shall be to “protect and conserve the coastal and marine ecosystems of the nation and its associated biological diversity and fisheries for the benefit of humanity.” This report identified 20 sites that were proposed as potential MPAs using a four-point criterion for site selection (socio-economic, educational, ecological, and feasibility). The report identified that decision making should be based on Best Available Scientific and Technological (BAST) information following a process of scientific assessment.

Between 2018 and 2021, the Environmental Protection Agency (EPA) led the implementation of the *Mami Wata* project in the Western Region of Ghana. This was focused on the analysis and allocation of spatial and temporal space for economic

activities, ecosystem services, and conservation values in Ghana's maritime space in order to achieve the economic objectives of the medium-term economic policy of Ghana. This included a State of the Marine Environment report for the four western coastal districts in Ghana and the identification and description of Ecological and/or Biologically Significant Areas (EBSAs) in the marine area off Cape Three Points (EPA 2020, 2021).

In 2022, the Feed the Future Ghana Fisheries Recovery Activity (GFRA) organised a workshop regarding the strategy for supporting the establishment and operation of MPAs in Ghana. The workshop focused primarily on the work of two main Government of Ghana agencies, which are the EPA and the Fisheries Commission (FC) because they have played active roles in previous attempts at marine spatial planning and MPA work in Ghana. During a stakeholder consultation workshop that involved the EPA, the Land Use and Spatial Planning Authority (LUSPA), the Wildlife Division (WD) of the Forestry Commission, and civil society organisations, three potential MPA sites of small pelagic fisheries importance were selected in consultation with the Ministry of Fisheries and Aquaculture Development (MoFAD) and the Fisheries Commission (FC) for which the Cape Three Points area was identified as a candidate site for establishing an MPA. It is noteworthy that a study on fisheries related coastal and marine ecosystem services (Sagoe *et al.,* 2021) and a follow up project, the Coastal and Marine Conservation Drive Project (COMADRIP), launched by the Centre for Coastal Management at the University of Cape Coast (CCM-UCC), also prioritised the Cape Three Points area for the design and development of an MPA management strategy (Jonah *et al.,* 2022).

The initiative from GFRA also supported the FC to establish an MPA Technical Advisory Committee (MPA-TAC) who meets regularly and offers technical guidance including defining the purpose and objectives for establishing the Cape Three Points MPA while ensuring diverse stakeholder perspectives are integrated into decision making associated with this process. The MPA-TAC comprises representatives of FC, EPA, LUSPA, MoFAD, Wildlife Division (WD), traditional authorities, fishermen, Ahanta West Municipal Assembly, non-governmental organization (NGOs) and Academia.

In 2023, the Ocean Country Partnership Programme (OCPP); an overseas development-funded initiative of the United Kingdom, undertook a workshop that provided the platform that showcased progress of work by key actors towards MPA and Marine Spatial Planning (MSP) implementation in Ghana (OCPP, 2023). During the same period, the GFRA, in conjunction with Hen Mpoano, worked on an MPA site selection study for the GCTPA. This study analysed existing scientific data and conducted participatory mapping to gather local ecological knowledge (LEK) from fishers and community members to identify suitable sites for the establishment of an MPA (USAID, 2024). Since March 2023, Hen Mpoano undertook various forms of stakeholder engagement – participatory local ecological knowledge gathering, community-level engagements, educational campaigns, and consultations, across 21 fishing communities and at the Nzema East and Ahanta West District level, and at the level of the Western Regional government. These engagements allowed key local stakeholders to be aware of the idea of an MPA and able to provide inputs and knowledge during this phase.

The accumulation of knowledge resulted in a proposed MPA area of 700 km^2, including the entire stretch of coastal ecosystems from Domunli in the Nzema East Municipal to Ampatano in the Ahanta West Municipal, out to the 6 nm inshore exclusion zone (USAID, 2024). This area includes five major rocky reef outcrops and the muddy substrates where fishing for small pelagic species is predominant. Between 2023 and 2024, GFRA commissioned a research survey to validate the location and bathymetry of the rocky reefs with participation from local fishers, along with fishery-independent surveys of these reefs using baited remote underwater video stations and underwater camera surveys to document the benthic habitats (USAID, 2024). These scientific surveys characterised the marine biodiversity in the area, providing additional information to identify priority sites for conservation and producing underwater video media to further engage community stakeholders. See Figure 2 for the landward and seaward boundaries of the proposed GCTP MPA.

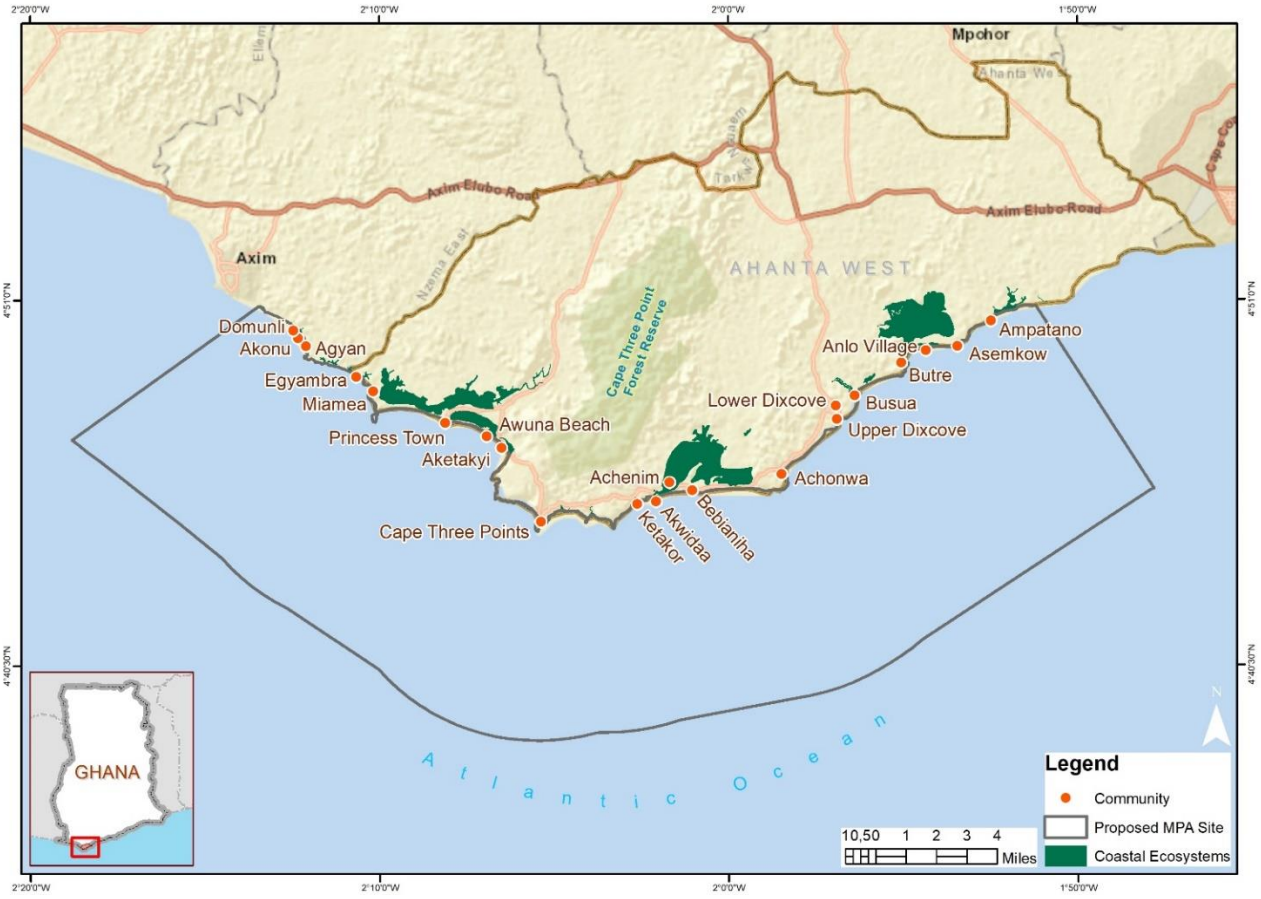

Figure 2: The proposed MPA boundaries in the GCTPA in Ghana with the 21 communities where stakeholder engagement took place.

In April 2024, at Our Oceans Conference in Greece, Ghana's Fisheries and Aquaculture Development Minister announced the country's commitment to designate the first MPA in the GCTPA by 2026 in consonance with the Marine Fisheries Management Plan target of establishing two MPAs within the plan period (2022-2026). This MPA is proposed to be community-led and managed using existing co-management arrangements, which recognise the establishment of co-management committees for managing geographically

defined and established fisheries management areas/units and associated stocks. Subsequently, a cabinet memo for MPA designation in the GCTPA has been drafted pending submission to, and approval by, cabinet. According to MoFAD officials, the MPA cabinet memo was to be submitted by the close of 2024.

This evolution of action on MPA designation in Ghana is presented graphically in Figure 3. It is a clear illustration that despite the high-level policy attention and discourses on MPA designation since 2010, the process took many years before there was a commitment to establish the country's first MPA, and although this has now been announced, the MPA is still yet to be formally designated. The next chapter discusses the challenges associated with the processes of MPA designation and the opportunities available to hasten the pace beyond MPA designation to implementation.

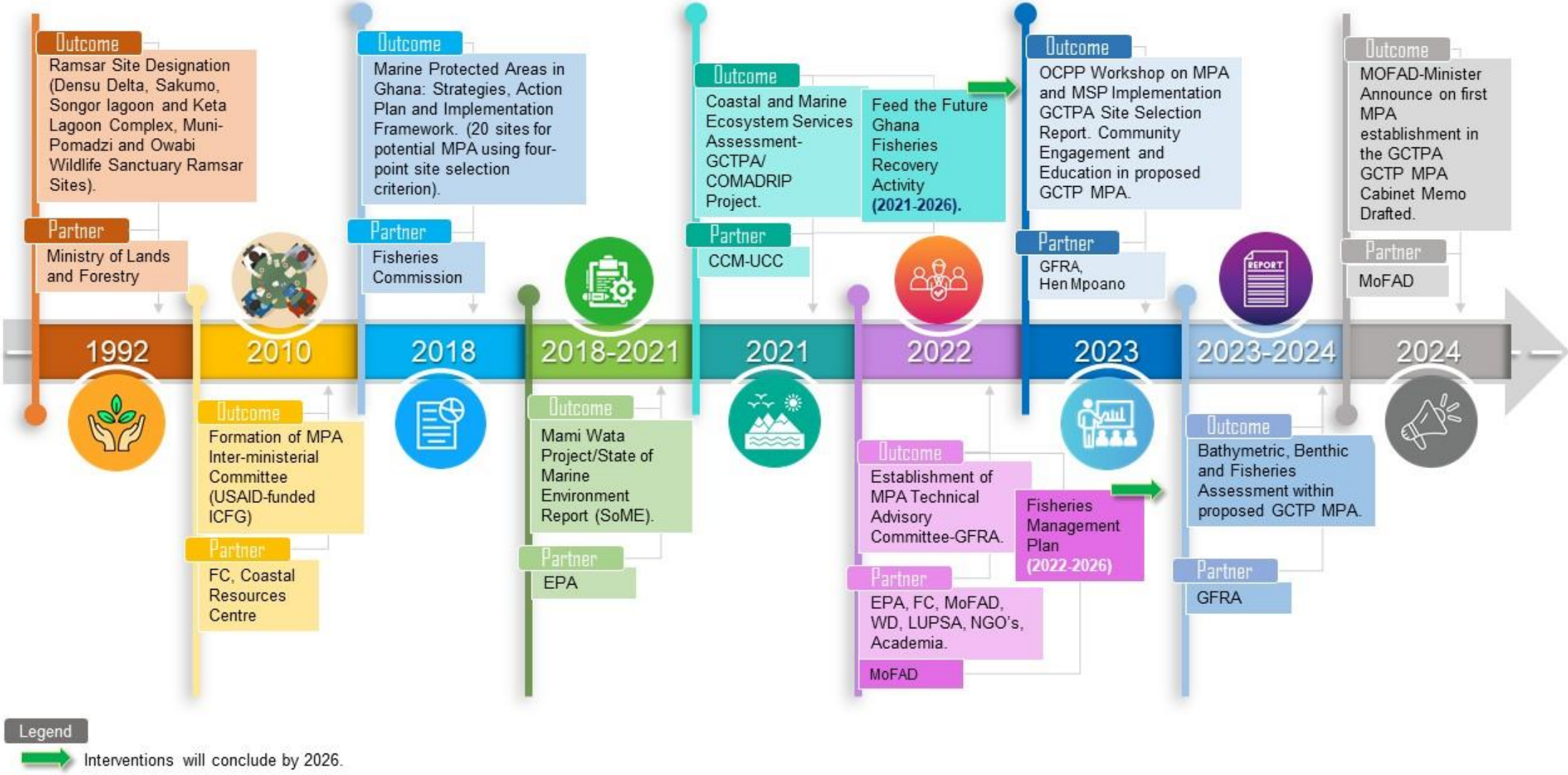

Figure 3: Evolution of MPA designation decision making in Ghana.

3. Analytical framework for this review

The analytical framework for this review is illustrated in Figure 4. It serves as a conceptual lens for analysing MPA designation and implementation in Ghana, considering existing legislations, policy frameworks, strategies, and plans that hinge on the planning and conservation of Ghana's marine resources. The three main components of the analytical framework are assessment, monitoring, and management (AMM), representing three core aspects of the MPA implementation stages. A summary description of the methods for assessing and monitoring, as well as the strategies for effective MPA management, is highlighted in Figure 4. Key areas of interest in MPA assessment are the development of indicator sets for establishing baseline conditions of key species, habitats, and ecosystems. Similarly, assessments could focus on understanding the resilience of marine ecosystems to climate and non-climate stressors. Ecological surveys and remote sensing data are also of interest to the development of scientific protocols for monitoring MPA conservation objectives. Finally, while developing management strategies for the execution of marine conservation plans, the spatial aspects of the use of marine resources and their patterns of usage are of relevance.

Assessment: refers to the institutional mandates and national priorities for assessing the conditions of protected features within an MPA to inform further management and attainment of conservation goals and objectives. This dimension focuses on techniques used to perform accurate measurement and stocktaking of the components of flora and fauna assemblages within coastal and marine habitat under threat and the ability of the system to withstand shocks (resilience). Techniques for assessment can be in the form of study designs, scientific surveys, focus group discussions, or public engagement where weighting and rating schemes are applied. Further, technological applications, mapping, and other techniques meant to draw conclusions on conditions of features after interventions and conservation strategies are effective in the MPA implementation framework.

Monitoring: refers to the institutional mandates for data collection, analysis, and reporting on MPA to evaluate management effectiveness and inform adaptation of management actions. It focuses on aspects of existing frameworks and propositions as well as capabilities to monitor marine resources. Monitoring targets, objectives, and monitoring surveys aimed to characterise and explore benthic habitats and fauna (general marine ecosystems and features within them) form the basis for future MPA monitoring.

Management: refers to mandates and priorities for MPA management planning and implementation, focusing on priority issues and impact mitigation measures in MPAs.

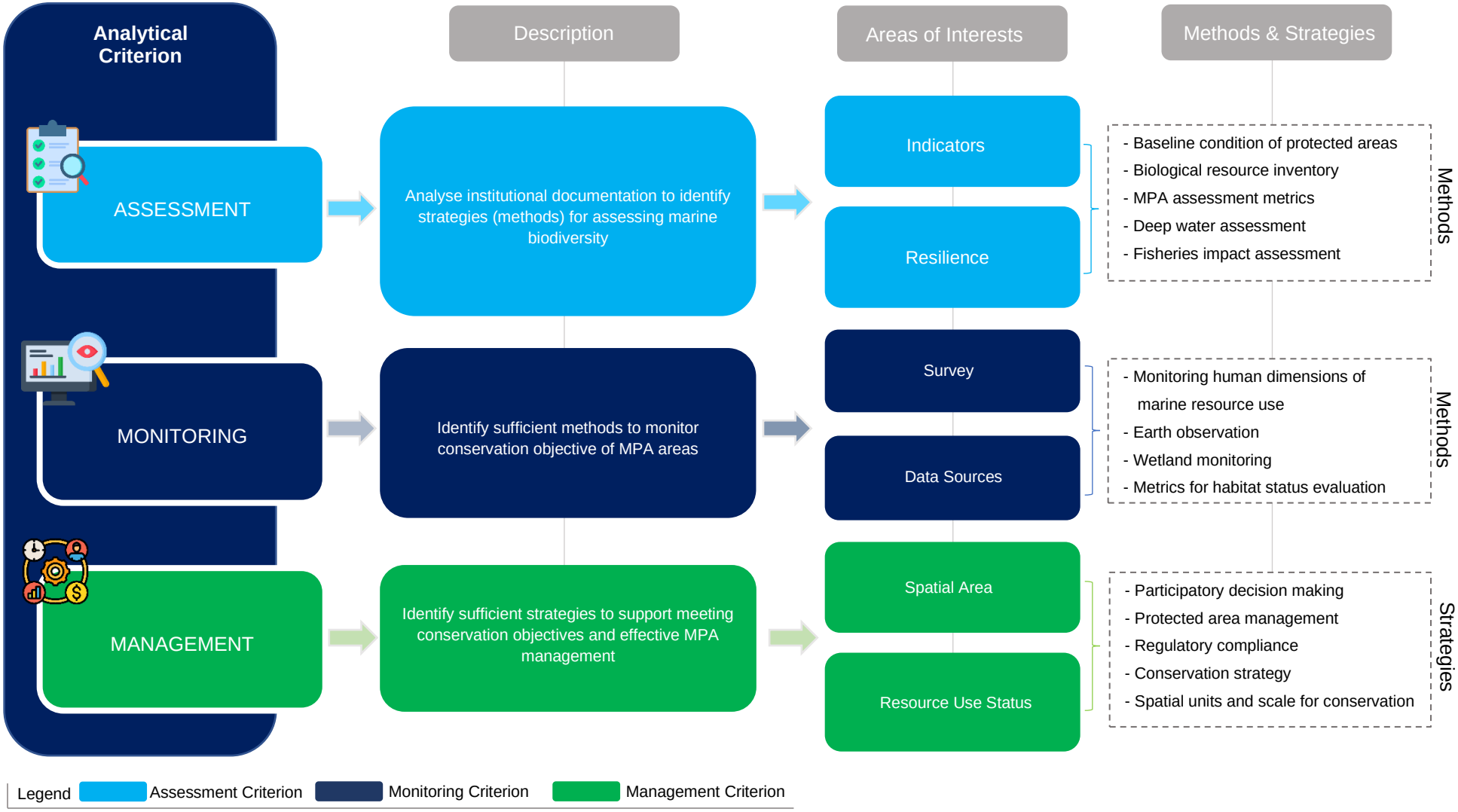

Figure 4: Summary of the analytical framework used to assess MPA implementation in Ghana.

3.1. Policy frameworks, legislations, strategies and plans pertaining to marine conservation and MPA implementation

At the national level, it is recommended that MPAs should be strategically networked to include significant representation of all key habitats, species, and ecological processes (Dudley, 2008; Gaines *et al.,* 2010; Burns *et al.,* 2023). To ensure coherence, a national framework with clear goals, strategy, and governance is essential (Grorud-Colvert *et al., 2021*). The framework should provide high-level coordination without being overly restrictive, allowing for the development of MPAs to meet local needs while at the same time ensuring protection of nationally important ecological and socio-economic assets. The network should consist of different types of MPAs with objectives additional to biodiversity conservation, including fisheries management, tourism development, cultural protection and education. Establishing a network (as compared to having several isolated MPAs) requires two levels of governance: national/network coordination to establish the framework and overarching principles for MPA establishment, management, and funding, and other site-specific governance setting up local management committees and management plans.

Table 1 below presents selected policies, strategies, plans, and legislations and their associations with key institutions and priorities for MPA management in Ghana. The criterion as applied evaluates sections of identified policies and frameworks, focusing on specific references to the AMM framework. The last column of the table uses the letters N and I, respectively, to indicate linkages to national and international priorities for marine conservation.

Table 1: Review of policy frameworks, legislations, strategies and plans for the Assessment, Management, and Monitoring Criteria of MPA implementation.

Assessment Criteria				
Legislation/Policy/ Strategy/Plan	**Area(s) of Focus**	**Implementation (Spatial) Scale**	**Responsible Institution(s)**	**Linkages to National (N) and International (I) Priority**
Environmental Assessment Regulations, 1999 (L.I. 1652)	Environmental impact assessments	National	Ministry of Environment, Science, Technology and Innovation (MESTI)/EPA	Implements environmental impact assessment procedures (N)
Fisheries Act (2002), Act 625.	Fisheries impact assessments	National	MoFAD/FC	Protection of key fisheries habitats (N).
Integrated Coastal Management Toolkits - Ahanta West (2013)	Assessment of; a) baseline biophysical and ecological conditions; b) climate adaptive capacities; c) threats to biodiversity	District	MoFAD/FC; NGOs; Metropolitan, Municipal, and District Assemblies (MMDAs)	Integrated Management of Coastal and Marine zones (N).
National Biodiversity strategy and action plan (2016)	Tools for fisheries management (i.e. registration and certification) GIS-based mapping of sacred areas National Biosafety Risk Assessment Guidelines Inventory of biological and genetic resources	National	MoFAD/FC, Wildlife Division of the Forestry Commission (WD), MESTI/EPA, Minerals Commission	Biodiversity conservation, sustainable use, and equitable access to genetic resources (N).
Strategic MPA Implementation Framework (2018)	Metrics for assessing MPA implementation progress	National	MMDAs, MESTI/EPA, WD	Outlines a national strategy for MPA implementation (N).
State of Marine Environment Report (2021)	Application of DPSIR assessment framework, Expert Elicitation (EE) and Traditional ecological knowledge approaches to understand the state of the environment	National	MESTI/EPA, Ghana Maritime Authority (GMA), Council for Scientific and Industrial Research (CSIR), MMDAs	Implements provisions in the Environmental Protection Act (N).

Management Criteria				
Legislation/Policy/ Strategy/Plan	**Area(s) of Focus**	**Implementation (Spatial) Scale**	**Responsible Institution(s)**	**Linkages to National (N) and International (I) Priority**
Wild Animals Preservation Act, 1961 (Act 43)	Protect and preserve reserves and animals in the reserves	National	WD	Implements International convention for the protection of Fauna and Flora (I).
Forestry Commission Act, 1980 (Act 405)	Grants the creation and management of strict nature reserves	National	WD	Wildlife protection in marine areas (N).
Wetland Management – (Ramsar Sites) Regulations (1999) National Wetlands Conservation Strategy	Establishes Ramsar Site across Ghana Prescribe and restrict certain activities within Ramsar Sites	National	MMDAs, WD	Fulfils obligations under the Ramsar Convention (I).
Fisheries Act, 2002 (Act 625)	Establish priorities for conservation and utilisation of fisheries resources and ensuring enforcement and compliance	National	MoFAD/FC	Implements the FAO Code of Conduct for Responsible Fisheries (1995) (I).
Fisheries regulation, 2010 (LI 1968) - Regulation 79	Definition of marine protected areas	National	MoFAD/FC	Advances Ghana's commitments towards 30x30 targets (I).
Fisheries Amendment Act, 2014 (Act 880)	Gazette the list of international fisheries conservation and management areas binding on Ghana to combat IUU fishing	National	MoFAD/FC	Implements international fisheries conservation and management areas (I).
National Biodiversity Strategy and Action Plan (2016)	Setting conservation targets through Systems of Protected Areas; Protect threatened species in all habitats; enforcement of protected area management plans; habitat restoration and co-management.	National	WD; MESTI/EPA, MoFAD/FC	Implements Aichi Target 11 towards the preservation and conservation of Biological heritage (I); Establish the framework for the protection of marine habitats (N).
Petroleum Exploration and Production Act, 2016 (Act 919)	Regulate fishing, navigation, and any other activities carried out within or in the vicinity of areas within which petroleum activities are being carried out.	National	Petroleum Commission	Advances safety and security concerns in marine environment (N).

Management Criteria				
Legislation/Policy/ Strategy/Plan	**Area(s) of Focus**	**Implementation (Spatial) Scale**	**Responsible Institution(s)**	**Linkages to National (N) and International (I) Priority**
Land Use and Spatial Planning Act, 2016 (Act 925), Section 45 and 46 (1)	Define the planning area of Ghana to include the marine space	National	LUSPA	Coordinate policy implementation in marine areas (N).
Local Governance Act, 2016 (Act 936)	License canoes and the prepare by-laws that support the implementation of national fisheries regulations	District	MMDAs	Implementation of fisheries regulations (N)
Co-Management Policy for the Fisheries Sector (2020)	Decentralise fisheries resource management Develop the modalities and institutional framework to delegate governance and management authority and responsibility to resource users	National	MoFAD/FC, MMDAs	Strengthen stakeholder participation in fisheries management (N)
State of Marine Environment Report (2021)	Provides guidance for sustainable management of EBSAs	National	MESTI/EPA	National Strategy on Ocean Governance (N).
Wildlife Resources Management Act, 2023 (Act 1115)	Consolidate laws on the Establishment and management of protected areas	National	WD	Implements the Convention on Biological Diversity (I)
Fisheries Management Plan	Protect sensitive marine ecosystems suffering from adverse recruitment patterns of multiple fish species. Strengthening co-management strategies	National	MoFAD/FC	National strategy for managing marine fisheries sector (N).
Fisheries and Aquaculture Policy	Management of fisheries, conservation of aquatic resources and protection of their natural environment	National	MoFAD/FC	Maintain capture fishery production levels (N)

Monitoring Criteria				
Legislation/Policy/ Strategy/Plan	**Area(s) of Focus**	**Implementation (Spatial) Scale**	**Responsible Institution(s)**	**Linkages to National (N) and International (I) Priority**
Fisheries Act, 2002 (Act 625)	Established the Fisheries Enforcement Unit for monitoring, control and surveillance of all fishing operations using satellite base stations within Ghana's EEZ. Regulation of fishing gear	National	MoFAD/FC	Implements international instruments to combat IUU fishing (I).
National Biodiversity and action plan (2016)	Develop the monitoring and evaluation plans to support the implementation of the NBSAP.	National	MoFAD/FC, WD, MESTI/EPA.	Enhance planning and capacity building in national biodiversity conservation actions (N).
Local Governance Act, 2016 (Act 936)	License canoes and the prepare by-laws that support the implementation of national fisheries regulations	District	MMDAs	Implementation of fisheries regulations (N).
State of Marine Environment Report (2021)	Set up mechanisms to monitor and manage the occurrence of invasive. Seaweed, Sargassum and Ulva species especially in the coastal waters.	National	EPA, MoFAD/FC, CSIR, Water Research Institute (WRI).	Habitat monitoring (N).

3.2. Institutional Frameworks for MPA Implementation in Ghana

The establishment and management of MPAs is multi-sectoral in nature, requiring different forms and levels of rulemaking, interaction, coordination and collaboration among various Ministries, agencies and local government authorities. Furthermore, partnerships and collaborations between government institutions and resource users underpin MPA management in a manner that fosters inclusive and participatory management of coastal and marine resources. Analysis of the institutional framework below highlights the inter-connectedness of government bodies, resource users, and stakeholders in managing MPAs, ensuring a collaborative approach to marine conservation. Figure 5, which is tailored to the Joint Nature Conservation Committee (JNCC) MPA implementation cycle, emphasizes institutional roles within each part of the cycle.

Ministry of Fisheries and Aquaculture Development (MoFAD) - plays a pivotal role in the establishment and management of MPAs in Ghana, working within its mandate to develop and sustainably manage the fisheries sector. MoFAD's responsibilities include formulating policies, providing financial oversight, and promoting institutional capacity-building. The Fisheries Act of 2002 (Act 625) empowers the Minister responsible for fisheries to declare marine reserves and make regulations concerning fisheries management, conservation, and quota systems, supporting the sustainable use of marine resources. MoFAD acts as a central coordinating body, serving as a policy-making and rule-enforcing institution in MPA implementation. Its role extends to securing budgetary allocations in collaboration with the Ministry of Finance and Economic Planning and working with the Attorney-General's Department to convert MPA policies into legal instruments. MoFAD also serves as an intermediary between the FC, Cabinet, and Parliament to ensure policies are approved, funded, and legally formalised. This institutional coordination and multi-sectoral collaboration are essential to the effective establishment and management of MPAs, fostering inclusivity and participatory governance of marine resources.

Fisheries Commission (FC) - under MoFAD, plays a key role in the establishment and management of MPAs in Ghana, including advisory, regulatory, management, policy coordination, rulemaking, and enforcement functions. It advises the Minister responsible for fisheries on declaring marine reserves and making regulations related to MPAs. The Commission also oversees the use of fishery resources, coordinating multi-sectoral activities for MPA implementation. It is empowered to declare and enforce closed fishing seasons in certain areas and will enforce MPA regulations when they are implemented through its Fisheries Enforcement Unit (FEU), in collaboration with the Ghana Marine Police, Navy, and the Ministry of Justice and Attorney-General's Department

Ministry of Environment, Science, Technology and Innovation (MESTI) - plays a consultative role in the establishment of MPAs in Ghana, particularly when the Minister of

Fisheries declares a marine reserve. Although not explicitly involved in creating fisheries regulations, MESTI's agencies, like the EPA, must be consulted as part of the broader process.

Environmental Protection Agency (EPA) - under MESTI, is responsible for protecting and enhancing the environment, including the marine ecosystem. It uses environmental assessments to regulate activities that could impact the environment, including MPAs. The EPA's functions include advising on environmental policies, coordinating with other bodies to control pollution, conducting research, and raising public awareness. The EPA also plays a critical role in environmental and social impact assessments of MPAs, ensuring their suitability and monitoring their effects on marine ecosystems. Additionally, the EPA will promote ecological and biological studies, disseminate information to local authorities, and support ongoing research to ensure the success and sustainability of MPAs.

Wildlife Division (WD) - under the Forestry Commission of the Ministry of Lands and Natural Resources (MLNR), plays a role in MPA implementation under the broader framework of the Wildlife Preservation Act, 1961 (Act 43) and the recent Wildlife Resources Management Act, 2023 (Act 1115). Its mandate is to conserve wildlife in Ghana in general and manage wildlife protected areas in particular within representative ecological zones of the country. These responsibilities emphasise the division's role in conservation, complementing MPA strategies through species protection, habitat management, and regulation of sustainable practices. Key responsibilities include the establishment of closed seasons to protect marine and wildlife species, protect and develop Ghana’s permanent estate of Wildlife-Protected Areas (PAs), promote management and development of wildlife outside Wildlife-Protected Areas, and the integration of wetland management in collaboration with local District Assemblies to regulate activities and integrate customary conservation practices compatible with Ramsar guidelines.

Land Use and Spatial Planning Authority (LUSPA) - play three key roles: 1) planning marine spaces for MPA establishment, both in Ghana’s internal waters and EEZ; (2) preventing encroachments and ensuring compliance with zoning regulations in MPAs; and (3) controlling development in sensitive ecosystems, such as coastal wetlands and nature reserves, to protect areas where MPAs are established.

Ghana Maritime Authority (GMA) - established under the Ghana Maritime Authority Act of 2002 (Act 630), is responsible for regulating, monitoring, and coordinating activities within the maritime industry. Its core functions include ensuring safe navigation and fulfilling both flag state and port state responsibilities in line with international maritime conventions and codes. In the context of MPAs, the GMA must be consulted to ensure that the mapping of marine reserves or zones for fishery conservation does not compromise maritime transportation. If establishing MPAs requires changes to sea routes, the GMA must advise the government and notify the International Maritime Organisation (IMO) and other relevant shipping authorities, both locally and internationally. The GMA is also

responsible for designating these areas as Particularly Sensitive Sea Areas (PSSAs) under IMO rules or as Special Areas under MARPOL regulations.

Metropolitan, Municipal, and District Assemblies (MMDAs) - play a crucial role in the establishment and operation of MPAs, particularly for those located in inland waters. Under the Fisheries Act of 2002, the Minister responsible for fisheries must consult with relevant District Assemblies when declaring Marine Reserves or prescribing conservation areas. MMDAs, under the Local Governance Act of 2016, are responsible for managing human settlements and the environment within their districts, and they coordinate development plans with other government bodies. Therefore, their involvement is essential to integrate MPA conservation measures into local development plans and ensure the success of MPAs through daily management and enforcement. The consultation, participation, and understanding of MMDAs are key factors for the effective establishment and long-term success of MPAs.

Ghana Police Service Marine Unit (GPSMU) and Ghana Navy (GN) - the Marine Police and the Navy are members of the Fisheries Enforcement Unit (FEU) of the FC. The FEU is an inter-agency entity made up of the Monitoring, Control and Surveillance Division (MCSD) of the FC, the GPSMU and the Ghana Navy. The FEU is headed by a Navy Officer and the Head of the MCSD acts as Deputy. The FEU is tasked with the responsibility of enforcement of fisheries regulations, and in relation to the establishment and operation of MPAs, it will be at the forefront in enforcing compliance.

Ministry of Justice and Attorney-General's Department (MoJAGD) - play crucial roles in the establishment and operation of MPAs. First, when the Minister responsible for fisheries decides to establish an MPA as part of fisheries conservation and management measures under Section 139 of Act 625, the Attorney-General's Department, particularly the Drafting Division, is tasked with converting Cabinet-approved policies into draft regulations. These are then laid before Parliament for 21 sitting days and published in the Gazette to bring the regulations into effect. Second, if the Minister decides to declare marine reserves as MPAs under Section 91 of Act 625, the Drafting Division ensures that the language and form of the declaration are vetted before submission to the Government Printer for publication in the Gazette. Third, the Attorney-General advises the President, government, and relevant ministries on the constitutionality of MPA declarations, especially considering the impact on the rights and socio-economic livelihoods of other marine and coastal resource users. Additionally, the Attorney-General's Department must ensure that Ghana's steps toward establishing MPAs align with its international obligations, particularly in cases involving transboundary, highly migratory, or straddling fish stocks. The Department is also responsible for prosecuting individuals who violate fisheries conservation laws, regulations related to MPAs, or closed season regulations set by the FC and the MoFAD. Lastly, the Attorney-General will represent the state in any legal challenges to the constitutionality or legality of MPA-related conservation functions.

Marine Protected Area Technical Advisory Committee (MPA-TAC) - serves as a sub-committee of the Fisheries Management Operational Committee (FMOC), in light of the

considerations by MoFAD and the FC to develop and implement a strategy for the establishment and operationalization of MPAs in Ghana in collaboration with relevant stakeholders. The six members of the Technical Advisory Committee (TAC) are drawn from the FC, EPA, LUSPA, GNCFC, the Department of Marine and Fisheries Sciences of the University of Ghana and Hen Mpoano (an NGO).

The functions of the TAC include providing technical advisory support services for planning, establishment, and implementation of MPAs, particularly for small pelagic fisheries management and recovery, reviewing of fisheries management and MPA strategies and making recommendations on the implementation of MPA strategies to the FC and other relevant institutions. Additional functions of TAC include the engagement of policymakers and regulators to advocate for political will and commitment for the establishment of MPAs; providing support during stakeholder consultations and validation processes to inform decision-making on the establishment and operation of MPAs; support capacity building activities for the planning, establishment, and implementation of MPAs; reviewing MPA management plan(s); and making recommendations for approval as specified by the Fisheries Act, 2002, and the relevant regulations.

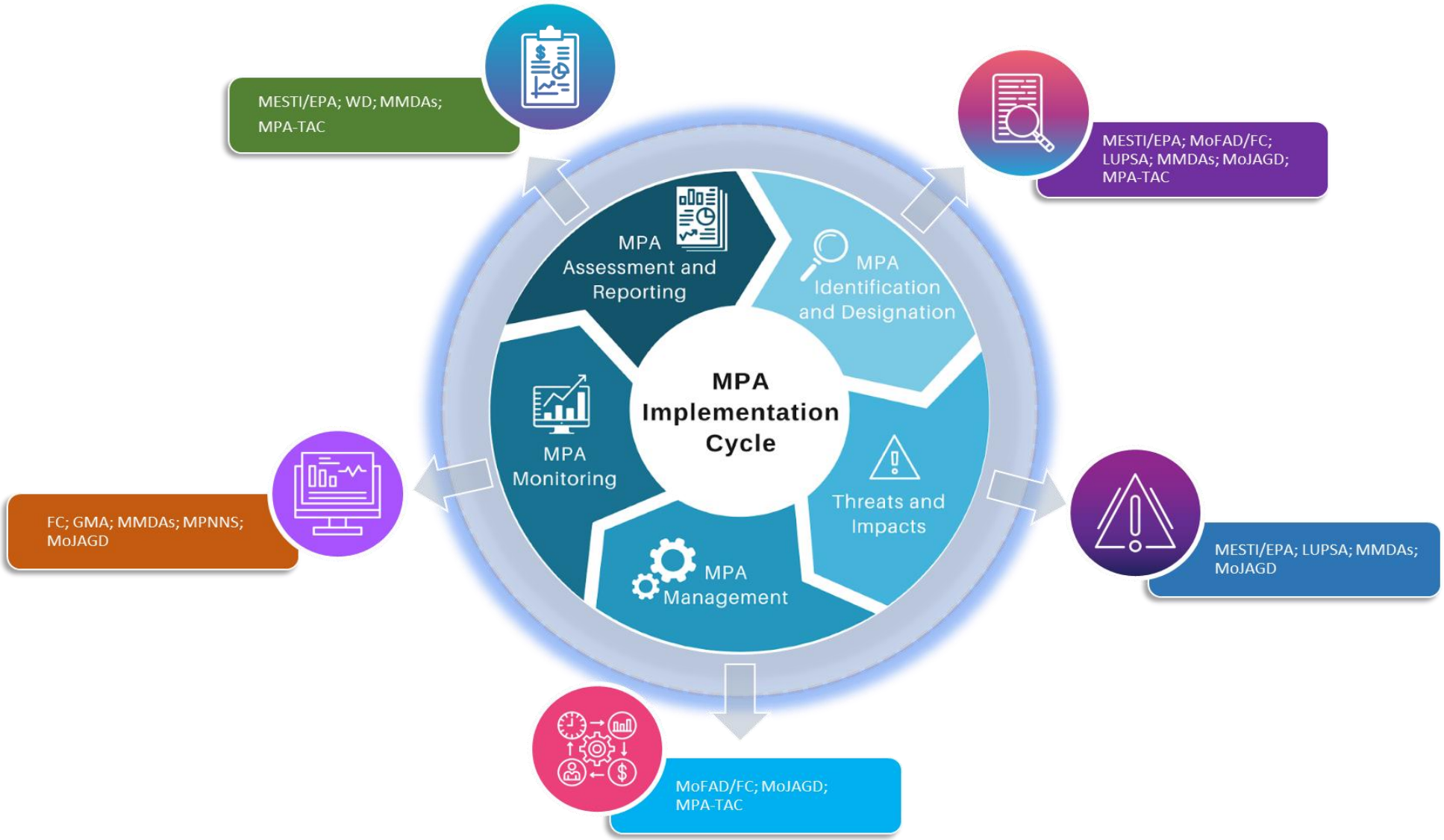

Figure 5: Institutional roles in the MPA implementation cycle.

3.3. Gaps and challenges in MPA policy and strategy implementation

A close look at institutions and agencies reveals significant overlaps in mandate and jurisdictional conflicts. At the national scale, challenges pertain to the lack of harmonized data sharing structure, ineffective inter-ministerial coordination and inadequate financial resources for MPA implementation. Relatedly, regional and local scale challenges respectively include the lack of clearly defined lead roles and low capacity to implement MPAs by local government authorities. See Figure 6 for a summary of identified gaps and challenges). Despite the need for a unified approach, there is limited evidence of effective inter-ministerial coordination. The absence of a structured inter-ministerial committee to harmonise roles and address jurisdictional overlaps remains a significant gap. Establishing an MPA network is a multidisciplinary endeavour. Although the FC and MoFAD are empowered to create marine reserves (Article 91 of the Fisheries Act, 2002), this is not an exclusive mandate. Furthermore, the 2023 Wildlife Resources Management Act (Act 1115) recognise the WD's responsibility for the protection and management of marine species not covered under the Fisheries Act (e.g., marine turtles, cetaceans, etc.) and on the advice of the Forestry Commission, the Minister of the MLNR may also establish a protected area including an MPA. Other Ministries, for example, MESTI and the Ministry of Local Government and Rural Development (MLGRD) also have important roles to play with respect to MPAs. Overlapping mandates and jurisdictions can lead to significant confusion and impede the establishment of network of MPAs as turf wars and assertions of jurisdictional autonomy by all these entities become inevitable. Having a clear, recognised "*chain of command*" and inclusive multi-disciplinary management system is essential. The lack of a clearly defined lead institution, as well as laid out responsibilities for support institutions, for MPA coordination increases the risk of inconsistent policy implementation across agencies and sectors.

The lack of clearly defined roles of lead institutions and supporting institutions for MPA coordination across the agencies and sectors (outlined in Table 1), increases the risk of inconsistent policy implementation and progress monitoring. To achieve most national level strategies and priorities, the coordination between ministries and departments as a unified front is paramount. Additionally, coordination between national institutions and District Assemblies is limited by the varying capacities of local governments, which may lack technical expertise and financial resources to implement MPA activities effectively. Fisheries and marine planning and management are not expressly decentralized functions under the Local Governance Act, 2016. Consequently, District Assemblies are not technically and financially resourced to conduct monitoring, assessment and enforcement of activities directly related to fisheries management and marine planning, including MPAs. Coordination with District Assemblies on issues related to marine planning and management often remains at the consultative level. The lack of explicit and prominent roles of District Assemblies in the coordination of MPA implementation at the local scale

leaves a critical gap, given that successful implementation of an MPA takes place at the very local scale (i.e., District Assemblies).

A lack of clearly defined roles and coordination results in weak data-sharing systems between agencies and institutions (e.g., EPA, LUSPA, WD, and the FC). Most institutions, with roles across the various strategies outlined, possess rich datasets (spatial and non-spatial), as well as project knowledge that could be beneficial to MPA management. This situation limits the timely flow of data and information necessary for decision-making and adaptive management of MPAs.

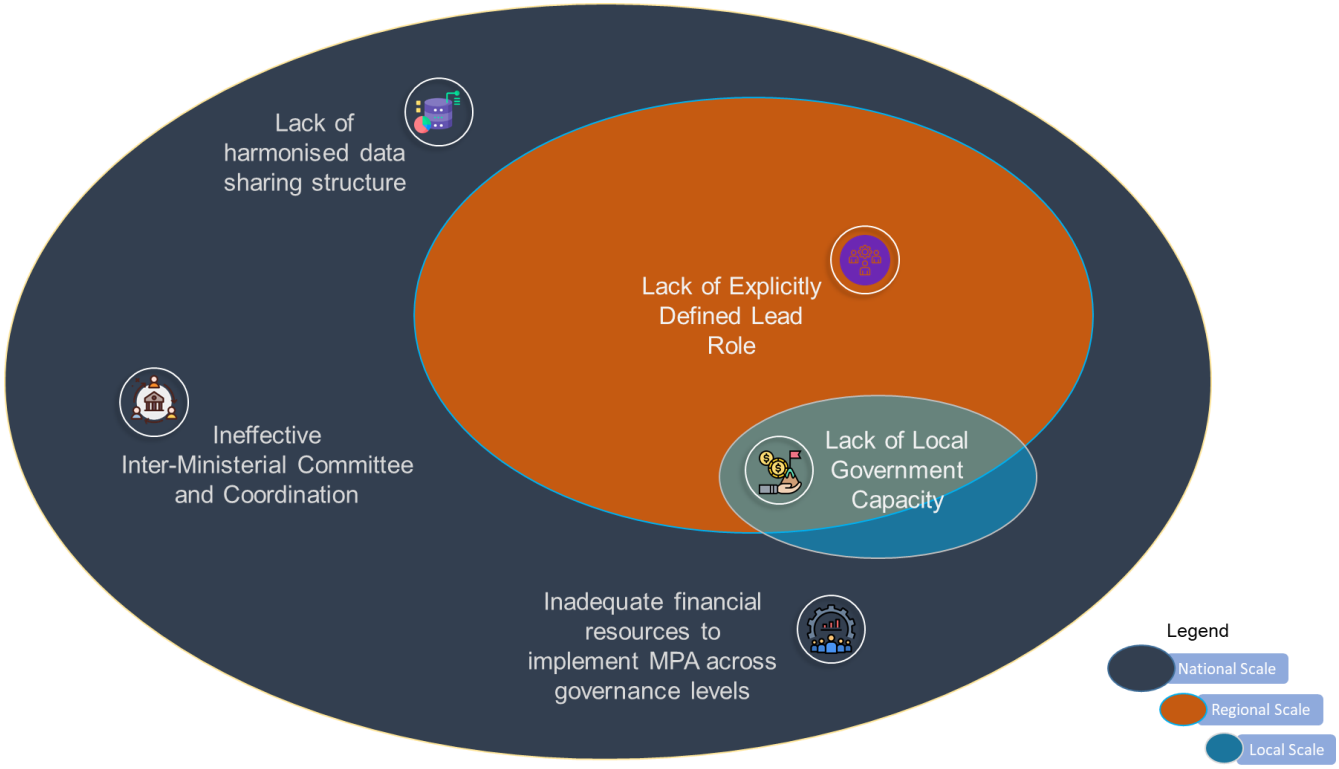

Figure 6: Institutional challenges in MPA implementation across national, regional, and local scales.

4. Recommendations and conclusions

There are numerous ecological, conservation, management, and socio-cultural benefits linked to the establishment and management of MPAs. Recognizing this, Ghana is rightly moving forward with plans to establish MPAs in its coastal and marine areas. While Ghana lacks a specific law dedicated solely to MPAs, there is sufficient legal backing from existing laws such as the Fisheries Act, 2002 (Act 625), the Fisheries (Amendment) Act, 2014 (Act 880), the Wildlife Preservation Act, 1961 (Act 43), and the Wetland Management (Ramsar Sites) Regulations, 1999 (LI 1659). Section 91 of Act 625 gives the Minister responsible for fisheries (within MoFAD) the right to declare an area of the fishery waters and the seabed underlying the waters as an MPA. Similarly, Section 5 of Act 1115 gives the right to the Minister responsible for wildlife (within MLNR) to establish protected areas including MPAs. Establishing and managing MPAs is a multi-sectoral effort requiring collaboration among various ministries, agencies, and local authorities.

This complexity can sometimes create gaps and uncertainties regarding which institution is responsible for specific tasks. Additionally, the Fisheries Act, 2002 (Act 625) mandates expert advice, planning, and consultation from multiple ministries and agencies for MPA establishment. However, overlaps and duplications in institutional mandates can pose challenges. Examples from other West African contexts, such as Senegal where there has been more substantial progress with 12 MPAs established since 1970 (Merceron *et al.* 2024), could also provide useful examples to help streamline effective community involvement and institutional collaboration in the implementation of MPAs.

To enhance Ghana's MPA management framework and facilitate rapid transition from MPA designation (this involves official declaration and gazettement) to implementation, several recommendations are proposed below.

- **Establishment of an Inter-Ministerial Commission**

An inter-ministerial commission should be established with either a fixed or rotating presidency. This has the advantage of integrating diverse perspectives and building a broad political footing. An inter-ministerial commission (or Independent Agency) can be attached to a supra-ministerial entity such as the Office of the Vice President. This has the advantage of integrating diverse perspectives and avoiding the risk of inter-ministerial misunderstandings and divergence, but has the disadvantage of relying on the good offices of the "higher authority." If the higher authority actively supports MPAs, this can be a strong advantage. However, if not, the commission could languish.

- **Enhancement of local government capacity**

Strengthening the technical and financial capacity of District Assemblies would improve the integration of local concerns into MPA planning and enforcement. Empowering local governments with conflict resolution skills and legal frameworks helps mediate disputes and manage the complex dynamics of resource use in MPAs. Strong local institutions can

better balance conservation goals with the livelihood needs of local communities, ensuring that MPA management is fair and inclusive. Local governments, with improved technical capacity, can contribute to the collection and monitoring of scientific data necessary for adaptive MPA management. Training local personnel in environmental monitoring techniques such as habitat assessments, biodiversity surveys, and water quality testing ensures that MPAs are managed based on current and accurate information. This data also supports informed decision-making and the periodic evaluation of MPA effectiveness.

- **Centralise data sharing and reporting systems**

A shared spatial database could enhance coordination between national and local agencies, ensuring all stakeholders have access to relevant information for planning and enforcement, including access to platforms that collect, manage, and disseminate information related to the status, activities, and governance of MPAs.

- **Lead agency designation**

Designating a single lead agency (e.g., the MoFAD/FC) to coordinate MPA efforts would streamline processes and ensure accountability across institutions. This is because the MoFAD/FC has taken the lead in setting objectives and targets for MPA designation and implementation in its Marine Fisheries Management Plan (2022-2026). The MoFAD/FC is also hosting national-level actions such as activities of the MPA-TAC and seeking approval for the MPA cabinet memo.

- **Sustained engagement of traditional users of marine resources**

It is appropriate that local people be actively involved before MPAs are established in order to understand the concept of MPAs, their value, and the formulation of any legislation and policies must reflect their concerns. This is because when MPAs are declared and established, concerns will be raised regarding the violation or potential violation of the economic and cultural rights of traditional users of the sea and oceans.

5. References

Akpalu, W. Eriksen, S.S. & Vondolia, G.K. 2018. *The fisheries sector in Ghana: A political economy analysis.* Norwegian Institute of International Affairs, Oslo.

Asiedu, B. Iddrisu, S. & Failler, P. 2023. Yesterday, today, and tomorrow's fish consumption: Analysis of present and prospective fish consumption in Ghana by 2030. *Cogent Food & Agriculture*, **9**, 2224603. https://doi.org/10.1080/23311932.2023.2224603

Asiedu, B. Okpei, P. Nunoo, F.K.E. & Failler, P. 2021. A fishery in distress: An analysis of the small pelagic fishery of Ghana. *Marine Policy*, **129**, 104500. https://doi.org/10.1016/j.marpol.2021.104500

Ateweberhan, M. Gough, C. Fennelly, L. & Frejaville, Y. 2012. *The Nearshore Rocky Reefs of Western Ghana, West Africa: Baseline ecological research surveys*. Blue Ventures Conservation, London, UK.

Burns, E.S. Lopazanski, C. Flower, J. Thomas, L.R. Bradley, D. & Lester, S.E. 2023. Finding harmony in Marine Protected Area design guidelines. *Conservation Science and Practice*, **5**, e12946. https://doi.org/10.1111/csp2.12946

CRC & Friends of the Nation. 2011. *Assessment of Critical Coastal Habitats of the Western Region, Ghana.* Coastal Resources Center (CRC), University of Rhode Island, Narragansett, USA.

Dudley, N. 2008. *Guidelines for applying protected area management categories*. IUCN, Gland, Switzerland.

EJF & Hen Mpoano. 2019. *Stolen at sea. How illegal 'saiko' fishing is fuelling the collapse of Ghana's fisheries*. Environmental Justice Foundation and Hen Mpoano.

EPA. 2020. *Potential Ecologically or Biologically Significant Marine Areas of Ghana: Marine Area Off Cape Three Points Ghana, West Africa*. Environmental Protection Agency, Accra, Ghana.

EPA. 2021. *State of the marine environment report for Ahanta west. Ellembelle, Jomoro and Nzema east districts in the western region of Ghana*. Environmental Protection Agency, Accra, Ghana.

European Commission. 2024. Fight against Illegal, Unreported and Unregulated fishing. *European Commission*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_24_2848 [Accessed 3 October 2024]

Gaines, S.D. White, C. Carr, M.H. & Palumbi, S.R. 2010. Designing marine reserve networks for both conservation and fisheries management. *Proceedings of the National Academy of Sciences*, **107**, 18286–18293. https://doi.org/10.1073/pnas.0906473107

Grorud-Colvert, K. Sullivan-Stack, J. Roberts, C. Constant, V. Horta e Costa, B. Pike, E.P. *et al.* 2021. The MPA Guide: A framework to achieve global goals for the ocean. *Science*, **373**, eabf0861. https://doi.org/10.1126/science.abf0861

GSS. 2023. Ghana Statistical Services. *National Accounts: Annual GDP by Production Approach*. Available at: https://statsghana.gov.gh/nationalaccount_macros.php?Stats=MjkwMzA1NjI0LjE0MTU=/webstats/oq43q9p651 [Accessed 29 October 2024]

deGraft-Johnson, K.A.A. Blay, J. Nunoo, F.K.E. & Amankwah, C.C. 2010. Biodiversity threats assessment of the Western Region of Ghana. *The integrated coastal and fisheries governance (ICFG) initiative Ghana*.

Jonah, A. Adade, R. Korang, R. Dzantor, S.A. Chuku, E.O. Asare, O.A. *et al.* 2022. *Coastal and Marine Conservation Drive Project*. Centre for Coastal Management, University of Cape Coast, Ghana.

Lazar, N. Yankson, K. Blay, J. Ofori-Danson, P. Markwei, P. Agbogah, K. *et al.* 2020. *Status of the small pelagic stocks in Ghana in 2019*. USAID/Ghana Sustainable Fisheries Management Project (SFMP). Coastal Resources Center (CRC), University of Rhode Island, Narragansett, USA.

Merceron, T. Clément, T. Gabrié, C. Staub, F. Ba, T. & Traore, M.S. (Eds.). 2024. *State of West African marine protected areas 2022*. IUCN, Gland, Switzerland.

MoFAD. 2022. *Fisheries Management Plan of Ghana. A National Policy for the Management of the Marine Fisheries Sector 2022-2026*. Ministry of Fisheries and Aquaculture Development (MoFAD), Government of Ghana, Accra, Ghana.

NDPC. 2021. *National Medium-Term Development Policy Framework (2022-2025). Volume I: Policy Framework.* Government of Ghana National Development Planning Commission (NDPC), Accra, Ghana.

Nunoo, F.K. 2018. *Marine Protected Areas in Ghana: Strategies, action plan and implementation framework*. Ministry of Fisheries and Aquaculture Development Fisheries Commission, Accra, Ghana.

OCPP. 2023. *Understanding the needs and priorities for Marine Spatial Planning and Marine Protected Areas in Ghana*. UK Ocean Country Partnership Program.

Pabi, O. Codjoe, S.N.A. Sah, N.A. & Appeaning Addo, I. 2015. *Climate change linked to failing fisheries in coastal Ghana*. International Development Research Centre, Ottawa, Canada.

Protected Planet. 2023. Protected Planet | Ghana. *Protected Planet*. Available at: https://www.protectedplanet.net/country/GHA [Accessed 24 August 2023]

Sagoe, A.A. Aheto, D.W. Okyere, I. Adade, R. & Odoi, J. 2021. Community participation in assessment of fisheries related ecosystem services towards the establishment of marine protected area in the Greater Cape Three Points area in Ghana. *Marine Policy*, **124**, 104336. https://doi.org/10.1016/j.marpol.2020.104336

Sarpong, D.B. Quaatey, K.N. & Harvey, K.S. 2005. *The Economic and Social Contribution of Fisheries to Gross Domestic Product and Rural Development in Ghana.* FAO Sustainable Fisheries Livelihoods Programme (SFLP) GCP/INT.

Sarre, A. Demarcq, H. Keenlyside, N. Krakstad, J.-O. El Ayoubi, S. Jeyid, A.M. *et al.* 2024. Climate change impacts on small pelagic fish distribution in Northwest Africa: trends, shifts, and risk for food security. *Scientific Reports*, **14**, 12684. https://doi.org/10.1038/s41598-024-61734-8

Sumberg, J. Jatoe, J. Kleih, U. & Flynn, J. 2016. Ghana's evolving protein economy. *Food Security*, **8**, 909–920. https://doi.org/10.1007/s12571-016-0606-6

USAID. 2024. *Marine Protected Area Site Selection and Stakeholder Engagement Report*. United States Agency for International Development (USAID), Burlington, USA.

Ocean Country Partnership Programme

The Ocean Country Partnership Programme (OCPP) is a UK Government-led programme delivered under the Blue Planet Fund in Overseas Development Assistance (ODA) eligible countries. Through this programme, Cefas, JNCC and MMO will provide technical assistance to support countries to tackle marine pollution, support sustainable seafood practices and establish designated, well-managed and enforced MPAs.

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