Ocean Country Partnership Programme

Strategic Roadmap for the Implementation of Marine Protected Areas in Ghana

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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 provide technical assistance to support countries to tackle marine pollution, support sustainable seafood practices and establish designated, well-managed and enforced MPAs.

Executive Summary

Coastal and marine ecosystems in Ghana are essential to the country's biodiversity, food security, and the livelihoods of coastal communities. However, these ecosystems are increasingly threatened by overfishing, pollution, habitat degradation, and a lack of enforcement of environmental regulations. In response, Ghana has committed to international conservation frameworks, including the Kunming-Montreal Global Biodiversity Framework, and has announced plans to establish its first Marine Protected Area (MPA) in the Greater Cape Three Points Area by 2026; a vital step toward sustainable marine resource management.

To support this transition, the Ocean Country Partnership Programme (OCPP), in collaboration with GFRA LBG, has developed a Strategic Roadmap for MPA Implementation. This roadmap builds on the foundational work of the OCPP's "Beyond MPA Designation" project (in collaboration with Hen Mpoano) which aimed to address knowledge gaps for effective MPA implementation. This roadmap provides a practical, adaptable guide to support transitioning from MPA establishment to effective, long-term implementation.

The roadmap is structured around three core phases of MPA implementation:

- **Management** - the coordinated actions and strategies implemented to achieve the conservation goals/objectives of a gazetted area.
- **Monitoring** - the systematic collection of data to assess the ecological, social, and governance conditions of an MPA.
- **Assessment** – the structured approach to evaluate management effectiveness to ensure ecological health, socio-economic outcomes.

Each phase is addressed through three Strategic Objectives, which are further supported by four targeted Actions accompanied by summary guidance and further information available in the Supplementary Material. The roadmap is designed to be flexible and non-prescriptive, allowing for adaptation to local contexts and evolving needs. While the roadmap is not site-specific or timebound, it offers a foundation for future MPA planning across Ghana

Cross-cutting themes, including stakeholder engagement and Gender Equality, Disability, and Social Inclusion (GEDSI), are embedded throughout the roadmap and summarised in dedicated sections to ensure inclusive and equitable implementation. Importantly, the roadmap incorporates regional and national stakeholder engagements to ensure that diverse voices are heard and actively shape the direction of MPA implementation.

A case study on the Greater Cape Three Points Area was also developed in conjunction with this roadmap and provides site-specific context, illustrating the journey from site identification to gazettement and onward to implementation. The case study is available on the resource hub.

Validation workshops and stakeholder engagements were held to ensure the strategic roadmap is inclusive, sustainable and grounded in reality.

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Acronyms

Acronym	Description
AIS	Automatic Identification System
CBD	Convention on Biological Diversity
CBM	Community Based Monitoring
DPSIR	Driver-Pressure-State-Impact-Response
EBM	Ecosystem Based management
EPA	Environmental Protection Agency
EQA / QA	Evidence Quality Assurance / Quality Assurance
FAO	Food and Agricultural Organisation of the United Nations
FC	Fisheries Commission
GBF	(Kunming-Montreal) Global Biodiversity Framework
GCTPA	Greater Cape Three Points Area
GEDSI	Gender Equality, Disability and Social Inclusion
GFRA	Ghana Fisheries Recovery Activity
GIS	Geographic Information System
GOAP	Global Ocean Accounts Partnership
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
LMMA	Locally Managed Marine Area
METT	Management Effectiveness Tracking Tool
MMDA / MMDAs	Metropolitan, Municipal and District Assembly / Assemblies
MoFA	Ministry of Fisheries and Aquaculture
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NAFPTA	National Fish Processors and Traders Association
NGOs	Non-Governmental Organisations
OCPP	Ocean Country Partnership Programme
PAME	Protected Area Management Effectiveness
SDGs	Sustainable Development Goals
SPCC	Small Pelagic Co-management Committee
TEK	Traditional Ecological Knowledge
VMS	Vessel Monitoring System
WD	Wildlife Division

Glossary

Term	Definition
Adaptive management	A structured, iterative process of decision-making that adjusts strategies based on monitoring and evaluation results.
Alternative income sources	Income sources (e.g., work) that involve activities that are not dependent on exploiting marine resources from the MPA area. This could include craft making or sustainable farming.
Baseline	A reference point representing the original or pre-impact condition of an ecosystem or indicator. Where it is not possible to attain pre-impact data, which is often the case, baseline data will be constructed from the first survey outputs.
Blended finance	When public or charitable money is used to make a project less risky and more appealing, so private investors are willing to put in their funds too. It helps attract extra investment for projects that support sustainable development.
Carbon sequestration	The process by which carbon dioxide is captured and stored by natural systems such as forests and oceans.
Co-Management	A collaborative arrangement where responsibility for resource management is shared between government and local stakeholders.
Conservation Advice	Guidance provided to support the protection and management of biodiversity and ecosystems.
Conservation goal / objective	A specific desired outcome aimed at preserving biodiversity, ecosystem function, or cultural values.
Ecosystem-based management	An integrated approach to managing natural resources that considers ecological relationships and sustainability.
Ecotourism	Environmentally responsible travel to natural areas and activities in them that support conservation and benefit local communities.
Enforcement	The implementation of laws and regulations to ensure compliance with conservation measures.
Equality	The state of being equal, especially in status, rights, and opportunities.
Equity	Fairness in access to resources, opportunities, and decision-making, considering different needs and contexts.
Gazettement	The gazettement of an MPA refers to the formal, legal establishment or recognition of a specific marine area through an official government publication (a gazette). The same as ‘designation’.
GEDSI	Gender Equality, Disability, and Social Inclusion; a framework to ensure inclusive and equitable participation in conservation efforts.
Governance	The structures, processes, and institutions through which decisions are made, and authority is exercised in conservation.
Indicator	A measurable variable used to assess progress toward a specific objective or goal.
Livelihood diversification	The strategy of having multiple income streams to reduce reliance on one source.
Management	The coordinated actions and strategies undertaken to achieve the conservation objectives of a protected area.

Term	Definition
Marine ecosystem	A community of living organisms and their physical environment in oceanic and coastal areas.
Marine Protected Area	A clearly defined geographical space recognised and managed to achieve long-term conservation of nature, associated ecosystem services, and cultural values.
Mitigation	Actions taken to reduce or prevent negative environmental impacts.
Participatory process	A method of decision-making that actively involves stakeholders in planning and implementation.
Pressures	Human activities or natural processes that exert stress on marine ecosystems, potentially leading to degradation.
Recovery	The process by which ecosystems or species return to a healthy state after disturbance.
Resilience	The capacity of an ecosystem or community to recover from disturbances and maintain essential functions.
Social safety net	Policies and programs that help individuals and families manage risk and volatility, protect them from poverty and inequality, and help them to access economic opportunity.
Socio-economic	Relating to the interaction between social and economic factors.
Stakeholder	Any individual, group, or organisation with an interest or role in the planning, implementation, or outcomes of an MPA.
Sustainability	The ability to maintain ecological and social systems over the long term without compromising future generations.
Traditional Ecological Knowledge (TEK)	Knowledge held by Indigenous and local communities about ecosystems, based on experience and cultural practices.

1. Background

Ghana's coastal and marine environment plays a vital role in biodiversity, food security, and economic development, with fisheries providing the main source of animal protein and livelihoods for many coastal communities (MoFA, 2022a). These resources, however, face mounting threats from overexploitation, pollution, and weak regulatory enforcement, resulting in declining fish stocks and ecosystem degradation (Eriksen, 2018; UNDP, 2021). In response, Ghana has aligned with global conservation commitments (Sagoe *et al.*, 2021; Karakara, Peprah and Dasmani, 2024), notably the Kunming–Montreal Global Biodiversity Framework (GBF), which aims to achieve 30% effective protection at the global level for land, sea and inland waters by 2030 (Convention on Biological Diversity, 2022). Reflecting this ambition, the Government of Ghana announced in April 2024 its plan to establish the country's first Marine Protected Area (MPA) in the Greater Cape Three Points Area (GCTPA) by 2026. As gazettement approaches, the focus must shift toward post-gazettement planning to ensure effective implementation and management.

To support post-gazettement planning for Ghana's first Marine Protected Area (MPA), the Ocean Country Partnership Programme (OCPP), in collaboration with Hen Mpoano (a non-profit organisation dedicated to the sustainable management of Ghana's coastal and marine ecosystems) developed a comprehensive suite of deliverables under OCPP's Beyond MPA Designation in Ghana project (Ocean Country Partnership Programme, 2025c). This initiative addressed critical knowledge gaps in MPA implementation, particularly in the areas of management, monitoring, and assessment, following the anticipated gazettement of the Greater Cape Three Points Area by 2026.

The first deliverable provided an analytical review of Ghana's MPA-related policies, legislation, and strategies, offering a foundational assessment of the legal and institutional frameworks. It identified key mandates, overlaps, and gaps among agencies such as The Ministry of Fisheries and Aquaculture (MoFA), the Wildlife Division (WD), and the Environmental Protection Agency (EPA), and highlighted the need for improved coordination, stronger legal instruments, and inclusive governance models like co-management. Building on this, further work focused on stakeholder mapping, gender analysis, and marine education and awareness, highlighting the importance of inclusive, gender-sensitive engagement and the need to strengthen marine literacy and campaign sustainability. These insights informed the development of a High-level MPA Implementation Framework (Ocean Country Partnership Programme, 2025b), which now serves as the foundation for this strategic roadmap for effective MPA implementation in Ghana.

2. Introduction

MPAs are globally recognised as powerful tools for conserving marine biodiversity, supporting sustainable livelihoods, and enhancing ecosystem resilience in the face of growing environmental pressures (Chukwuka, Adegboyegun and Adeogun, 2025a; Eli, Raimi and Amachree, 2025). International frameworks such as the Convention on Biological Diversity (CBD), the Sustainable Development Goals (SDGs), and regional strategies such as the African Union's Agenda 2063 (African Union Commission, 2015) and Africa Blue Economy Strategy (AU-IBAR, 2019) emphasise the role of MPAs in achieving sustainable development.

In Ghana, progress toward MPA establishment has accelerated over the past decade, culminating in plans to gazette the Greater Cape Three Points Area (GCTPA) as the country's first MPA. To ensure that this gazettement translates into meaningful conservation outcomes, attention must now shift to post-gazettement activities. Implementing and maintaining effective MPAs follows a continuous, adaptive process of managing MPAs. This can involve site identification, threat assessment, management, monitoring, and assessment (Figure 1), and aims to ensure the effective protection and long-term ecological health of marine ecosystems within gazetted areas.

This roadmap focuses on three core post-gazettement stages of management, monitoring, and assessment. It recognises the interdependencies between them and the need for coordinated, inclusive, and adaptive approaches to MPA implementation in Ghana. Further information on the MPA Implementation Cycle is available in Section 2 of the High-level MPA Implementation Framework (Ocean Country Partnership Programme, 2025a).

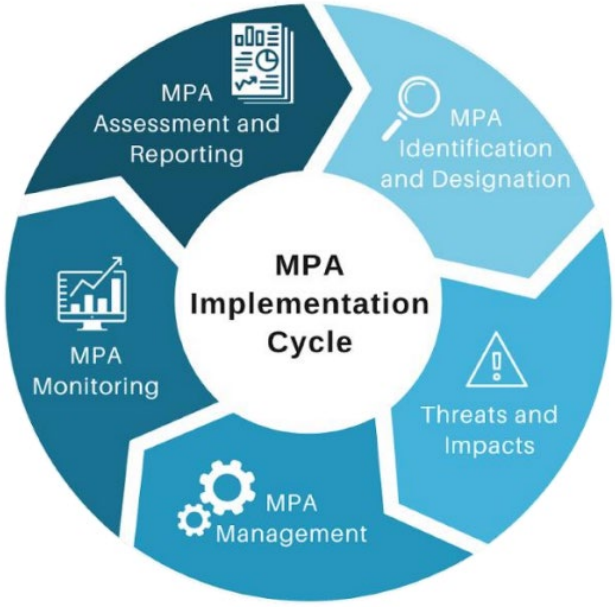


Figure 1. Steps of the JNCC's MPA Implementation Cycle. The cycle begins with MPA identification and designation, progressing clockwise through implementation stages, and loops back through assessment and reporting to inform adaptive management and future sites.

3. Purpose

This document provides a strategic, actionable roadmap to guide the effective implementation of MPAs in Ghana. It builds upon the high-level framework developed through OCPP's Beyond MPA Designation in Ghana project and translates it into a practical tool that outlines key steps, Strategic Objectives, and recommended Actions for transitioning from MPA designation to successful management, monitoring, and assessment.

This roadmap is designed to support a wide range of stakeholders, including government agencies, local communities, researchers, and NGOs, in developing MPAs that are ecologically sound, socially inclusive, and institutionally resilient.

Structured around three core post-gazettement stages, management, monitoring, and assessment, this strategic roadmap provides guidance on establishing governance systems, identifying and addressing threats, tracking ecological and socio-economic indicators, and evaluating effectiveness to inform adaptive management. Each stage is underpinned by Strategic Objectives and Actions informed by best practices and lessons learned from OCPP's Beyond MPA Designation project.

The roadmap emphasises the importance of stakeholder engagement throughout the implementation process, encouraging inclusive participation from fisher associations, traditional authorities, women's groups, and conservation organisations. It also integrates cross-cutting themes such as gender, equality, disability and social inclusion (GEDSI) and traditional ecological knowledge, and sustainable financing, critical elements for building trust, enhancing compliance, and ensuring long-term success.

Importantly, the term "roadmap" has been deliberately used to reflect its role as a flexible, living guidance document, one that is able to evolve over time and can be adapted to different MPA contexts in Ghana. While it does not prescribe fixed timelines or site-specific implementation plans, it offers a structured foundation to support the development of tailored roadmaps for each MPA as they are gazetted. These site-level roadmaps should incorporate recommended timings and be informed by local context, stakeholder input, and environmental dynamics.

To indicate sequencing, this roadmap groups Actions into three broad timeframes, short-term, mid-term, and long-term, drawing on the high-level framework developed through OCPP's Beyond MPA Designation in Ghana project, and refined based on stakeholder feedback:

- **Short-Term**: Establishing the foundation for implementation and addressing urgent priorities.
- **Mid-Term:** Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.
- **Long-Term**: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

4. Management

Management, in the context of MPAs, refers to the coordinated actions and strategies implemented to achieve the conservation goals/objectives of a gazetted area. These actions may include enforcing local regulations to restrict harmful human activities, such as destructive fishing practices or coastal development, that threaten marine habitats and species (Kelleher, 1999; Grorud-Colvert, Sullivan-Stack, Roberts, Constant, Horta E Costa, *et al.*, 2021). Effective MPA management requires a thorough understanding of the ecological, cultural, and socio-economic assets within the area, as well as the pressures and stressors that compromise their integrity. Identifying and addressing these threats is a critical step in developing a robust and adaptive management strategy.

Central to this approach is the principle of ecosystem-based management (EBM), which recognises the complex interconnections between species, habitats, and human communities (Long, Charles and Stephenson, 2015). EBM seeks to maintain ecosystem health and function while allowing for sustainable use of marine resources. In the Ghanaian context, this means balancing conservation goals with the needs of coastal communities who rely on the ocean for food, income, and cultural identity. By integrating ecological science with traditional knowledge and inclusive governance, MPA management can support both biodiversity conservation and human wellbeing, ensuring long-term resilience and sustainability.

For management of MPAs in Ghana, the OCPP's MPA Roadmap framework to support the implementation of MPAs in Ghana identified three key Strategic Objectives:

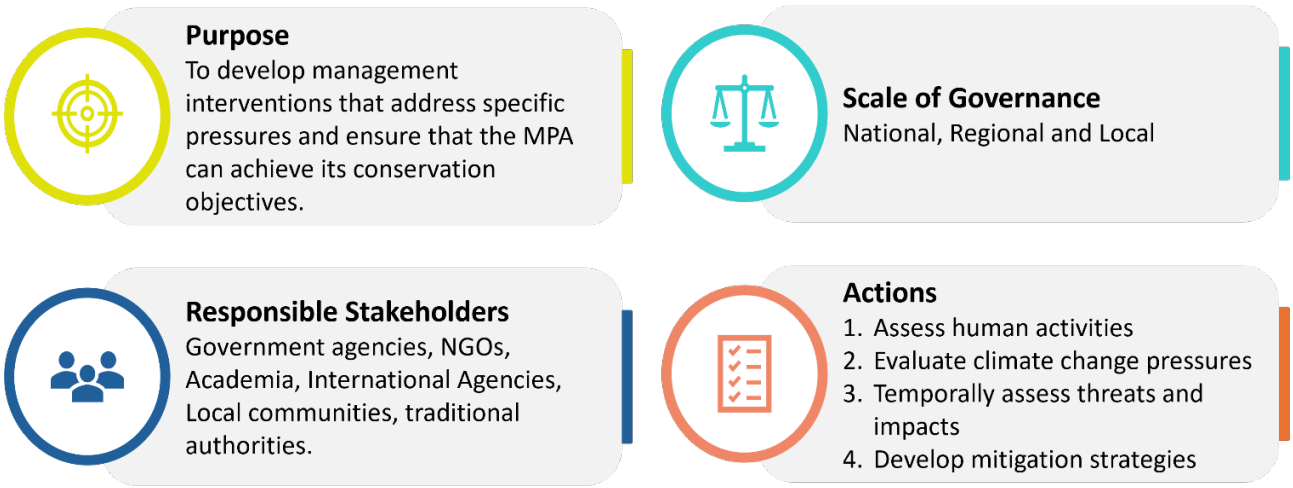
1. Identify threats and impacts
2. Develop an MPA Strategy or Policy and establish effective governance systems
3. Implement MPA management and monitor effectiveness.

This section details the three Strategic Objectives for MPA management along with key Actions to take to achieve those Strategic Objectives. It is important to note that the Strategic Objectives and associated Actions detailed below should be regularly reviewed and consulted on with stakeholders to ensure they remain appropriate and inclusive.

Active involvement of government agencies, local communities, and fisher associations in MPA management to foster shared conservation goals and co-created strategies enhances compliance and reduces conflict through co-management approaches. To support this, each Action of the Strategic Objectives below also highlights the role and responsibilities of stakeholders and considerations for GEDSI to ensure that MPA management is inclusive, equitable, and responsive to the needs and rights of all community members, thereby strengthening both social and ecological outcomes.

While Marine Spatial Planning (MSP) is not the focus of this document, its relevance is acknowledged. MSP offers a broader framework for managing ocean space and coordinating marine uses, including conservation. MPAs are a key component of MSP should be integrated into Ghana's MSP processes to ensure policy alignment. Further information on the linkage between MPAs and MSP is available in Appendix 1 of the Supplementary Material.

4.1. Strategic Objective 1: Identify threats and impacts



This Strategic Objective aims to systematically identify, evaluate, and understand both current and potential future threats to the MPA. A comprehensive understanding of these threats is essential for designing effective management interventions that directly address the pressures undermining the MPA's ecological integrity and conservation goals.

Threats to the health of marine habitats and species may arise from direct human activities, such as overfishing, habitat destruction, pollution, and unregulated tourism, or from broader environmental changes which are indirect, such as climate change and coastal erosion. The pressure on marine species and habitats from these threats can act independently or in combination, often compounding their impacts on marine ecosystems.

Special attention should be given to how pressure from threats may evolve over time, considering factors such as population growth, economic development, and shifting climate patterns. This forward-looking approach enables managers to anticipate emerging risks, prioritise actions, and build resilience into MPA planning and governance.

Ultimately, this Strategic objective supports the development of targeted, adaptive, and science-based management strategies that are responsive to both current conditions and future uncertainties, ensuring the long-term effectiveness and sustainability of the MPA.

To support this Strategic objective through a GEDSI lens, threat identification should be inclusive of diverse voices, especially women, people with disabilities, and marginalised communities, whose experiences and knowledge can enrich understanding of pressures on marine ecosystems. Threats should be assessed for their differential impacts across social groups, and future projections must consider social vulnerability.

To achieve this Strategic Objective, four Actions have been proposed, with details provided below. These Actions require governance reaching across regional, national, and local levels and comprise of inputs from a range of stakeholders.

4.1.1. Action 1: Assess Human Activities Impacting Marine Environments

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Understanding the scope and intensity of human activities is key to effective marine conservation. This Action focusses on identifying, quantifying, and mapping activities that impact marine ecosystems, such as fishing, tourism, transport, and coastal development. These pressures often act cumulatively and synergistically, with impacts varying across time and space. For example, overfishing may reduce fish populations, while coastal development can simultaneously destroy critical habitats like mangroves or coral reefs. Coastal erosion is also a significant threat to Ghana's marine environment and has been addressed under the Management section, Strategic Objective 1, Action 2.

Beyond ecological effects, these activities have significant socio-economic impacts. Declining fish stocks threaten food security and livelihoods in coastal communities. Unmanaged tourism can degrade habitats, undermining biodiversity and long-term economic gains. Infrastructure may boost access and growth but can also displace communities and increase climate vulnerability. Addressing these dimensions ensures MPAs are ecologically sound, socially just, and economically viable.

This Action supports informed decision-making by identifying high-pressure areas, guiding zoning and regulation, and enabling long-term monitoring. It promotes stakeholder engagement through clear mapping of human activities. Assessments should integrate satellite imagery, vessel tracking (e.g., AIS), local knowledge, and field surveys. Results will inform threat mapping, impact assessments, and targeted mitigation strategies.

When assessing human activities impacting marine environments, it's important to include diverse voices, especially women, people with disabilities, and marginalised groups, whose livelihoods may depend on these ecosystems. Data collection should be accessible and inclusive, and local knowledge from underrepresented communities should inform the mapping and analysis to ensure equitable and accurate results.

Figure 2 below summarises a five-step approach to assessing human activities impacting the marine environments in Ghana. This is not an exhaustive list and may vary depending on the location and data availability. Further information on the approach outlined below is available in Appendix 2 of the Supplementary Material.

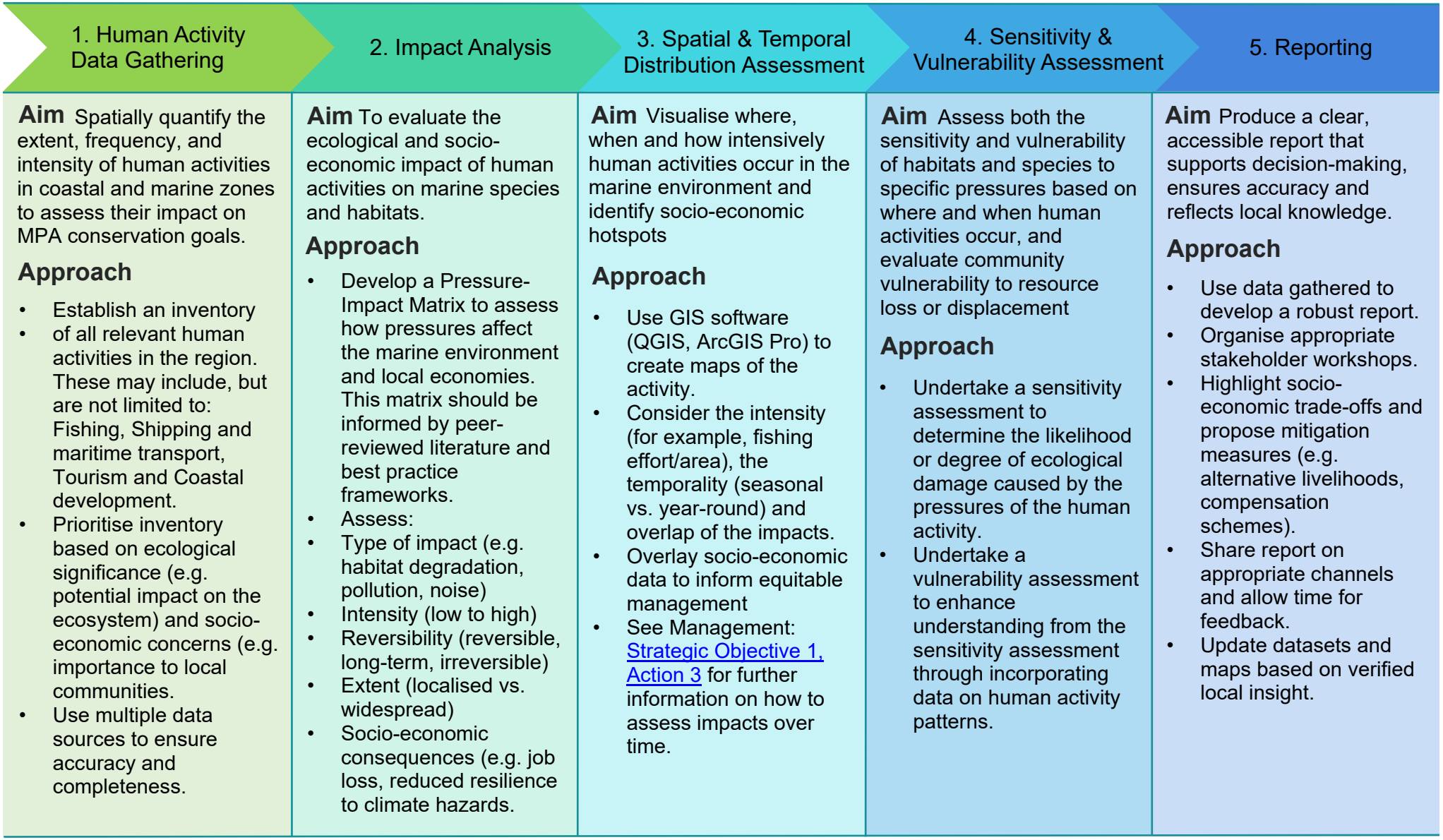


Figure 2. Summary of five-step approach to assess human activities impacting the marine environments in Ghana.

4.1.2. Action 2: Evaluate Climate Change Impacts and Vulnerabilities

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Climate change is an escalating threat to Ghana's marine ecosystems, from rocky reefs at Greater Cape Three Points (GCTP), to mangrove forests in the Keta Lagoon Complex and seagrass meadows of the Pra Estuary (Coastal Resources Center and Friends of the Nation, 2011; Ateweberhan *et al.*, 2012). Key climate change impacts include sea surface temperature rise (SST), ocean acidification (OA), sea-level rise (SLR), accelerated coastal erosion, altered rainfall, and more frequent extreme weather. These changes can:

- **Disrupt ecological functions** (e.g., coral calcification declines under OA; SST-driven bleaching events recorded in 2016)
- **Reduce species resilience** (e.g., slower seagrass recovery after turbidity spikes)
- **Cause habitat loss** (shoreline retreat, mangrove dieback)
- **Impact livelihoods** of small-scale fishers, salt producers, and shellfish collectors through habitat loss and shifting species distributions (EPA, 2021; MoFA, 2022a)

This Action aims to assess current and projected climate-related impacts on key marine and coastal habitats and to evaluate the vulnerability and adaptive capacity of both ecosystems and dependent human communities. While this document addresses climate impacts broadly, site-specific erosion management should be integrated into MPA plans where needed.

Data gaps, especially long-term, high-resolution climate data, make widespread monitoring challenging. A strategic approach focusing on climate-sensitive habitats, supported by community observations and selective sensors, can validate remote sensing and strengthen adaptive management.

GEDSI should be integrated into climate impact assessments, as vulnerable groups often face greater risks and limited adaptive capacity. Inclusive planning, disaggregated data, and targeted support help ensure adaptation strategies are equitable and effective.

Figure 3 below summarises a three-step approach to assess climate change impacts and vulnerabilities. This is not an exhaustive list and is strongly influenced by data availability, ecosystem dynamics and adaptive capacity. Further information on the approach outlined below is available in Appendix 3 of the Supplementary Material.

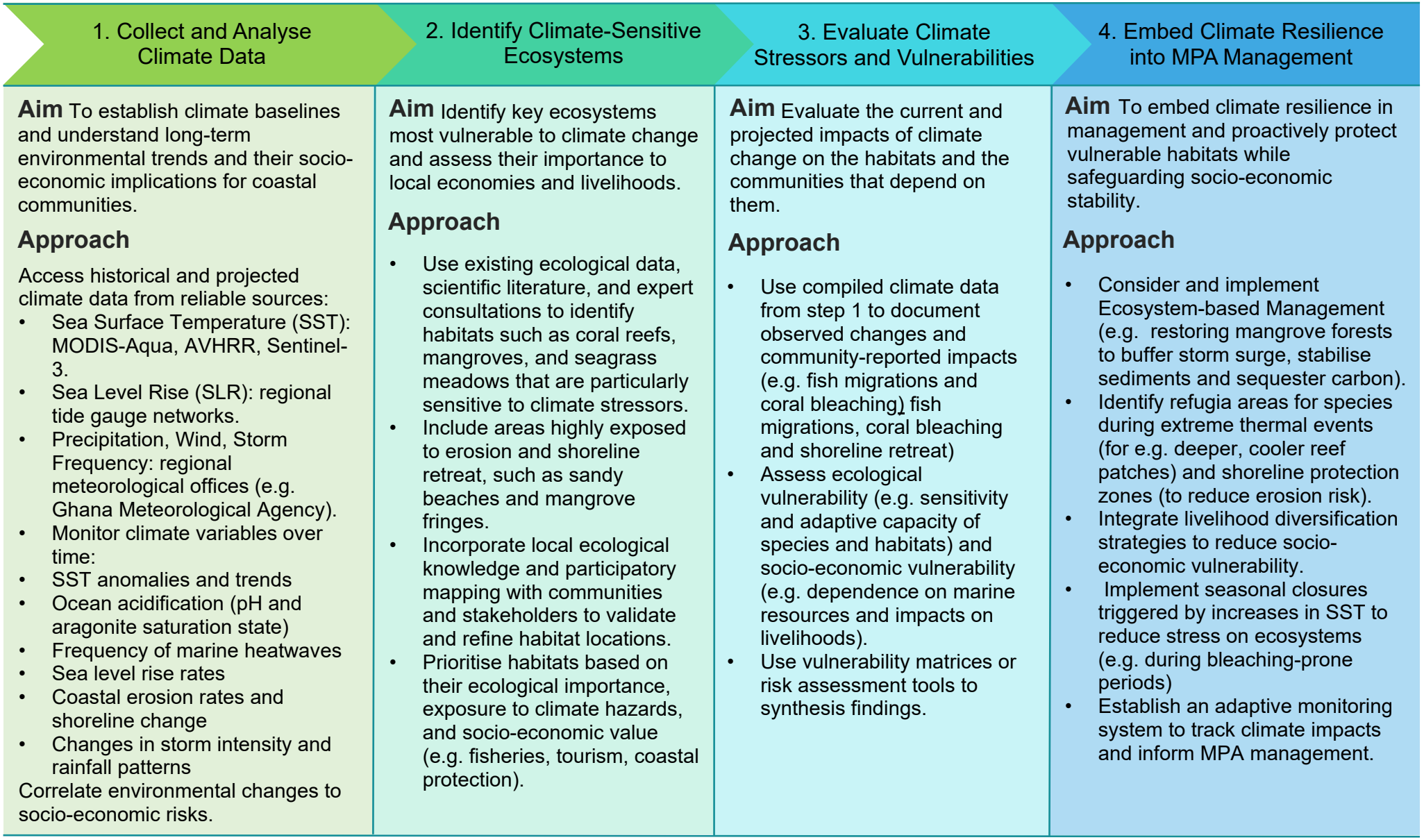
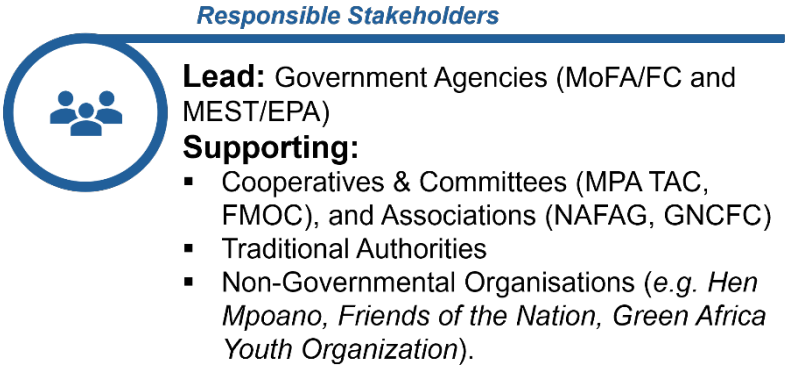


Figure 3. Summary of three-step approach to evaluate climate change impacts and vulnerabilities on marine environments in Ghana.

4.1.3. Action 3: Assess Threats and Impacts Over Time



Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

Assessing threats and impacts over time is a critical component of adaptive MPA management. This Action involves systematically tracking and analysing environmental, ecological, and socio-economic pressures to understand how they evolve and affect the protected area. By analysing historical data, MPA managers can uncover long-term trends, detect emerging threats, and assess the effectiveness of existing interventions. This supports proactive planning, helps understand cumulative impacts, and provides a strong foundation for evidence-based decision-making (Murray *et al.*, 2025).

Effective implementation of this Action requires consistent data collection, integration of traditional and scientific knowledge, and collaboration across governance levels. It also benefits from technological tools such as remote sensing, GIS, and ecological modelling. Socio-economic monitoring should include indicators such as changes in fisheries income, tourism revenue, employment patterns, and community vulnerability to resource loss.

While climate change is addressed separately in Action 2 due to its specialised tools, Action 3 focuses on local and regional human pressures, such as fishing, shipping, and coastal development, that can be directly monitored and managed. Because climate change often amplifies these pressures, its impacts should still be integrated into planning for a comprehensive understanding of ecological and socio-economic consequences.

Long-term threat and impact assessments should include diverse stakeholder perspectives, especially from groups more vulnerable to environmental change. Disaggregated socio-economic data (e.g., by gender, age, livelihood type) and inclusive engagement help ensure that cumulative impacts and future scenarios reflect the realities of all affected communities. This makes MPA planning more equitable and responsive, balancing conservation goals with food security, cultural values, and economic stability.

Figure 4 below summarises a four-step approach to assess threats and impacts over time. This is not an exhaustive list and is strongly influenced by data availability, impact of cumulative and interacting threats and changing baselines. Further information on the approach outlined below is available in Appendix 4 of the Supplementary Material.

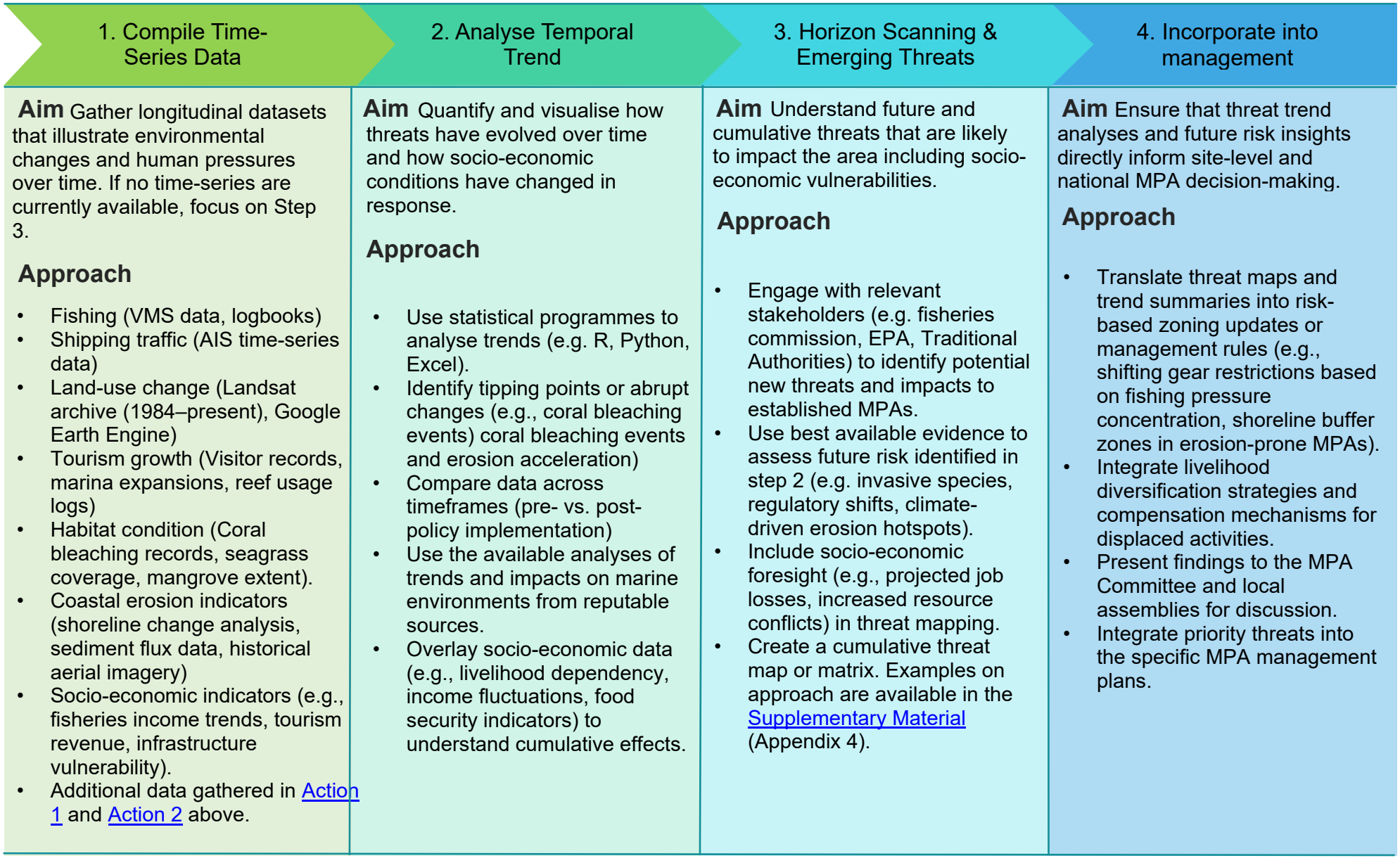


Figure 4. Summary of four-step approach to assess threats and impacts in the marine environment in Ghana over time.

4.1.4. Action 4: Develop mitigation strategies through participatory processes

Responsible Stakeholders

Lead: Traditional Authorities and Government Agencies (MEST/EPA, MOFA/FC)

Supporting:

- Local Communities
- Non-Governmental Organisations (e.g. Hen Mpoano, Friends of the Nation, Green Africa Youth Organization).

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Mitigation strategies are essential for reducing the impact of identified threats on key ecological features and for supporting ecosystem-based management and can include actions such as implementing nature-based solutions (Piet *et al.*, 2015). This Action emphasises the importance of designing, evaluating, and implementing these MPA strategies in collaboration with local stakeholders, including fishers, community leaders, conservation groups, and government agencies, to ensure they are contextually appropriate, socially equitable, and ecologically effective.

Recognising, understanding and incorporating diverse stakeholder values and perspectives in MPA management has the potential to enhance conservation outcomes and build resilient social and strengthen livelihoods, food security, and climate resilience in Ghana. To effectively incorporate stakeholder views in MPA management, the following should be considered:

- **Prioritising key stakeholders** – actively engage stakeholders with high interest and influence (such as government agencies, international organisations, traditional authorities, committees and cooperations, and local communities) in MPA management processes. Further information is available in Section 7: Stakeholder Engagement
- **Incorporating broader institutional perspectives** – ensure stakeholders with a high interest but lower influence (such as universities and NGOs) are involved in co-designing of MPA management strategies.
- **Incorporating marginalised voices** – ensure that vulnerable and often excluded groups (e.g., women, youth groups, migrant fishers, individuals with disabilities, lower-income households and head porters) are meaningfully involved in co-designing MPA management strategies. In addition, undertake capacity building programmes specifically with marginalised groups to develop knowledge and skills and support a greater engagement in MPA management activities. This includes addressing barriers to participation and ensuring that mitigation strategies consider livelihood diversification, alternative income sources, and social safety nets (Chukwuka, Adegboyegun and Adeogun, 2025).

- **Integrating socio-economic considerations into mitigation design –** strategies should aim to reduce ecological pressures while minimising negative economic impacts on local communities.

Figure 5 below summarises a two-step approach to develop mitigation strategies through participatory processes.

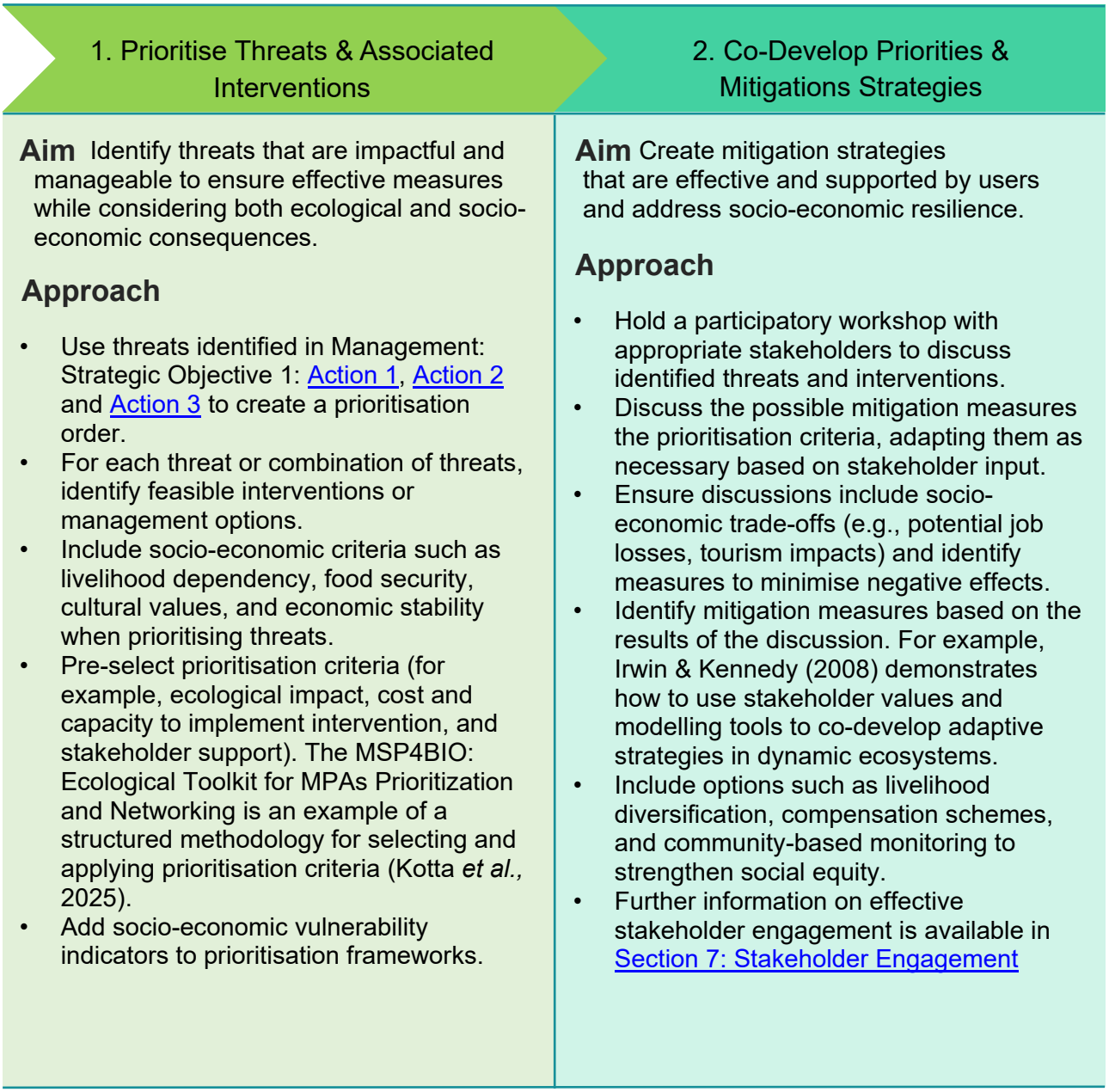


Figure 5. Summary of two-step approach to develop mitigation strategies for identified threats on key ecological features and to support ecosystem-based management through participatory processes.

4.2. Strategic Objective 2: Develop an MPA Strategy or Policy and Establish effective governance systems

This Strategic Objective aims to build on Strategic Objective 1 and develops a comprehensive MPA strategy or policy that supports effective conservation and sustainable use of the marine environment through participatory processes, whilst establishing clear governance structures that integrate traditional and governmental authority. A governance system that integrates traditional and governmental authority is defined by a co-management structure, where decision-making and responsibilities are shared between government agencies and local traditional leaders through joint MPA management committees.

Successful MPA implementation requires strategic and adaptive management guided by an MPA strategy or policy. The MPA strategy or policy defines national marine conservation goals, sets standards and priorities, guides site-level planning, and establishes governance for effective, inclusive, and adaptive protection of marine ecosystems and communities. This Strategic Objective also supports Assessment Strategic Objective 3, Action 1 by enabling the development of decision frameworks that directly link specific assessment outcomes to targeted management responses, ensuring that conservation actions are evidence-based and responsive to changing ecological and social conditions.

Designating a lead agency for national MPA coordination ensures unified leadership, consistent policy implementation, efficient resource use, and alignment with broader conservation goals. In parallel, the establishment of effective governance systems ensures transparent decision-making, promotes stakeholder trust and participation, provides legal and institutional support and aligns local efforts with broader national and international marine conservation goals (Di Franco *et al.*, 2020; Day, 2022).

To achieve this Strategic Objective, four Actions have been proposed, with details provided below. These Actions require governance reaching across regional, national and local levels and comprise of inputs from a range of stakeholders.

4.2.1. Action 1: Develop a National MPA Policy or Strategy

Responsible Stakeholders

Lead: Government Agencies (MoFA/FC, MEST/EPA, MLNR/WD)

Supporting:

- Non-Governmental Organisations (NGOs) (e.g. Hen Mpoano, GFRA, Friends of the Nation, Green Africa Youth Organization)
- Local communities
- Universities and Research Institutions (e.g. University of Cape Coast, University of Ghana)

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

While developing a National MPA Management Plan was initially proposed to provide a unified vision and strategic framework for marine conservation, stakeholder feedback indicates that a National MPA Policy or Strategy is preferred. Both the Fisheries Commission (FC) and the Environmental Protection Agency (EPA) support anchoring MPAs within existing national frameworks, such as the National Fisheries Management Plan, rather than creating a standalone national plan. This approach ensures coherence with broader fisheries and environmental governance while still providing clear guidance for site-specific MPA management plans.

A National MPA Policy or Strategy would:

- Define national goals/objectives, standards, and priorities for marine conservation.
- Provide overarching principles for site-level plans, ensuring consistency and alignment with national development goals and social protection frameworks (e.g. Ghana's National Integrated Maritime Strategy (NIMs) (Koomson, 2022) and Ghana Productive Safety Net Project).
- Establish governance structures and processes for accountability, adaptive management, and stakeholder engagement.

Site-specific MPA management plans remain essential for addressing local ecological, biological and socio-economic realities but should be developed in alignment with the national policy or strategy. These plans should be informed by best available evidence, inclusive stakeholder consultations (with GEDSI considerations), and regular reviews based on monitoring and updated knowledge.

A comprehensive stakeholder mapping exercise should precede policy development to identify interests, potential conflicts, and collaboration opportunities. Continuous engagement of women, youth, migrants, PWDs, and other minority groups throughout all stages will ensure inclusivity, trust, and ownership. Further details on stakeholder engagement, as well as incorporating GEDSI, are available in Section 7: Cross Theme Considerations.

Figure 6 provides a high-level overview of a five-step approach to developing a National MPA Policy or Strategy. Whilst this figure demonstrates core components for developing a National MPA Policy or Strategy, additional steps may be necessary depending on context and specific needs. Further information on tools and frameworks for strengthening MPA management is available in Appendix 5 of the Supplementary Material.

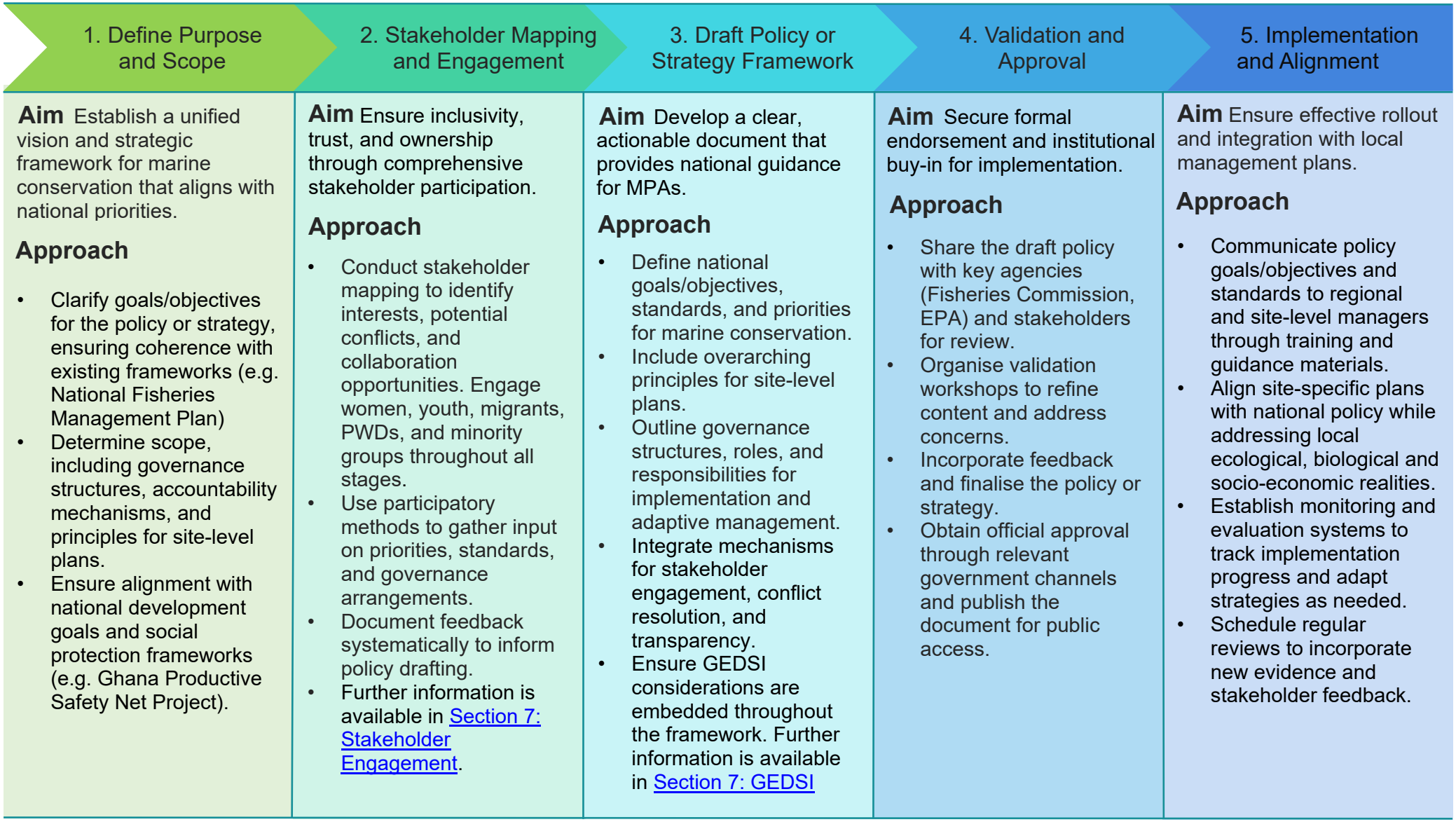


Figure 6. Summary of five-step approach to develop a National MPA Policy or Strategy.

4.2.2. Action 2: Designate a Lead Agency for National MPA Coordination

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Establishing a lead agency for national MPA coordination is a foundational step in building an effective and coherent MPA network. National-level coordination plays a critical role in representing the diverse ecological, cultural, and socio-economic priorities of the various ecosystems and regions that make up a country. It also ensures that national efforts are aligned with broader international trends, legal obligations, and conservation targets. A designated lead agency provides central leadership and accountability, streamlining MPA planning and implementation (Grorud-Colvert, Sullivan-Stack, Roberts, Constant, Horta E Costa, *et al.*, 2021). It ensures coordination across regions and sectors, especially where marine ecosystems and resource use cross jurisdictional boundaries. The lead agency should be empowered to coordinate across government departments, facilitate stakeholder engagement, manage national data and reporting systems (for further information on reporting systems see Strategic Objective 2: Assess and report on the effectiveness of the MPA in the Assessment section of this document), and represent the country in regional and international MPA-related forums. To do this effectively, the agency must be selected based on its institutional capacity, existing mandate, and alignment with national conservation priorities.

Prior to a lead agency being formally designated, it is essential to establish a clear legal and policy mandate. Without this, the agency may lack the authority to act, undermining its ability to lead and coordinate effectively. In cases where multiple agencies have overlapping responsibilities, it is important to clarify roles and avoid duplication. Complementary legal and institutional frameworks can help resolve inconsistencies and promote a unified approach to MPA governance.

Stakeholder engagement must be integrated throughout the entire process. The legitimacy and success of the lead agency will depend on its ability to work transparently and inclusively with all relevant stakeholders. Further details on stakeholder engagement, as well as incorporating GEDSI, are available in Section 7: Cross Theme Considerations.

Figure 7 presents a high-level, four-step framework for designating a lead agency for national MPA coordination. While it outlines key considerations in the process, additional steps or context-specific factors may also need to be addressed.

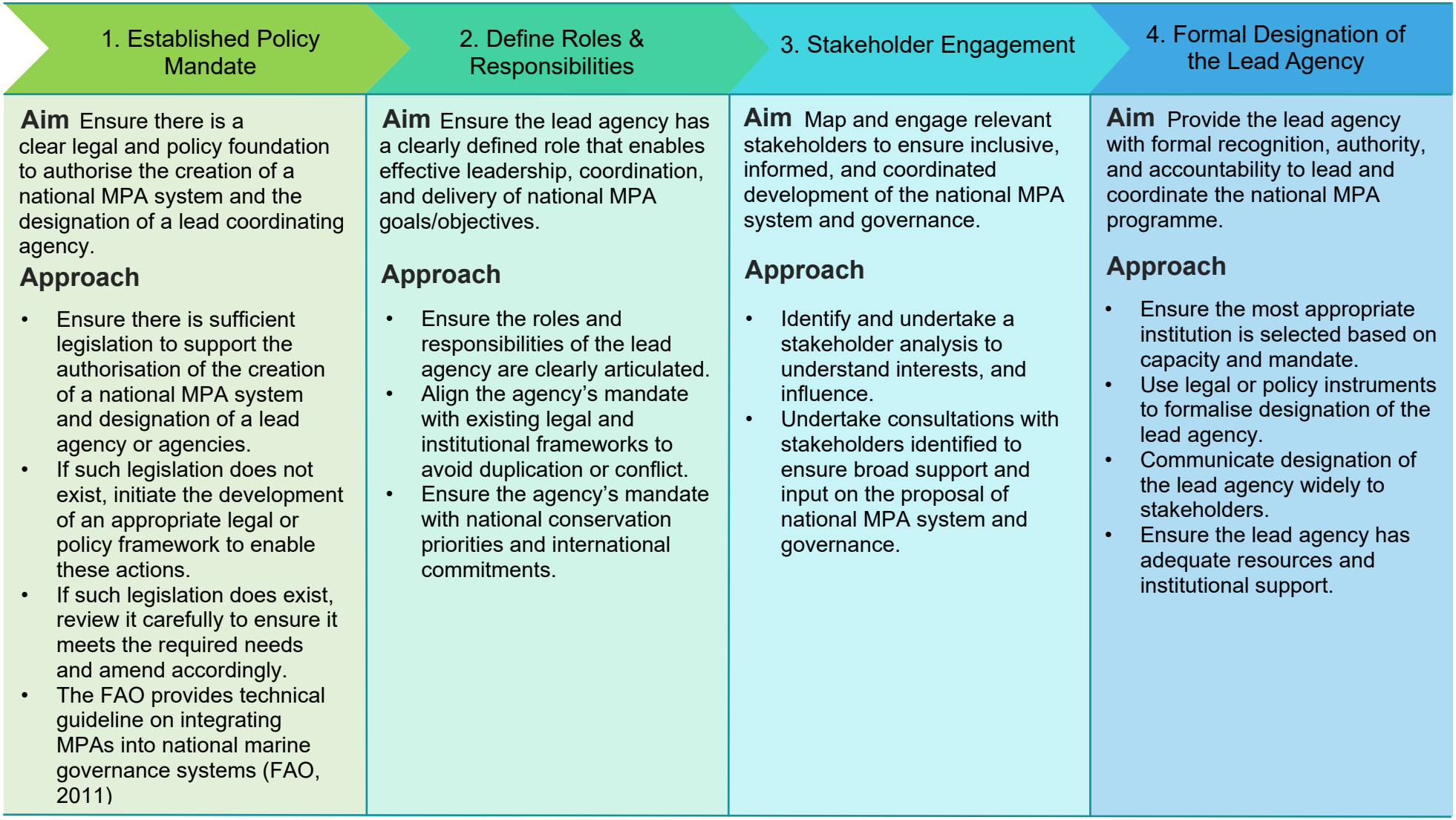


Figure 7. Summary of four-step approach for designating a lead agency for national MPA coordination in Ghana.

4.2.3. Action 3: Establish an inter-ministerial commission

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

An inter-ministerial commission in the context of MPA management acts as a high-level coordination and decision-making body composed of representatives from key government ministries. Its main purpose is to ensure integrated, cross-sectoral governance, particularly where mandates and interests overlap across agencies. Unlike the lead agency for National MPA Coordination (outlined above in Action 2), which is responsible for the operational coordination and implementation of the national MPA programme, the inter-ministerial commission provides strategic oversight, aligns policies across sectors, resolves institutional overlaps, and supports the lead agency's work from a broader policy perspective. Attaching the inter-ministerial commission to a supra-ministerial body, such as the Vice President's Office, can enhance coordination and authority, but its effectiveness depends heavily on the active support of that higher authority.

Establishing an inter-ministerial commission for MPA management requires careful planning to ensure it functions effectively as a high-level coordination and decision-making body. To be effective, the inter-ministerial commission must be grounded in a clear legal or policy framework that defines its authority, scope, and relationship with existing institutions. Representation should be inclusive, ensuring all relevant sectors are involved, and roles and responsibilities must be clearly articulated to avoid duplication or conflict. Coordination with the lead agency is essential, as the commission provides oversight and guidance rather than operational management. An inter-ministerial commission can have either a fixed chair or a rotating chair which can promote diverse perspectives and strengthen political support.

Developing a strong operational structure is key to a commission's effectiveness. This includes setting up a secretariat, regular meeting schedules, and clear decision-making procedures to ensure coordination and continuity. Transparency and accountability mechanisms are also important to consider, such as thorough documentation, regular reporting, and active stakeholder engagement. These practices help build trust, ensure decisions are well-informed, and promote legitimacy. When operations are structured and transparent, the commission is better positioned to make credible, inclusive, and sustainable decisions.

Figure 8 presents a high-level, four-step framework for establishing an MPA interministerial commission. While it outlines key considerations in the process, additional steps or context-specific factors may also need to be addressed.

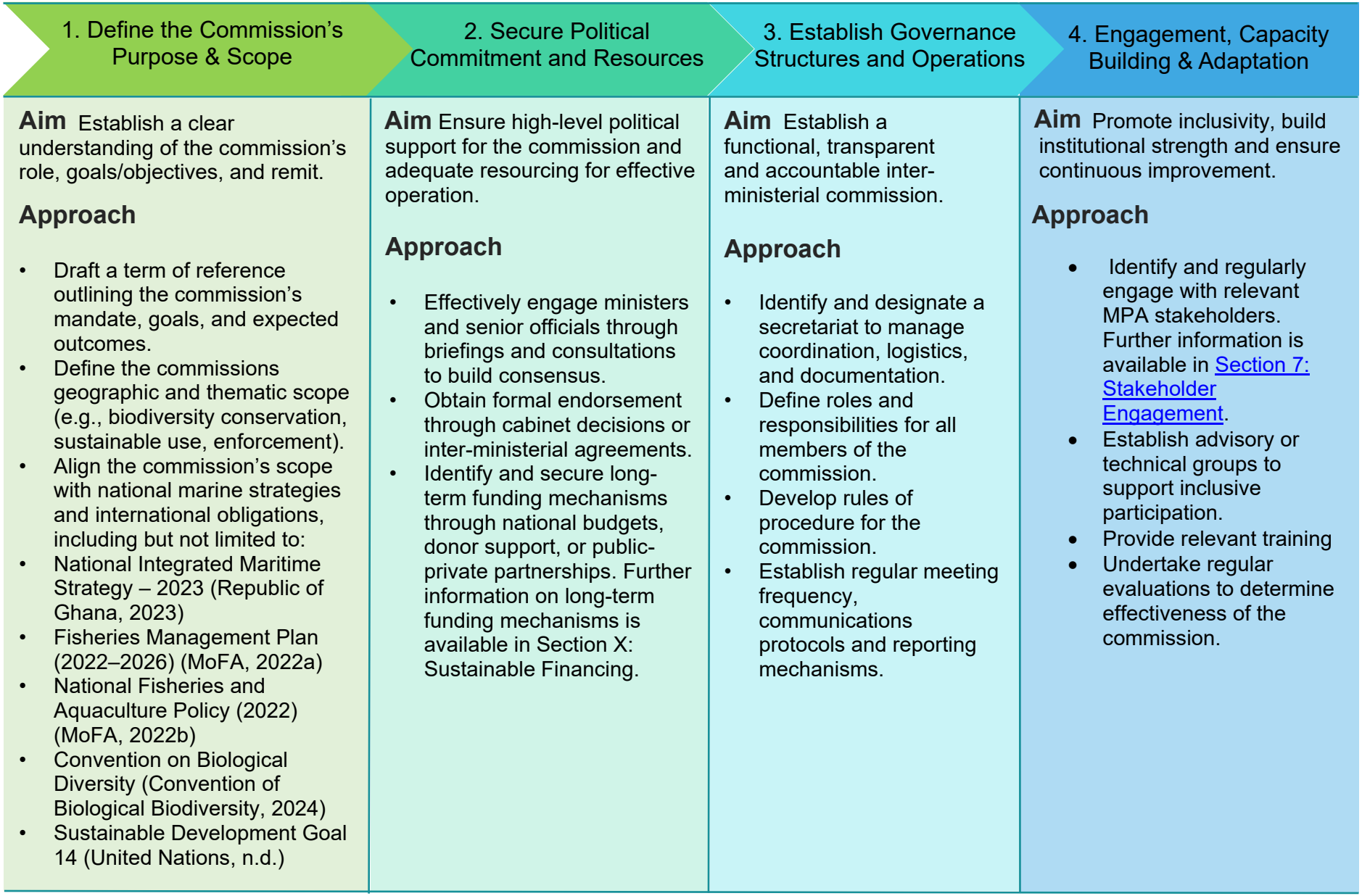
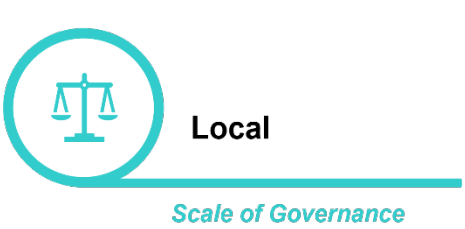


Figure 8. Summary of four-step approach for establishing an MPA interministerial commission in Ghana.

4.2.4. Action 4: Create Local Co-Management Structures



Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Local co-management structures in the context of MPA management are collaborative arrangements where local communities and government authorities share responsibility for managing marine resources. These structures recognise the value of local knowledge and the importance of involving those most directly affected by the implementation of conservation measures. Effective stakeholder engagement, with attention to gender equality, disability, and social inclusion (GEDSI), is essential to ensure that co-management processes are equitable, representative, and responsive to diverse community needs.

In Ghana, the Small Pelagic Co-management Committee (SPCC) exemplifies this approach. It includes a broad range of stakeholders, fishermen, fish processors, government representatives, and civil society organisations, ensuring inclusive and representative decision-making. The committee operates at multiple levels, from national to community-based units, with clearly defined roles.

This model offers valuable lessons for MPA management. Co-management enhances legitimacy and effectiveness by supporting compliance through community buy-in, fostering stewardship and a sense of ownership, improving adaptability to environmental changes and local challenges, and strengthening trust and equity in marine governance.

To institutionalise this approach, Ghana approved a Co-Management Policy for the Fisheries Sector in 2020 (MoFA, 2020). This policy provides a framework for delegating authority to resource users and stakeholders, laying the groundwork for participatory MPA governance. The GFRA Fisheries Co-management Report (2024) outlines practical steps and capacity-building efforts to operationalise this policy, offering a strong foundation for integrating co-management into MPA planning (GFRA, 2024).

Figure 9 presents a high-level, four-step framework for creating local MPA co-management structures in Ghana. While it outlines key considerations in the process, additional steps or context-specific factors may also need to be addressed. Further information is available in Appendix 6 of the Supplementary Material.

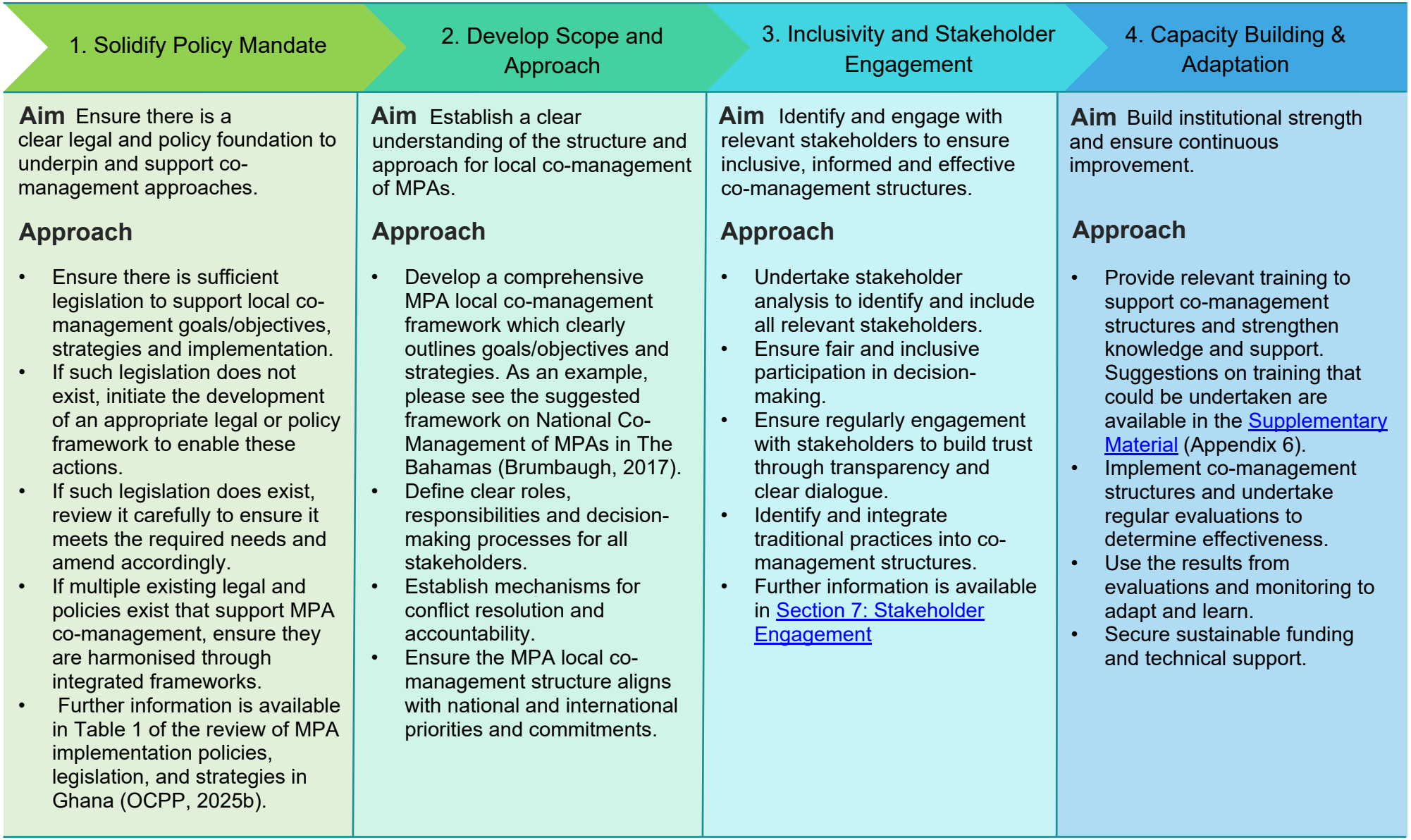
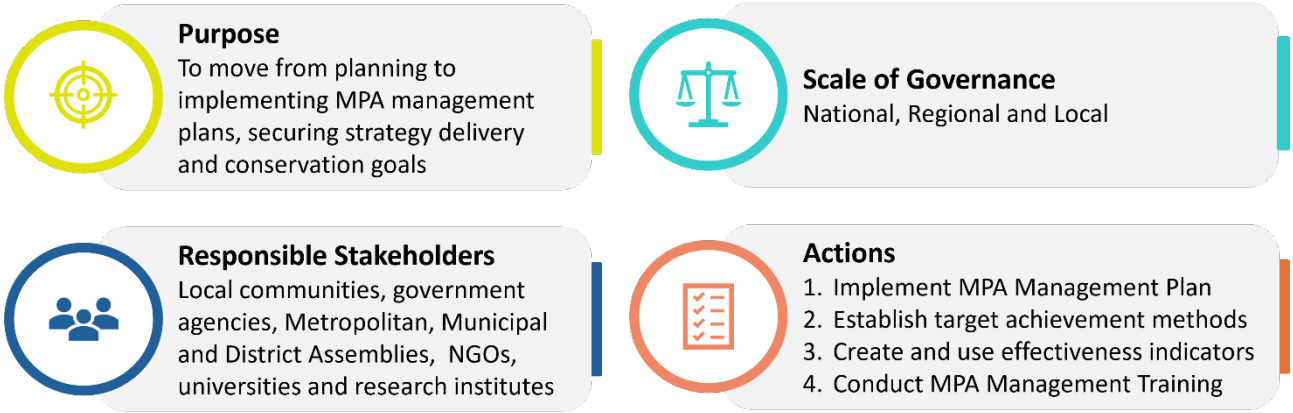


Figure 9. Summary of four-step approach for creating local MPA co-management structures in Ghana.

4.3. Strategic Objective 3: Implement MPA management and Develop Conservation Advice

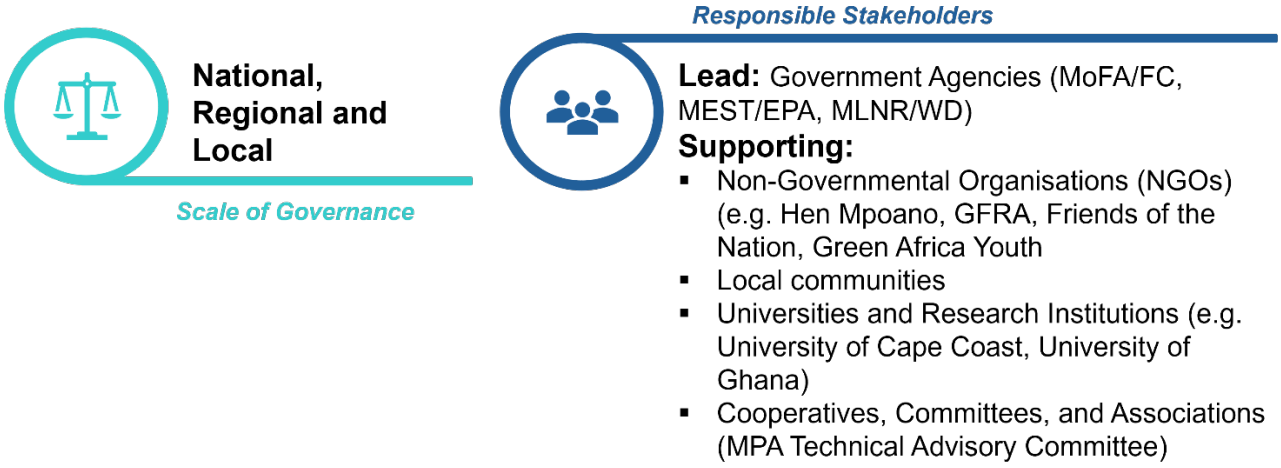


This Strategic Objective builds on the foundations established in Strategic Objective 2, which focused on developing MPA management plans and establishing governance systems. Strategic Objective 3 shifts the focus from planning to implementation, ensuring that the strategies and measures outlined in MPA management plans are actively put into practice and enforced. It marks a critical transition from design to delivery, where conservation goals begin to be realised through tangible actions on the ground.

A key component of this Strategic Objective is the development of conservation advice which ensures that management actions are informed by the best available science and local knowledge, helping to guide decisions that protect biodiversity and ecosystem function. Establishing systems to track progress against defined targets, enabling evidence-based evaluation of management effectiveness creates a bridge to the monitoring phase, ensuring that implementation is not only carried out but also measured, refined, and adapted over time. Additionally, capacity building through MPA management training ensures that stakeholders at all levels, from national agencies to local communities, are equipped with the skills and understanding needed to support effective implementation.

To deliver this Strategic Objective, four specific Actions have been proposed. These Actions require coordination across regional, national and local governance levels and depend on collaboration with a diverse range of stakeholders to ensure legitimacy, effectiveness, and long-term sustainability.

4.3.1. Action 1: Develop and Apply Conservation Advice



Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Conservation advice translates ecological goals/objectives and scientific understanding into practical guidance for MPA managers, stakeholders, and decision-makers. It outlines the ecological features of the site, the pressures they face, and the conditions needed to maintain or restore them. This advice forms a critical foundation for implementing management measures that are both targeted and proportionate.

Developing conservation advice requires synthesising ecological data, stakeholder knowledge, and regulatory frameworks. It involves identifying key habitats and species, understanding their ecological roles and sensitivities, and determining the environmental conditions necessary for their long-term viability (JNCC, 2016). The advice should also consider socio-economic contexts and potential trade-offs, ensuring that it is realistic, inclusive, and adaptable.

This Action is a core part of the management phase, as it directly informs the design and implementation of management measures. It ensures that actions taken within the MPA are grounded in ecological priorities and aligned with conservation goals/objectives. Importantly, conservation advice also provides a benchmark against which the effectiveness of management can later be assessed.

Conservation advice guides the monitoring phase by defining what to track and why, setting ecological conditions and desired outcomes. These insights then feed into the assessment phase, where management success is evaluated against conservation objectives. Acting as a bridge between science and adaptive management, conservation advice keeps MPAs focused on delivering meaningful results.

Figure 10 below summarises a five-step approach to developing and applying MPA conservation advice. This is not an exhaustive list and may vary depending on the location and data availability. Further information on the approach outlined below is available in Appendix 7 of the Supplementary Material.

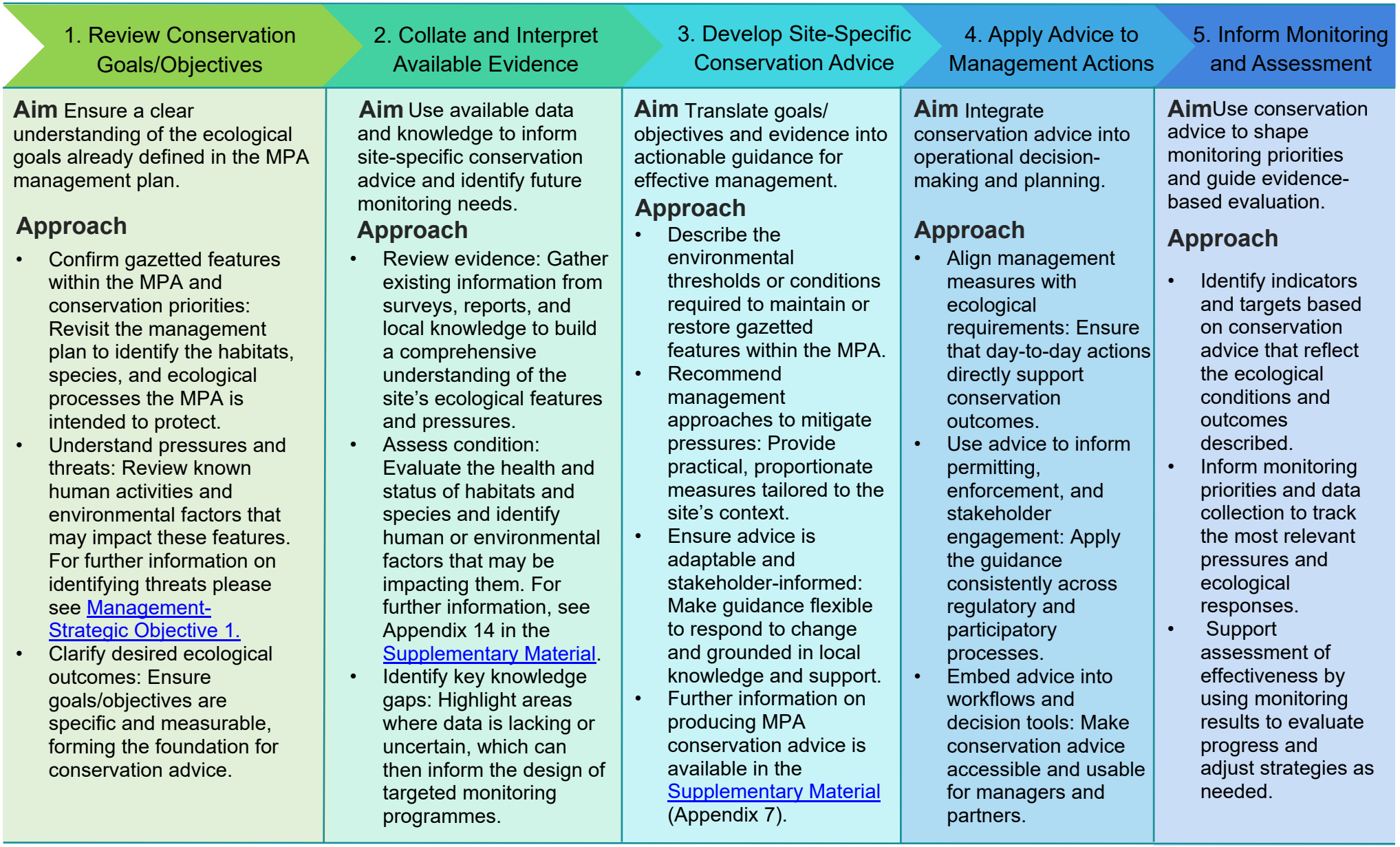


Figure 10. Summary of five-step approach for developing and applying MPA Conservation Advice.

4.3.2. Action 2: Establish Systems to Track Progress Against Targets

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Establishing systems to track progress against MPA management targets is essential for ensuring that implementation efforts are effective, transparent, and accountable. These systems provide a structured way to measure success, using defined indicators and data collection methods to assess whether management actions are achieving their intended outcomes(Grorud-Colvert, Sullivan-Stack, Roberts, Constant, Horta E Costa, *et al.*, 2021). An indicator is a specific, measurable variable used to track changes over time, helping to evaluate progress toward an objective or goal.

At this stage, most foundational elements, such as establishing management and monitoring goals, indicators and processes should already be in place (for further information, see Strategic Objective 2 of the Management section and Strategic Objective 1 of the Monitoring section). The priority is keeping goals practical and meaningful. Management goals enable progress tracking, while indicators must be relevant, sensitive, and feasible. Overly complex indicators hinder effective assessment

Figure 11 illustrates the four key components of an effective progress-tracking system:

- **Review Targets and Indicators:** Ensure they remain measurable, relevant, and aligned with MPA goals/objectives.
- **Data Collection Protocols:** Define roles, methods, and timelines for consistent, accurate data gathering across management, monitoring, and assessment phases.
- **Reporting Systems:** Use dashboards and templates to present progress clearly and support adaptive management.
- **Feedback Mechanisms:** Link results to decision-making, identifying gaps and informing strategy adjustments.

These components form a feedback loop for adaptive management. Reporting and feedback enable regular review, guiding decisions and adjustments. By informing strategic planning, they keep management responsive, effective, and aligned with MPA goals and international targets (further information is available in the Assessment section: Strategic Objective 2, Action 1).

Feedback mechanisms should be built into implementation systems to support adaptive management. This involves regularly reviewing data to identify gaps, delays, or successes, and using these insights to adjust management actions as needed. Mechanisms should be designed to clearly link results to decision-making, helping teams refine strategies based on what is working well and where improvements are needed to stay aligned with MPA targets.

Review each management action in the MPA Management Plan and map it to the specific MPA conservation objectives. Identify and assess whether the defined targets and indicators, are still measurable, relevant, and feasible. Look for gaps where actions lack indicators or where existing ones may not provide meaningful insights. Ensure targets and indicators reflect local contexts and priorities.

Reporting tools such as dashboards, databases, and templates should be designed to compile and visualise progress in a clear and accessible way. Establishing a regular reporting system, such as monthly updates or automated dashboards, supports consistent review of implementation data. These tools should prioritise ease of use and clarity to ensure they effectively inform decision-making and support adaptive management.

Data collection protocols should be embedded into routine management activities using practical tools such as logbooks, digital apps, or checklists. Staff must be trained to record actions consistently and accurately, with clear roles designated for data collection, compilation, and review. It's essential to define how, when, and by whom data will be collected.

Figure 11. Overview of the systems and approaches that can be used to track progress of MPA management measures.

4.3.3. Action 3: Commence implementation of the MPA Management Plan

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Commencing implementation of the MPA management plan (outlined above in Strategic Objective 2, Action 1: Develop a National MPA Management Plan) demonstrates the transition from planning and institutional setup to active delivery. With the national MPA management plan already developed and governance structures established under Strategic Objective 2 (including the designation of a lead agency, formation of an inter-ministerial commission, and creation of local co-management structures), this Action is focused on activating those systems and operationalising the plan.

The implementation of management plans involves Strategic Objectives being translated into tangible activities. The emphasis and focus are on delivery and ensuring that the MPA management plans and associated structures developed are actively in place to manage the MPA, enforce regulations and support communities.

Governance structures must be fully established and resourced, with clear roles and responsibilities defined across all levels. Early actions should be prioritised and sequenced to focus on those that are most feasible and impactful, helping to build momentum and demonstrate value, with key milestones and timeframes provided for both short- and longer-term goals/objectives (Jentoft, van Son and Bjørkan, 2007; Cavalcante de Oliveira Júnior *et al.*, 2021). Effective implementation depends on strong, ongoing communication between national, regional, and local stakeholders. These interactions must be inclusive and transparent, ensuring that all voices are heard and respected. This approach not only builds trust among stakeholders but also ensures that diverse perspectives are considered, strengthening the legitimacy and effectiveness of MPA management. For further information on effective stakeholder engagement please see Section 7.1: Stakeholder Engagement.

Figure 12 presents a high-level, four-step framework for establishing an MPA interministerial commission. While it outlines key considerations in the process, additional steps or context-specific factors may also need to be addressed.

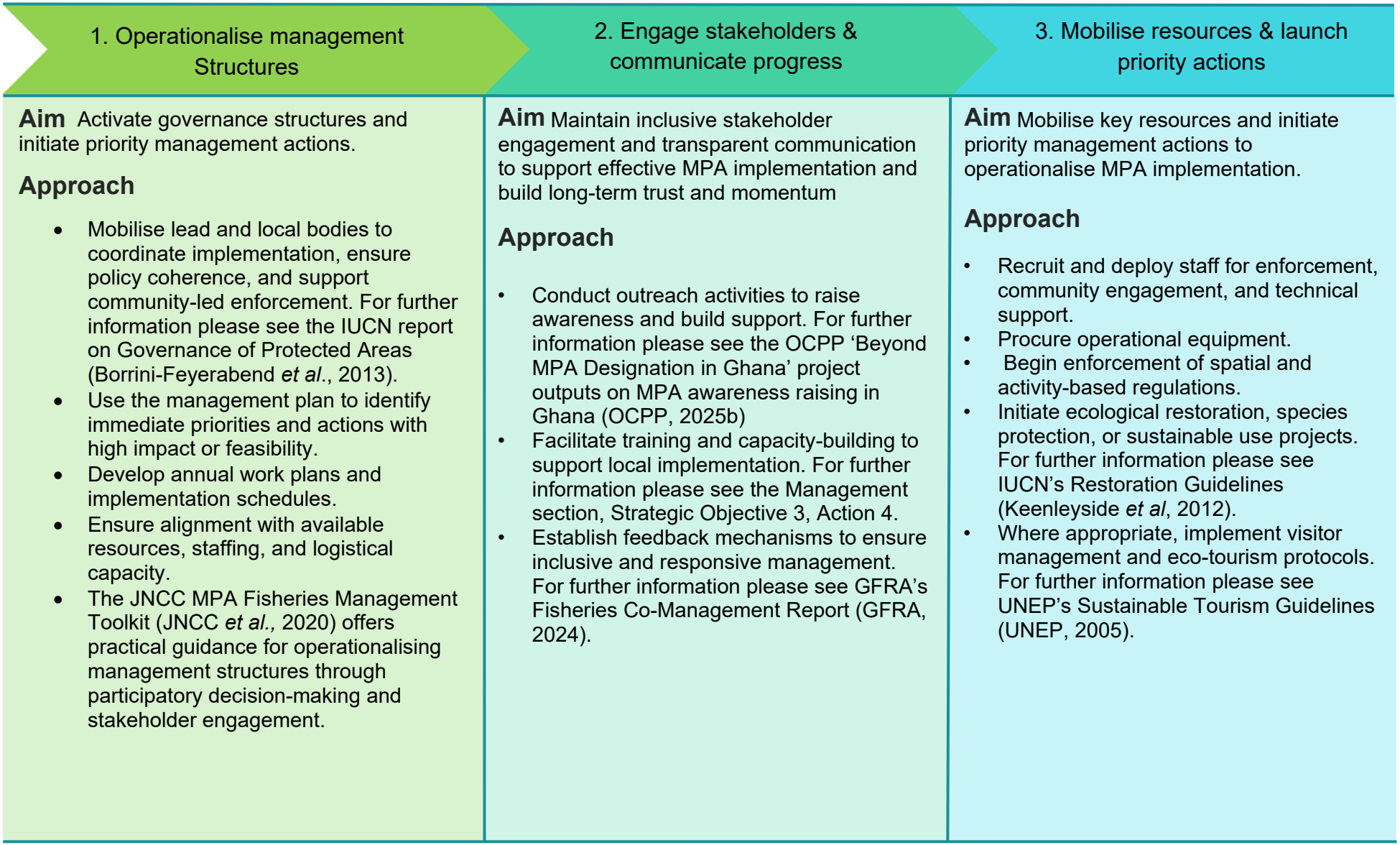


Figure 12. Summary of three-step approach to commence implementation of the MPA Management Plan.

4.3.4. Action 4: Conduct MPA Management Training

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Effective MPA management requires a diverse skill set, from ecological understanding and stakeholder engagement to regulatory enforcement and adaptive planning. Training ensures that managers, field staff, and relevant stakeholders are equipped with the knowledge, tools, and confidence to implement management measures effectively and in line with conservation goals/objectives.

A central consideration in delivering MPA management training is tailoring content to the local context. This includes recognising the specific ecological features of the site, the socio-economic dynamics of surrounding communities, and the governance structures in place. Additionally, conservation advice should be embedded within training programmes to help implementers and communities clearly understand how to apply ecological recommendations in practice.

Training should also be inclusive, engaging both government and non-government actors, and should promote collaboration across sectors. Practical, hands-on learning, such as scenario planning, field exercises, and case studies, can be especially valuable in reinforcing theoretical knowledge. In addition, equipping women and youth groups with management, negotiation, and ecological monitoring skills can support rebalancing traditional power dynamics

Another key aspect is ensuring that training is not a one-off event but part of a broader capacity development strategy. Follow-up support, refresher sessions, and peer learning opportunities help sustain and deepen the impact of initial training. Where possible, training should also be linked to career development pathways and institutional strengthening, helping to embed MPA management skills within long-term organisational structures.

Figure 13 below presents an overview of MPA management training that may be undertaken to support the development of a framework for planning and delivering capacity-building activities to support effective MPA implementation.

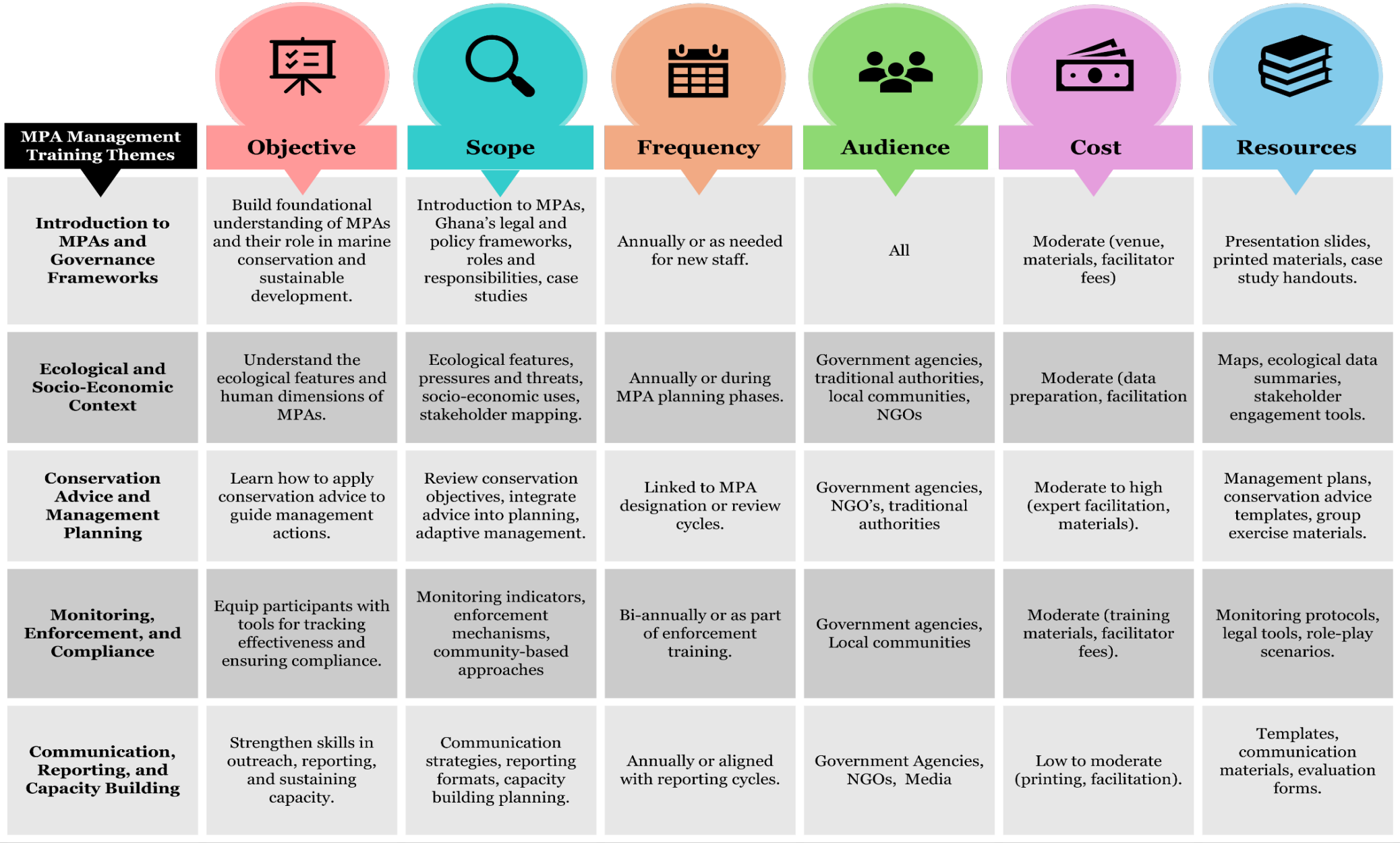


Figure 13. Overview of MPA management training activities to strengthen MPA implementation capacity

5. Monitoring

Monitoring refers to the systematic collection of data to assess the ecological, social, and governance conditions of an MPA. It is essential to ensure an MPA's effectiveness in conserving marine biodiversity, supporting sustainable livelihoods, and enhancing ecosystem resilience. MPA monitoring involves tracking biodiversity, habitat condition, human activities, socioeconomics, and management effectiveness over time. It includes both baseline assessments (to understand the starting condition) and ongoing monitoring (to detect changes and trends), and is therefore a core component of adaptive management, helping managers understand whether an MPA is achieving its conservation goals.

Monitoring provides multiple benefits that can be incorporated at various stages of the MPA implementation cycle (Figure 1). These include:

- **Evidence-Based Management**: It provides the data needed to make informed decisions and adapt management strategies to changing conditions.
- **Accountability**: Demonstrates whether MPAs are delivering on their intended ecological and social outcomes.
- **Policy and Reporting**: Supports national and international reporting obligations (e.g., CBD, SDGs) and helps track progress toward global conservation targets.
- **Public Trust and Engagement**: Transparent monitoring can act to build trust with stakeholders and can encourage community involvement when this is facilitated.
- **Equity and inclusion**: Inclusive monitoring captures the experiences and needs of women, persons with disabilities, and marginalised groups, promoting fair participation and benefits.

For monitoring MPAs in Ghana, the OCPP's MPA Roadmap framework to support the implementation of MPAs in Ghana (Ocean Country Partnership Programme, 2025d) identified three key Strategic Objectives:

- Identify monitoring goals/objectives for the MPA
- Identify monitoring opportunities to fulfil monitoring goals/objectives
- Monitor effective conservation and sustainable management of MPA

This section details the three Strategic Objectives for MPA monitoring along with key Actions to take to achieve those Strategic Objectives. As noted in previous sections, it is important that the Strategic Objectives and associated Actions detailed below should be regularly reviewed and consulted on with stakeholders to ensure they remain appropriate and inclusive.

Active involvement of government agencies, local communities, marginalised groups, and fisher associations in monitoring MPAs promotes inclusive cross-agency coordination of monitoring, enhances community ownership and stewardship, increases compliance, enhances data quality through participatory monitoring, provides vital input though real-time feedback and local insights, and reduces conflict through co-management approaches.

5.1. Strategic Objective 1: Identify monitoring objectives for the MPA

This Strategic objective is centred on the development of precise, measurable monitoring objectives that directly align with the conservation goals/objectives of the MPA. Identifying and defining targeted environmental, social, and economic indicators is key to ensuring the development of a robust and cohesive monitoring framework. Such a framework not only enhances the efficiency of data collection but also guarantees that monitoring efforts are strategically focused on the most relevant metrics for evaluating the MPA's performance during Assessment. Within this framework it is also important to set out and clarify roles and which stakeholders will be leading on different elements.

This Strategic Objective also emphasises the value of integrating local knowledge and community participation, as well as leveraging existing data collection initiatives. Such integration fosters a sense of shared stewardship and seeks to maximises the use of available resources. This approach should ensure inclusive participation by integrating Gender Equality, Disability, and Social Inclusion (GEDSI) considerations into monitoring objectives, so that diverse voices and needs are reflected in data collection and decision-making. Clear and well-articulated monitoring goals/objectives are essential for guiding adaptive management, enabling timely and evidence-based decisions that can respond to emerging challenges and opportunities. Ultimately, this approach strengthens the accountability, transparency, and long-term success of the MPA's conservation strategy.

To achieve this Strategic Objective, four Actions have been proposed, with details provided below. These Actions primarily require governance at a local level, with additional support at the national level. Input from a wide range of stakeholders is also required.

5.1.1. Action 1: Review baseline data and identify monitoring gaps

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

To identify a site for MPA gazettement and then to understand how well the MPA is achieving its conservation goals, we must first have a good understanding of the current ecological, environmental and socio-economic situation within the MPA. Baseline data offer a snapshot of the MPA, providing a reference point for planning, monitoring, assessment, and adaptive management. Ensuring robust baseline data is key to:

- **Informed Planning:** Identifying critical habitats and ecological corridors for protection.
- **Stakeholder Engagement:** Understanding community needs (including GEDSI) and values to foster support and reduce conflict.
- **Impact Assessment:** Measuring changes over time to evaluate conservation effectiveness.
- **Adaptive Management:** Adjusting strategies based on observed trends and emerging challenges.

Baseline data are critical both at the start of the MPA implementation cycle (Figure 1) and as a benchmark for reference in later stages. Once baseline data have been gathered, a gap analysis can be undertaken to identify where additional data are required, and to highlight areas where greater consideration (ecological, environmental and socioecological) is needed within the MPA. When considering gaps in data and monitoring it is vital to always refer to the site's conservation goal. Additionally, gap analysis should consider other relevant criteria such as irreplaceability of target biodiversity components, minimum effective size and viability requirements, species migration requirements, integrity, ecological processes and ecosystem services.

Integrating GEDSI into MPA planning ensures inclusive and equitable conservation. It involves engaging marginalized groups through accessible consultations and collecting disaggregated socio-economic data. Gap analysis should identify where inclusion is missing and prevent harm to vulnerable communities. Embedding GEDSI throughout the MPA cycle leads to fairer, more resilient, and community-supported outcomes.

Figure 14 below summarises a three-step approach to gathering and assessing baseline data and identifying monitoring gaps. This is not an exhaustive approach and may vary depending on location and data availability. Further information is available in Appendix 8 of the Supplementary Material.

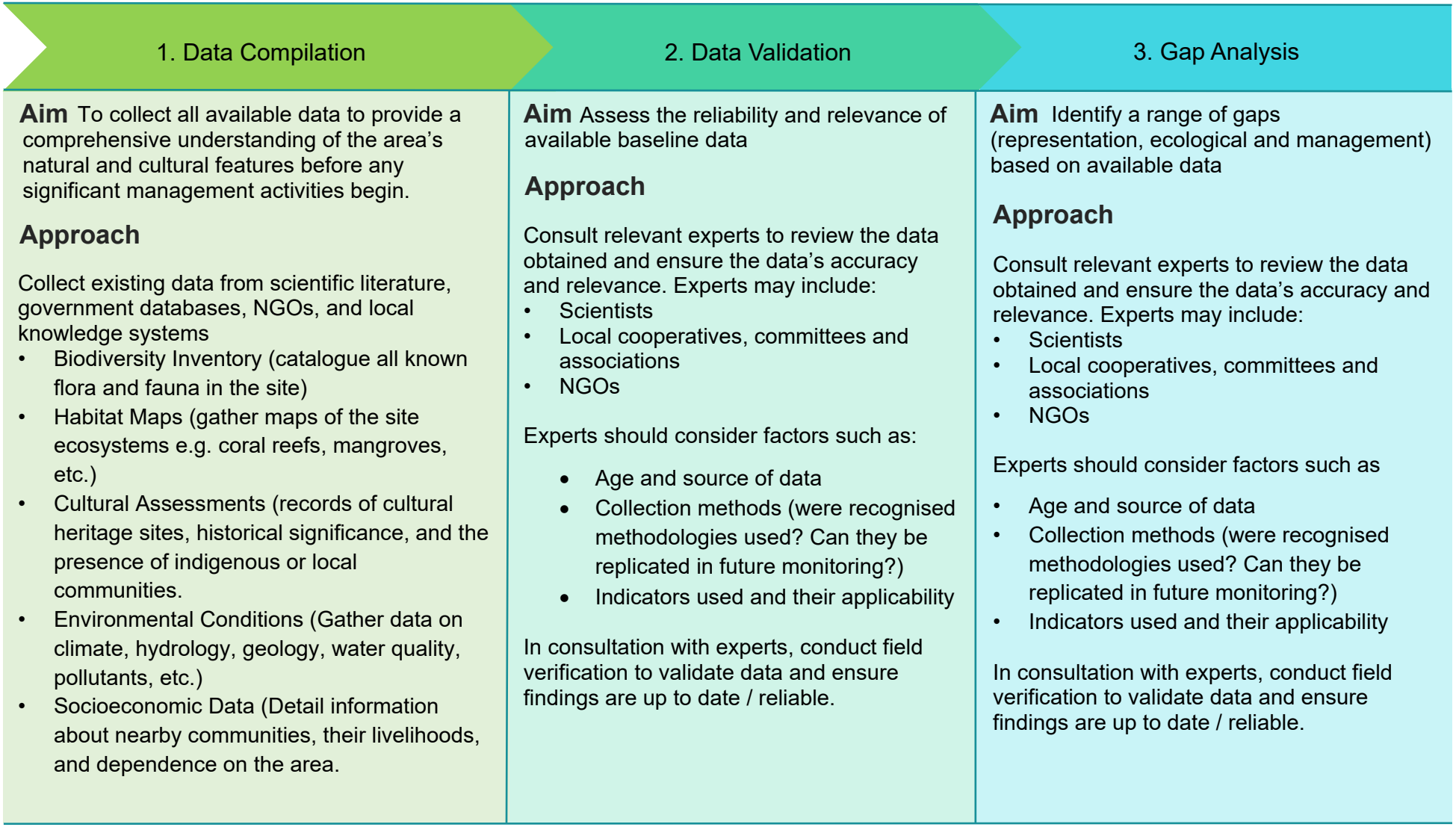


Figure 14. Summary of 3-step approach to reviewing baseline data and identifying monitoring gaps.

5.1.2. Action 2: Develop ecological monitoring goals

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Ecological monitoring is key to MPA management, providing the scientific foundation for assessing conservation effectiveness and guiding adaptive strategies. It involves the systematic collection of data on marine ecosystems, species populations, habitat conditions, and environmental changes over time. Ecological monitoring is vital for:

Measuring Conservation Impact - Allows evaluation of MPAs against their goals, e.g., restoring fish populations, protecting endangered species, or preserving critical habitats.

Informing Adaptive Management - Monitoring can detect shifts in ecosystem health, enabling adjustments to management plans.

Supporting Biodiversity Conservation - By tracking species diversity and abundance, ecological monitoring can identify key areas for protection and ensures that conservation efforts are targeting the most vulnerable or ecologically significant species and habitats.

Enhancing Scientific Understanding - Long-term ecological data contribute to broader scientific knowledge about marine ecosystems, species interactions, and the effects of human interventions.

Building Public and Political Support - Tangible evidence of ecological improvement, such as increased fish biomass, can be used to engage stakeholders, secure funding, and strengthen political will.

Ecological monitoring should also include human dimensions, especially perspectives of underrepresented groups such as women, people with disabilities, Indigenous peoples, and other marginalised communities. Monitoring frameworks must also account for how ecological changes affect these groups differently. See more in the GEDSI and Stakeholder Engagement sections.

Figure 15 below summarises a four-step approach to developing ecological monitoring goals/objectives. This is not an exhaustive approach and may be adapted as needed based on the MPA. Further information is available in Appendix 9 of the Supplementary Material.

1. Articulate Values & Targets	2. Prioritisation	3. Identify Key Indicators	4. Set Monitoring Goals/Objectives
Aim To clearly set out ecological values and conservation targets for the site. **Approach** • Considering stakeholder input and legal mandates, refer to the site's overarching Conservation Goals and conservation objectives to understand what the key features of the MPA that require conservation, and what the desired ecological outcome is that will enable the Conservation Goal to be achieved. • Consider reporting targets, both locally, nationally regionally and internationally. • Consider the time frame in which goals and objectives could feasibly be achieved.	**Aim** To rank gaps in ecological and environmental monitoring of the site based on their impact on conservation outcomes and feasibility of data collection. **Approach** • Consult with local experts and stakeholders to discuss the representation and ecological sections of a gap analysis. • Using the gap analysis and referring to the list of Conservation Goals, develop a 'wish list' of monitoring for the site. • Conduct a cost-benefit analysis of each item on the wish list to assess the impact that monitoring a specific feature will have for reporting conservation outcomes, vs the cost (human, time, monetary) involved in conducting the monitoring (data collection, analysis and reporting). • Develop a ranked list of monitoring based on the results of the cost-benefit analysis.	**Aim** Develop a list of key indicators that can be used to monitor and assess the progress of the MPA in achieving its conservation objectives. **Approach** • Use frameworks such as the IUCN Green List Standard or NOAA's Integrated Ecosystem Assessment to identify internationally recognised indicators such as species abundance, habitat condition, or water quality. • Consider reporting targets and how data collected on each indicator can be used / included in reports such as Protected Area Management Effectiveness (PAME) Evaluations.	**Aim** Create a list of goals/objectives for the MPA. **Approach** A structured approach should be taken to ensure monitoring goals are clear and aligned with project aims. Two useful frameworks are: SMART – Specific, Measurable, Achievable, Relevant, Time-bound. • Define what will be monitored, how it will be measured, and set realistic, time-bound targets. SMART-OITT – Outcome, Indicator, Target & Method, Timeframe & Location. • Clarifies why monitoring is needed, what will be measured, how and where it will occur, and when. Using these frameworks supports robust, context-sensitive goals that meet ecological and management needs. More information can be found in Appendix 9 of the Supplementary Material.

Figure 15. Summary of 4-step approach for developing ecological monitoring goals/objectives.

5.1.3. Action 3: Develop socioeconomic monitoring goals

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Socioeconomic monitoring is a vital component of ensuring MPAs are effective and equitable. This monitoring focuses on the human dimensions of how MPAs affect and are affected by the people who live near and depend on marine resources. In regions such as Africa, MPAs are increasingly expected to support ecosystem services, contribute to poverty alleviation through sustainable livelihoods (conditional to better biodiversity outcomes), ensure food security, promote sustainable tourism, and play a role in climate change mitigation and adaptation (Fromont *et al.*, 2024). This monitoring is therefore vital as it enables us to:

Understand Human Impact and Dependency - Identify how communities use marine resources, what their economic dependencies are (e.g., fishing, tourism), and how MPA regulations may alter these dynamics.

Measure Social Outcomes – Socioeconomic indicators (e.g., income levels, employment, food security) reveal whether MPAs are benefiting or disadvantaging local populations. Monitoring these outcomes ensures that conservation does not come at the cost of human well-being.

Inform Adaptive Management - Data on socioeconomic conditions allow managers to adjust MPA policies in response to changing community needs or unintended consequences. For example, if fishers are losing income due to restricted access, alternative livelihoods or compensation schemes can be considered.

Build Legitimacy and Trust - Transparent monitoring of social impacts fosters trust between communities and MPA authorities. When people see their concerns being acknowledged and addressed, they are more likely to comply with MPA regulations.

Enhance Equity and Inclusion - Socioeconomic monitoring can help to avoid vulnerable groups being disproportionately impacted by MPA implementation. It should capture how different groups (women, people with disabilities, Indigenous peoples, and small-scale resource users) are impacted by MPA policies and benefit from ecosystem services. Inclusive engagement can ensure that marginalised voices are heard. The IUCN have produced guidance for assessing and improving social equity in marine conservation (Andrachuk *et al.*, 2025).

As with the previous Action, the success of monitoring depends on setting clear, well-defined goals/objectives to guide data collection, resource allocation, and outcome evaluation. Figure 16 below summarises a four-step approach to developing socioeconomic monitoring goals/objectives. This is not an exhaustive approach and may be adapted as needed based on the MPA.

1. Articulate needs and goals	2. Identify key human dimensions	3. Identify key indicators	4. Set monitoring goals/objectives
Aim To clearly define the social and economic needs and goals for the MPA **Approach** • Identify the overarching management and conservation goals of the MPA. In terms of the socioeconomic goals, these may include improving local livelihoods, ensuring food security, or enhancing community participation. • Engage stakeholders (especially local communities, fishers, and tourism operators) to understand their priorities and concerns. This ensures that monitoring goals/ objectives are grounded in real-world needs and aligned with both ecological and social outcomes. • Tip: Use participatory tools like focus groups, stakeholder mapping, and problem trees to clarify shared goals.	**Aim** Identify the social, cultural, and economic aspects such as resource use patterns, community well-being and cultural/spiritual values, governance, and perceptions of MPA effectiveness. **Approach** Frameworks such as the Socioeconomic Monitoring for Coastal Management (SocMon) provides guidance. Steps to take include: • Refer to baseline data and pull-out human dimensions relevant to the MPA. • Conduct semi-structured interviews with local stakeholders using open-ended questioning. • Conduct household surveys using structured questionnaires to collect quantitative data. • Conduct focussed group discussions to explore community perspectives, validate survey findings, and encourage dialogue. • Use participatory mapping, where community members draw collaborative maps to identify resource area use, access points, and culturally significant sites.	**Aim** Develop a list of key indicators that can be used to monitor and assess the key human dimensions identified in step 2. **Approach** Select indicators that reflect the chosen human dimensions. For example: • % of households reporting improved income from marine activities • Level of community participation in MPA decision-making • Perceived fairness of enforcement Indicators should be valid, reliable, and sensitive to change.	**Aim** Create a list of goals/objectives for the MPA. **Approach** A structured approach should be taken to ensure monitoring goals are clear and aligned with project aims. Two useful frameworks are: SMART – Specific, Measurable, Achievable, Relevant, Time-bound. SMART-OITT – Outcome, Indicator, Target & Method, Timeframe & Location. Using these frameworks supports robust, context-sensitive goals that meet ecological and management needs. More information can be found in Appendix 9 of the Supplementary Material.

Figure 16. Summary of 4-step approach for developing socioeconomic monitoring goals/objectives.

5.1.4. Action 4: Develop comprehensive monitoring framework

Responsible Stakeholders

Lead: Government Agencies (MLNR/WD and MEST/EPA)

Supporting:

- Cooperatives, Committees, and Associations (e.g. MPA Technical Advisory Committee)
- NGOs (e.g. Hen Mpoano)
- Universities and research institutes (e.g. University of Cape Coast, University of Ghana)

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals

Developing a comprehensive monitoring framework is the basis for effective MPA monitoring. The Actions in Strategic Objective 2 and Strategic Objective 3 will continue to feed into this framework which brings together ecological and socioeconomic monitoring goal/objectives to support adaptive management, accountability, and long-term sustainability. By aligning with international best practices (e.g., The MPA Guide (Grorud-Colvert, Sullivan-Stack, Roberts, Constant, Horta e Costa, *et al.*, 2021) and IUCN guidance (Pomeroy, Parks and Watson, 2007)) this framework should provide a clear roadmap for tracking progress, identifying challenges, and adapting strategies over time.

Integrating GEDSI considerations into a comprehensive monitoring framework is important to ensure that MPA management is inclusive and equitable. This involves defining methods and frequencies that are accessible for all stakeholders, including marginalised groups such as women, people with disabilities, and Indigenous communities. Socioeconomic indicators should be matched with inclusive data collection tools such as household surveys designed to capture diverse perspectives and pilot-tested to ensure cultural and logistical suitability. A robust data management plan must prioritise accessibility, ensuring that data is available to all stakeholders in a user-friendly format. More information on data management is available in the Supplementary Material (Appendix 8).

The framework should include regular evaluation cycles and adaptive mechanisms that incorporate stakeholder feedback. Key considerations include:

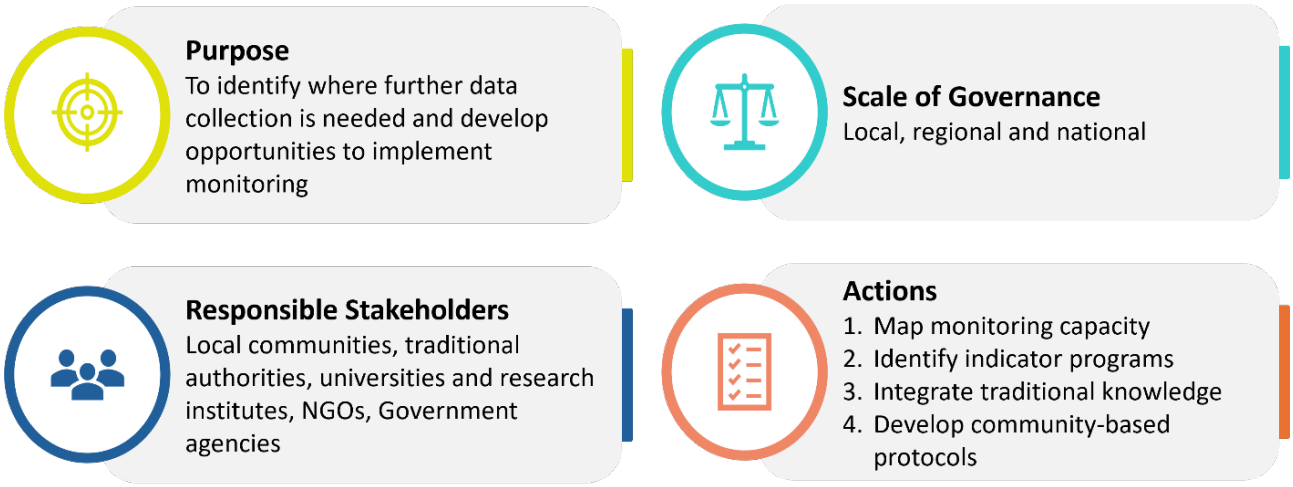
- The framework should be co-developed and implemented in partnership with stakeholders, reviewed and updated regularly.
- Monitoring of MPA's can require large resources and capacity. See the Sustainable Finance section for more guidance.
- When monitoring surveys take place may be constrained by logistics such as availability of suitable vessels and weather.
- Appropriate standards and management systems should be used. This should include Quality Assurance (QA) and ensuring discoverability and accessibility of data.

Figure 17 below summarises a four-step approach to developing a comprehensive monitoring framework. This is not an exhaustive approach and may be adapted as needed based on the MPA.

1. Define methods and frequency	2. Develop a data management plan	3. Establish role and responsibilities	4. Plan for evaluation and adaptation
Aim To ensure that data collection is consistent, reliable, and appropriate for each indicator. **Approach** • Standardize methods: Use internationally recognized protocols (e.g., Reef Check for coral health, SocMon for socioeconomic data). • Match methods to indicators: For example, use underwater visual census for fish biomass, and household surveys for income or perception data. • Determine frequency: Align with ecological cycles and management needs (e.g., quarterly for fish stocks, annually for livelihoods). • Pilot test: Trial methods in a small area to refine tools and logistics before full implementation.	**Aim** To ensure that data is stored, analysed, and shared securely and effectively. **Approach** • Create a centralized database: Use cloud-based or GIS-integrated systems for accessibility and spatial analysis. • Define data standards: Establish formats, metadata requirements, and quality control procedures. • Assign responsibilities: Identify who collects, enters, verifies, and analyses data. • Plan for accessibility: Ensure data is available to stakeholders in user-friendly formats. • More on Data Management in Supplementary Material (Appendix 8)	**Aim** To clarify who is responsible for each part of the monitoring process and ensure accountability. **Approach** • Map stakeholders: Identify all relevant actors - community groups, NGOs, government agencies, researchers. • Define roles: Assign tasks such as data collection, analysis, reporting, and communication. • Build capacity: Provide training and resources to ensure all actors can fulfil their roles effectively. • Formalize agreements: Use MOUs or community protocols to document responsibilities and expectations.	**Aim** To ensure the monitoring framework remains relevant, effective, and responsive to change. **Approach** • Set review timelines: Schedule regular evaluations (e.g., every 2–3 years) to assess performance. • Use adaptive management: Adjust indicators, methods, or goals/objectives based on findings and stakeholder feedback. • Document lessons learned: Maintain a learning log or case studies to inform future planning. • Engage stakeholders: Involve communities and partners in reviewing results and co-developing improvements.

Figure 17. Summary of 4-step approach for developing a comprehensive monitoring framework.

5.2. Strategic Objective 2: Identify monitoring opportunities to fulfil monitoring goals



Strategic Objective 2 focuses on identifying and developing practical opportunities to implement the monitoring approaches established under Strategic Objective 1. It also identifies where further data collection efforts are needed and the opportunities for community involvement in fulfilling these activities. This objective bridges the gap between planning and implementation. While Strategic Objective 1 establishes what should be monitored and why, this Strategic Objective focuses on how monitoring can be practically carried out while ensuring that strategies are not only scientifically sound but also socially, financially and logistically feasible.

A critical challenge in implementing monitoring is securing sustainable financing. Alongside monitoring and management plans, it is vital to develop a clear financial strategy. This should outline how monitoring will be funded over time, identify potential gaps and risks in financing, and explore cost-effective solutions. Embedding monitoring within current management systems (e.g., fisheries departments, local coastal committees, and national reporting frameworks) reduces duplication, ensures continuity, and makes monitoring part of routine governance rather than a separate, resource-heavy exercise. These strategies help ensure that the MPA can realistically fulfil their goals/objectives while remaining financially sustainable.

By identifying opportunities for data collection and community involvement, this Strategic Objective embeds monitoring within the local context. Engaging communities promotes active participation, local knowledge sharing, and conservation support, while building trust and ownership essential for compliance and long-term stewardship. This Strategic Objective supports adaptable and inclusive monitoring by recognising gaps in existing data and exploring diverse approaches (e.g., citizen science and partnerships with local institutions). It should also embed GEDSI principles by ensuring monitoring opportunities actively involve women, persons with disabilities, and other marginalised groups, and by collecting disaggregated data to track equity outcomes. This is important in resource-limited settings, where traditional scientific monitoring may not be feasible.

To achieve this Strategic Objective, four Actions have been proposed, with details provided below. These Actions require governance at both a national and local level and require input from a wide range of stakeholders.

5.2.1. Action 1: Map Existing Monitoring Capacities

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Mapping existing monitoring capacities is a vital step in building an effective and sustainable monitoring system for MPAs. It involves systematically identifying and documenting the current tools, technologies, human resources, institutional arrangements, and community-led efforts already in place that contribute to monitoring activities. This includes both formal scientific programs and informal or traditional practices that generate valuable ecological or socioeconomic data. Ensuring existing monitoring capacities are comprehensively mapped is important because it allows us to:

- **Understand Current Capabilities and Gaps:** Mapping reveals what monitoring activities are already being conducted, by whom, and with what resources.
- **Maximise Efficiency and Resource Use:** By leveraging existing infrastructure, (e.g., channels of communication, incentivising fishers to conduct monitoring activities etc) MPAs can reduce costs and streamline implementation. This is especially important in resource-limited settings.
- **Support Strategic Planning:** A clear picture of current capacities allows managers to prioritise investments, align monitoring with management goals, and design realistic, phased implementation plans.
- **Foster Collaboration and Partnerships:** Mapping helps identify potential collaborators, such as NGOs, universities, or local authorities, who can contribute expertise, data, or logistical support.
- **Build Local Ownership and Capacity:** Recognising and integrating local monitoring efforts, especially those led by communities, builds trust, validates local knowledge, and strengthens long-term stewardship. This should include efforts to engage women, persons with disabilities, and other marginalised groups to ensure equitable participation and benefit sharing.

By understanding what monitoring capacities already exist (e.g., trained personnel, data collection protocols and equipment), MPA managers can make informed decisions about where to invest resources, how to build on existing strengths, and where capacity-building is most needed.

Figure 18 below summarises a five-step approach for mapping existing monitoring capacities. This is not an exhaustive approach and may be adapted as needed based on the MPA.

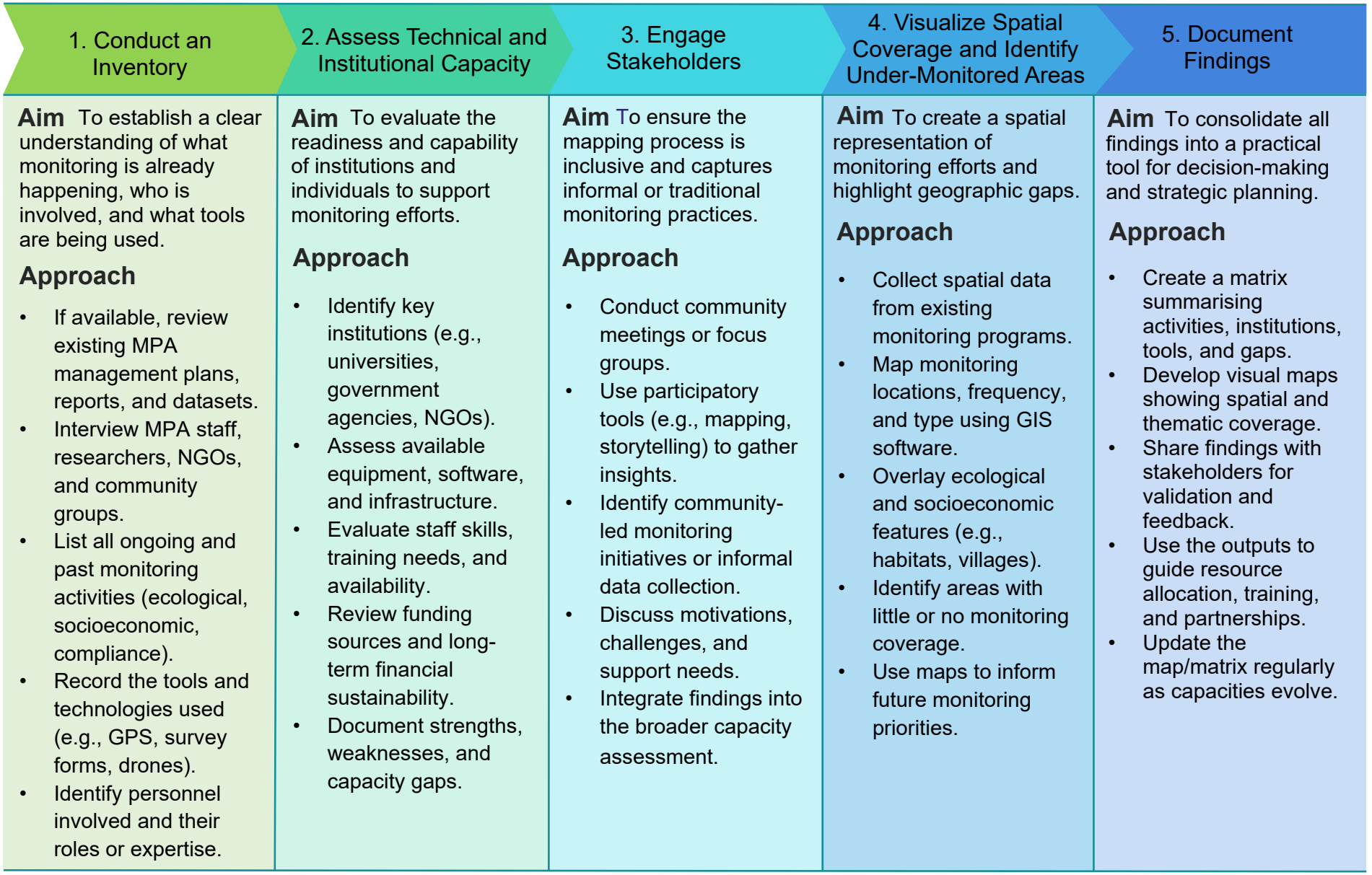


Figure 18. Summary of 5-step approach for mapping existing monitoring capacities.

5.2.2. Action 2: Identify existing data collection programs that could inform the reporting of monitoring indicators

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

Identifying existing data collection programs is a strategic and cost-effective step in building a robust MPA monitoring system. It involves systematically reviewing and assessing ongoing or historical initiatives that generate data relevant to the MPA's ecological and socioeconomic indicators. Identifying data collection programs enables MPA managers to:

- **Maximise Use of Available Resources:** Tapping into existing data reduces duplication of effort and saves time and resources.
- **Enhance Data Continuity and Comparability:** Long-term datasets from established programs provide valuable baselines and trends. Continuity strengthens ability to detect changes over time and evaluate MPA effectiveness.
- **Support Indicator Reporting:** Many existing programs already collect data aligned with common MPA indicators (e.g., fish biomass, household income, compliance rates). Integrating these datasets can streamline reporting and improve accuracy.
- **Foster Collaboration and Data Sharing:** Identifying data sources opens doors to partnerships with institutions that can offer technical support, training, or co-management opportunities.
- **Improve Decision-Making and Accountability:** Access to diverse, high-quality data enhances transparency and supports evidence-based management, helping to justify decisions and demonstrate impact to stakeholders.

By identifying these programs, MPA managers can uncover valuable datasets that may already align with their monitoring goals/objectives. Furthermore, it opens opportunities for collaboration, data sharing, and technical support. Identifying existing programs should also consider opportunities to embed Gender Equality, Disability, and Social Inclusion (GEDSI) principles, ensuring that monitoring reflects diverse perspectives and benefits all stakeholder groups.

This step also feeds into the gap analysis noted in Monitoring: Strategic Objective 1, Action 1, as it helps identify areas where no data exists or where existing data is outdated or inaccessible. More on data management can be found in the Supplementary Material (Appendix 8).

Figure 19 summarises a five-step approach to identify existing data collection programs. This is not an exhaustive approach and may be adapted as needed based on the MPA.

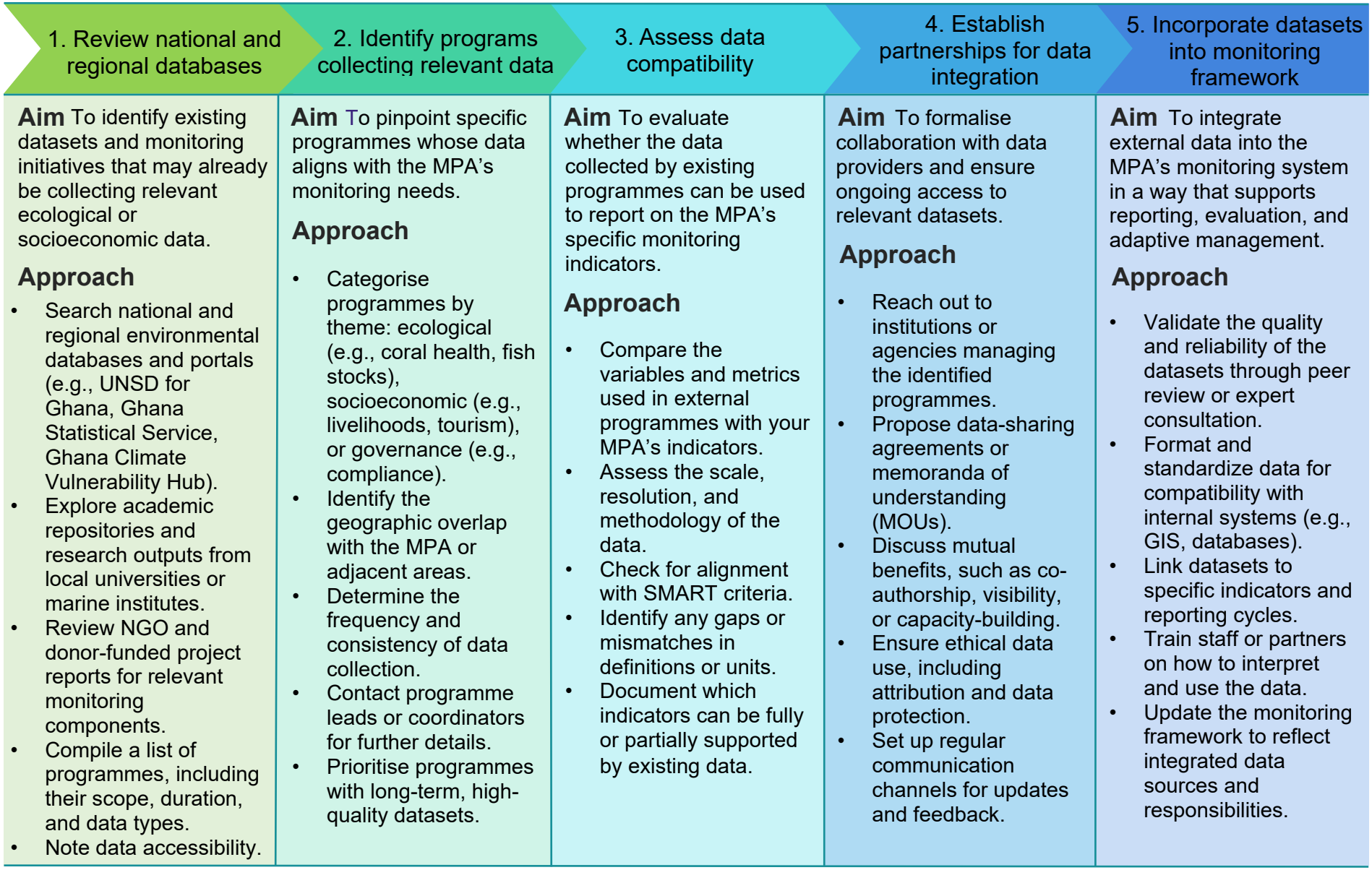


Figure 19. Summary of 5-step approach to identify existing data collection programs that could inform the reporting of monitoring indicators.

5.2.3. Action 3: Integrate Traditional Ecological Knowledge with scientific monitoring approaches

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Integrating Traditional Ecological Knowledge (TEK) with scientific monitoring is a vital step toward creating more inclusive, effective, and context-sensitive MPA management. TEK encompasses the cumulative body of knowledge, practices, and beliefs developed by Indigenous peoples and local communities through generations of close interaction with their marine environments. The benefits of integrating TEK with scientific monitoring include:

- **Enhancing Ecological Understanding:** TEK offers long-term, observational insights into species behaviour, seasonal patterns, and ecosystem changes that may not be captured by short-term scientific studies.
- **Supporting Culturally Relevant Conservation:** Incorporating TEK ensures that monitoring respects and reflects local values, practices, and worldviews.
- **Building Trust and Collaboration:** Recognising TEK validates the role of Indigenous and local communities as knowledge holders, supporting strong partnerships between communities, scientists and MPA managers.
- **Improving Adaptive Management:** TEK can provide early warnings of ecological shifts and inform timely responses. When integrated with scientific data, it supports more responsive and resilient management strategies.
- **Promoting Equity and Inclusion:** Integrating TEK supports correction of historical imbalances in marine governance by giving voice to communities often excluded from formal decision-making. This should include deliberate efforts to involve women, persons with disabilities, and other marginalised groups, ensuring their knowledge and perspectives inform monitoring and management. The IUCN have produced guidance for assessing and improving social equity in marine conservation (Andrachuk *et al.*, 2025).

This integration not only strengthens the scientific robustness of monitoring but also ensures that conservation strategies are grounded in local realities and values.

Figure 20 summarises a five-step approach to integrate traditional ecological knowledge with scientific monitoring approaches. This is not an exhaustive approach and may be adapted as needed based on the MPA.

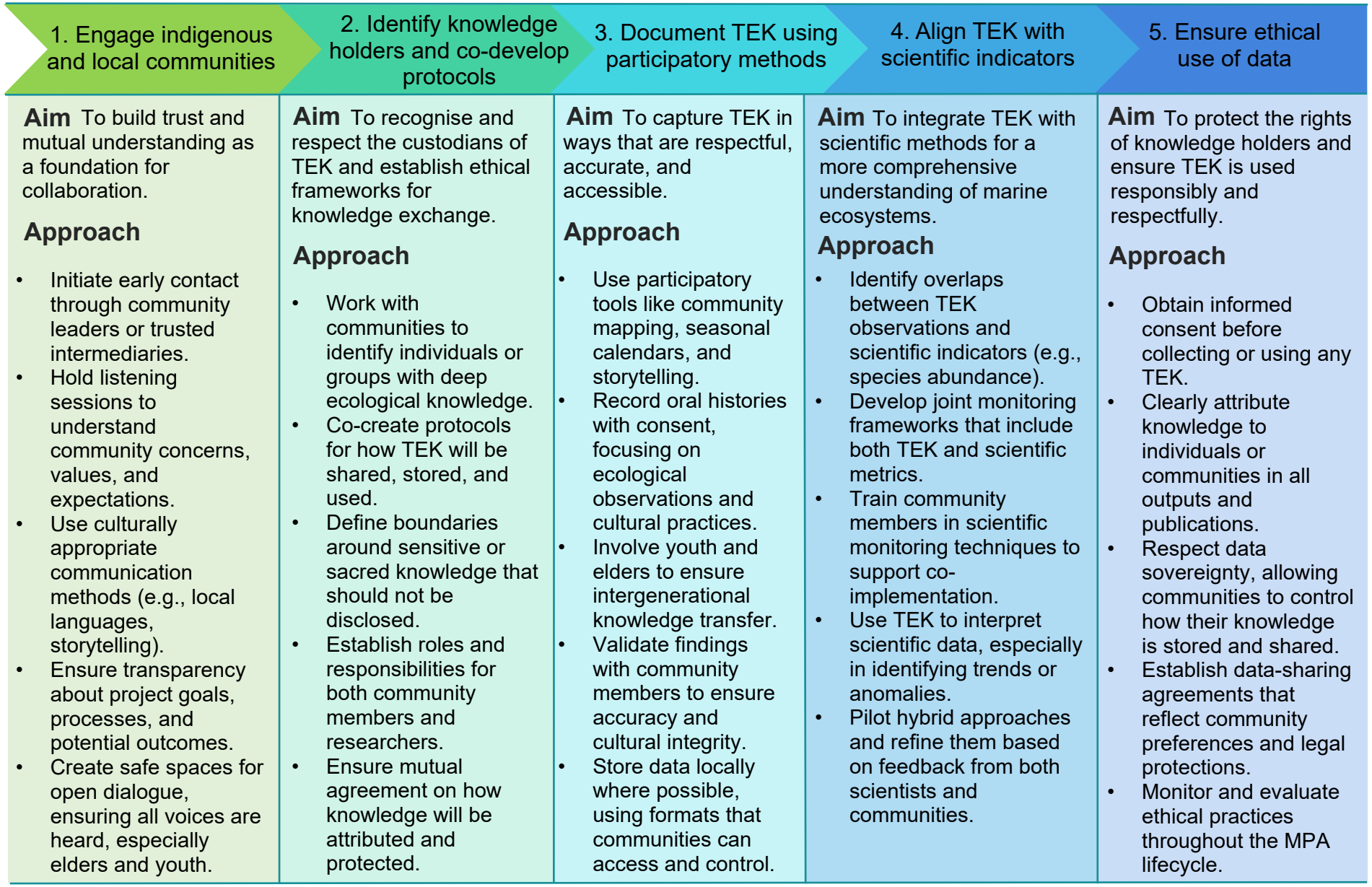


Figure 20. Summary of 5-step approach for approach to integrate TEK with scientific monitoring approaches.

5.2.4. Action 4: Develop Community-Based Monitoring Protocols

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Developing community-based monitoring (CBM) protocols for MPAs is increasingly recognised as a vital strategy for enhancing conservation effectiveness, equity, and sustainability. CBM empowers local communities to take an active role in environmental stewardship, integrating traditional knowledge with scientific methods to produce more relevant and actionable data. It is essential that CBM protocols embed GEDSI principles to ensure that women, persons with disabilities, and other marginalised groups are actively involved and benefit equitably from monitoring activities. Evidence from the Locally Managed Marine Area (LMMA) Network demonstrates that CBM fosters adaptive management by aligning monitoring efforts with community priorities and ecological realities. This participatory approach not only improves compliance and enforcement but also strengthens local governance and resilience (Govan *et al*., 2008).

CBM also enhances data quality and utility. By involving community members in data collection and interpretation, monitoring becomes more frequent, context-sensitive, and responsive to local changes. CBM frameworks increase the effectiveness of environmental stewardship by addressing gaps in conventional monitoring systems and facilitating communication between stakeholders and decision-makers (Conrad and Daoust, 2008). Recently, the development of digital platforms is transforming CBM by enabling communities to collect, archive, and share data more efficiently. These tools support broader data access and integration, allowing for both local and large-scale environmental assessments. However, they also raise challenges around data sovereignty and technical capacity, underscoring the need for ethically designed systems that respect community control (Johnson *et al*., 2021).

Developing robust CBM protocols is essential for ensuring that MPA monitoring is inclusive, effective, and grounded in the lived experiences of those most connected to marine ecosystems. Figure 21 below summarises a five-step approach to developing CBM protocols. This is not an exhaustive approach and may be adapted as needed based on the MPA.

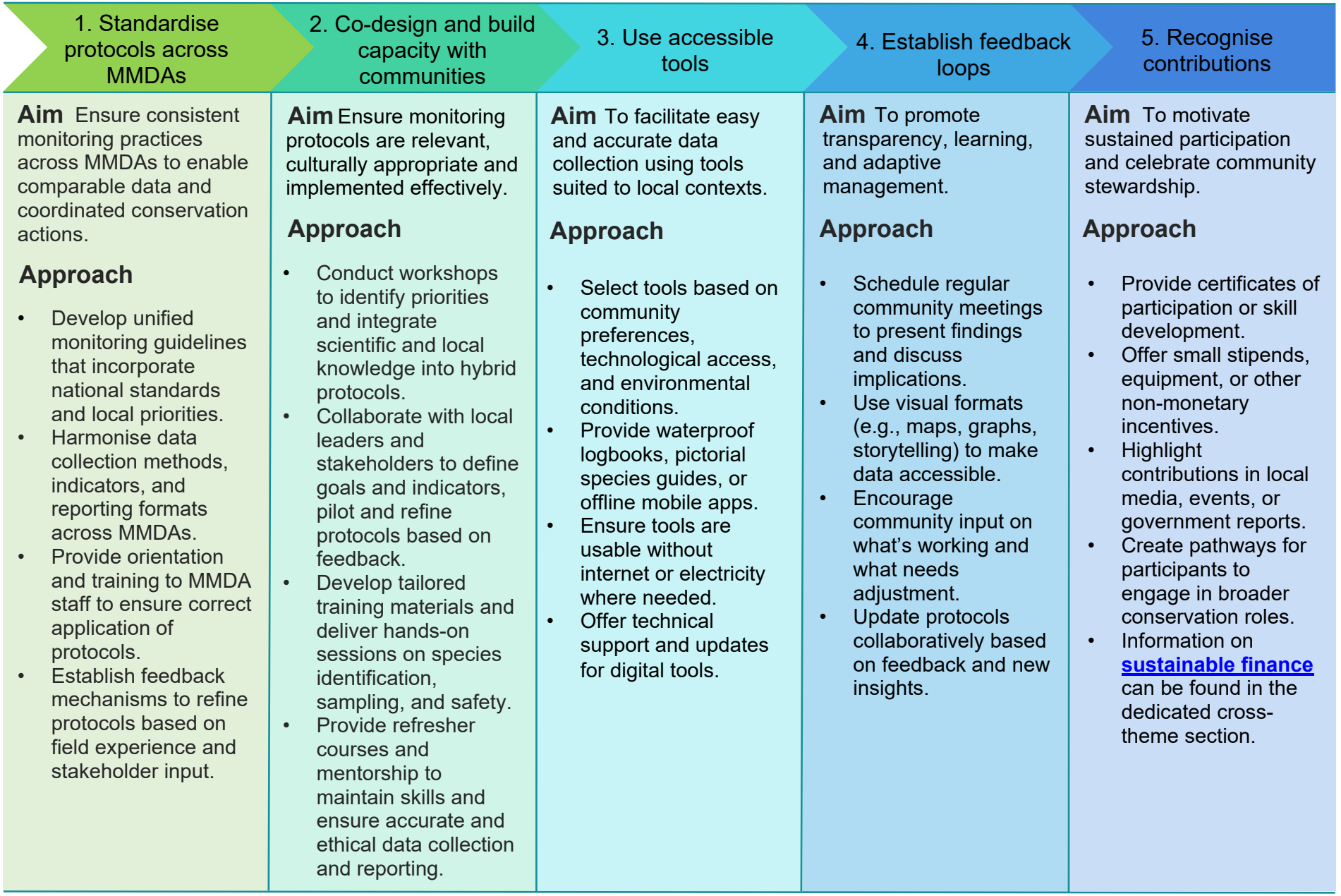
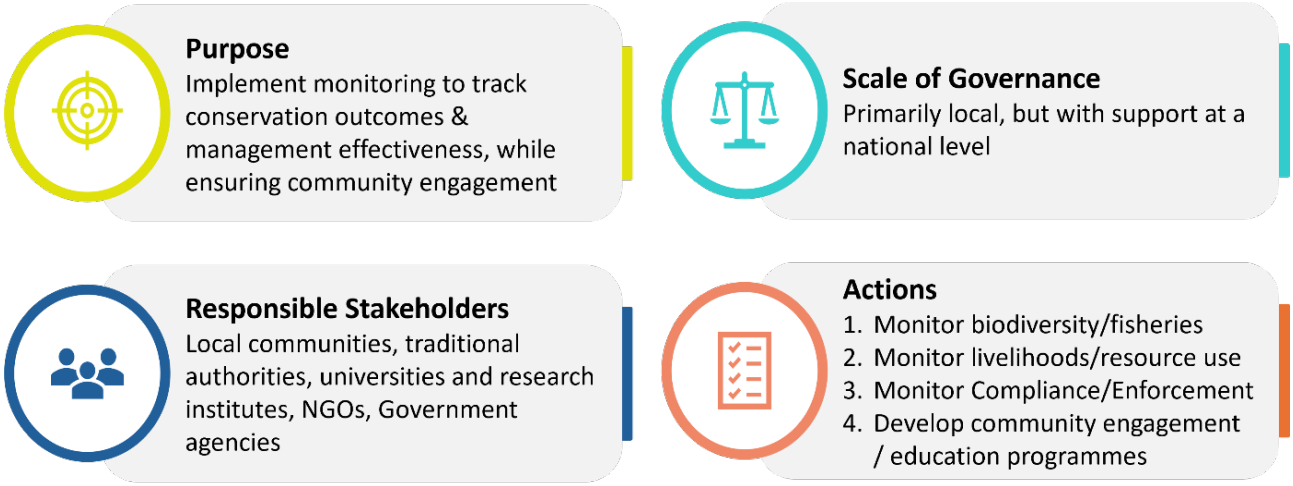


Figure 21. Summary of 5-step approach for approach for developing CBM protocols.

5.3. Strategic Objective 3: Monitor effective conservation and sustainable management of the MPA



Implementing monitoring activities is a pivotal step in assessing the success and effectiveness of an MPA. This Strategic Objective moves beyond planning and into action, ensuring that ecological, socioeconomic, and compliance indicators are actively tracked through structured, consistent methods. By doing so, it provides the evidence base needed to evaluate conservation outcomes, identify emerging challenges, and inform adaptive management decisions.

Ecological monitoring helps determine whether biodiversity and habitat health are improving, while socioeconomic assessments reveal how local communities are affected (economically, culturally, and socially) by MPA management. Compliance monitoring ensures that rules are being followed and that enforcement is fair and effective. Together, these components offer a holistic view of MPA performance. This Strategic Objective emphasises community engagement throughout the monitoring process. Monitoring should embed GEDSI principles by ensuring diverse groups are actively involved and by collecting disaggregated data to track equity outcomes. Involving local stakeholders not only enhances data quality through local knowledge but also fosters ownership, transparency, and trust. When communities are part of the monitoring effort, they are more likely to support conservation goals and contribute to long-term stewardship. Ultimately, implementing monitoring activities transforms the MPA from a static gazettement into a dynamic, responsive system and ensures that management is grounded in real-world evidence.

Data management is an important aspect of monitoring that should be integrated into planning. To be comprehensive, management must consider data governance, data standards and quality, data collection protocols, data storage and security, data accessibility and sharing, capacity and training, documentation and meta-data. More information on data management can be found in the Supplementary Material (Appendix 8).

To achieve this Strategic Objective, four Actions have been proposed, with details provided below. These Actions primarily require governance at a local level, but with support at a national level. Input from a wide range of stakeholders is also required. Incorporating GEDSI considerations strengthens social equity and ensures that monitoring reflects the needs and perspectives of all stakeholders.

5.3.1. Action 1: Monitor Changes in Biodiversity and Fishery Resources Over Time

Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

Monitoring changes in biodiversity and fisheries resources over time provides the empirical foundation needed to assess ecological health, evaluate conservation outcomes, and guide adaptive decision-making. Without consistent monitoring, it is impossible to determine whether MPAs are achieving their intended goals such as species recovery, habitat restoration, and the maintenance of ecosystem functions.

Adaptive management relies on monitoring to evaluate the effectiveness of interventions and respond to changing environmental conditions. Thus, monitoring indicators, such as species abundance, habitat condition, and human use, must be tracked over time and paired with clear targets and thresholds to trigger management responses when needed (Bryce and Hunter, 2024). This iterative process ensures that MPAs remain resilient and responsive in the face of climate change and other stressors. For example, In Mozambique, Rare's Fish Forever (Rare, *n.d.*) program has supported six coastal communities in establishing community-managed MPAs. These areas include fully protected reserves and managed access zones, designed to address declining fish stocks and biodiversity loss. Monitoring data (collected by local fishers) has informed adaptive management strategies, such as seasonal closures and gear restrictions. This participatory approach has led to improved fish biomass and ecosystem health, while also embedding conservation into national policy frameworks (Chukwuka, Adegboyegun and Adeogun, 2025b).

Additionally, monitoring supports transparency and accountability, helping build trust among stakeholders and demonstrating the value of MPAs to local communities and policymakers. As global efforts intensify to achieve 30% effective protection at the global level for land, sea and inland waters by 2030 (Convention on Biological Diversity, 2022), robust monitoring systems will be essential to measure progress and ensure that conservation investments yield tangible ecological and social benefits**.** Figure 22 summarises a six-step approach to monitoring changes in biodiversity and fisheries resources over time. This is not an exhaustive approach and may be adapted as needed based on the MPA.

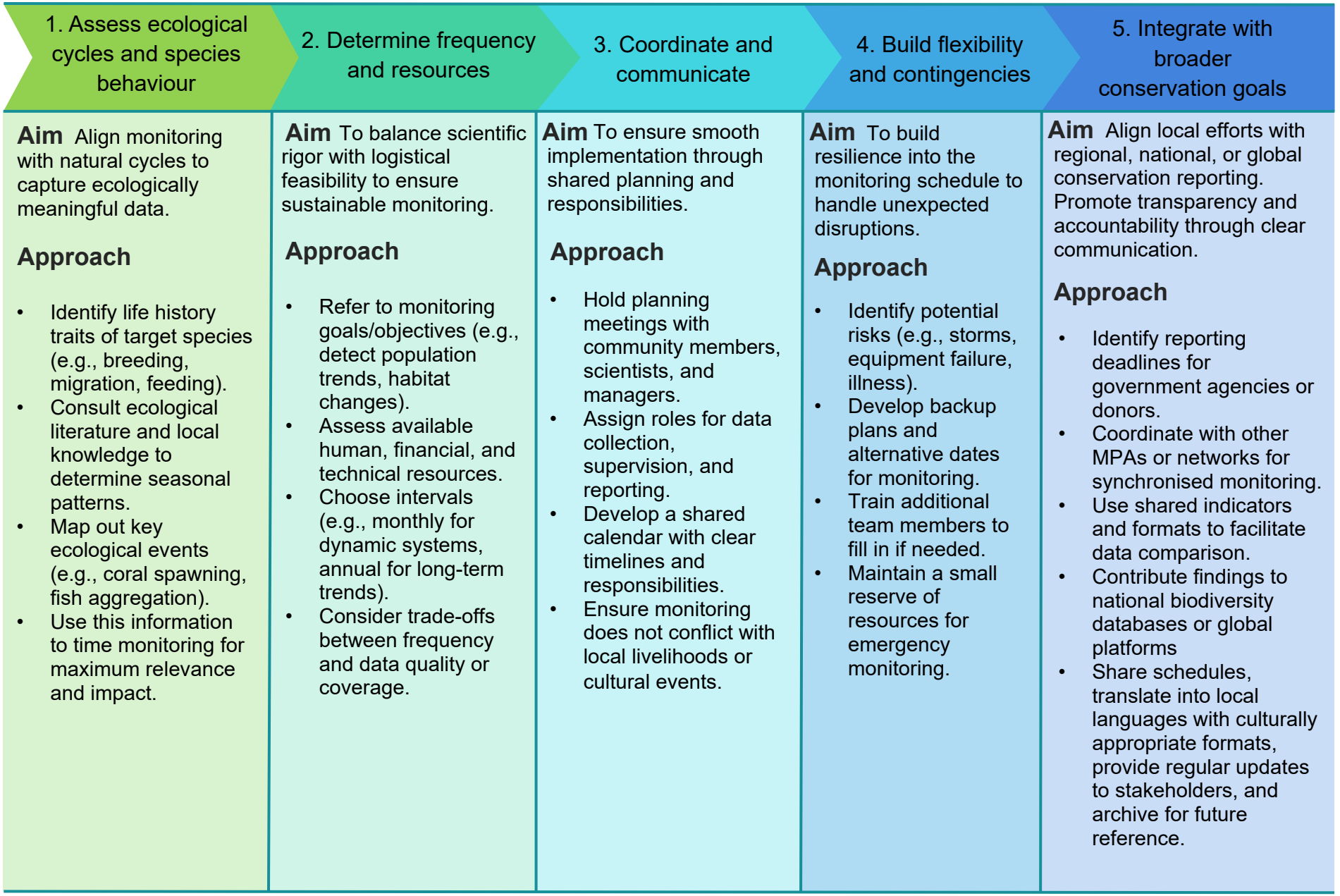


Figure 22. Summary of 6-step approach for monitoring changes in biodiversity and fisheries resources over time

5.3.2. Action 2: Monitor Changes in Livelihoods and Resource Use Patterns Over Time

Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

As discussed in Monitoring: Strategic Objective 1, Action 3, monitoring changes in livelihoods and resource use patterns over time is essential for understanding the social dimensions of MPA management as socioeconomic monitoring reveals how conservation measures impact local communities (economically, culturally, and socially) ensuring that MPAs support both ecological goals and human well-being. Implementation and management of MPAs can alter access to marine resources, shift income sources, and reshape community dynamics. Without tracking these changes, management risks overlooking unintended consequences such as increased poverty, gender disparities, or resource conflicts. In Tanzania, for example, while seaweed farming and tourism were promoted as alternative livelihoods within MPAs, they did not consistently yield higher incomes than traditional fisheries. Socioeconomic monitoring found that households, particularly those headed by women, involved in seaweed farming experienced high poverty incidence (Westlund *et al.*, 2017). Many women transitioned to small-scale businesses or returned to fisheries, thus highlighting both the need for adaptive, gender-sensitive approaches to livelihood planning, but also the importance of socioeconomic monitoring to identify such issues in the first place. Monitoring should embed GEDSI principles by ensuring data is disaggregated by gender, disability, and other social identifiers, and by actively involving marginalised groups in monitoring processes.

Monitoring resource-use patterns also informs conflict resolution and policy adjustments. Understanding who uses which resources, when, and why helps managers design fair zoning, compensation schemes, and alternative livelihood programs. As MPAs evolve, continuous socioeconomic monitoring ensures that conservation remains equitable, inclusive, and responsive to the realities of coastal communities (Westlund *et al.*, 2017). Incorporating GEDSI considerations ensures that livelihood and resource-use monitoring reflect diverse needs and supports equitable benefit-sharing. Figure 23 below summarises a four-step approach to monitoring changes in livelihoods and resource use patterns over time. This is not an exhaustive approach and may be adapted as needed based on the MPA.

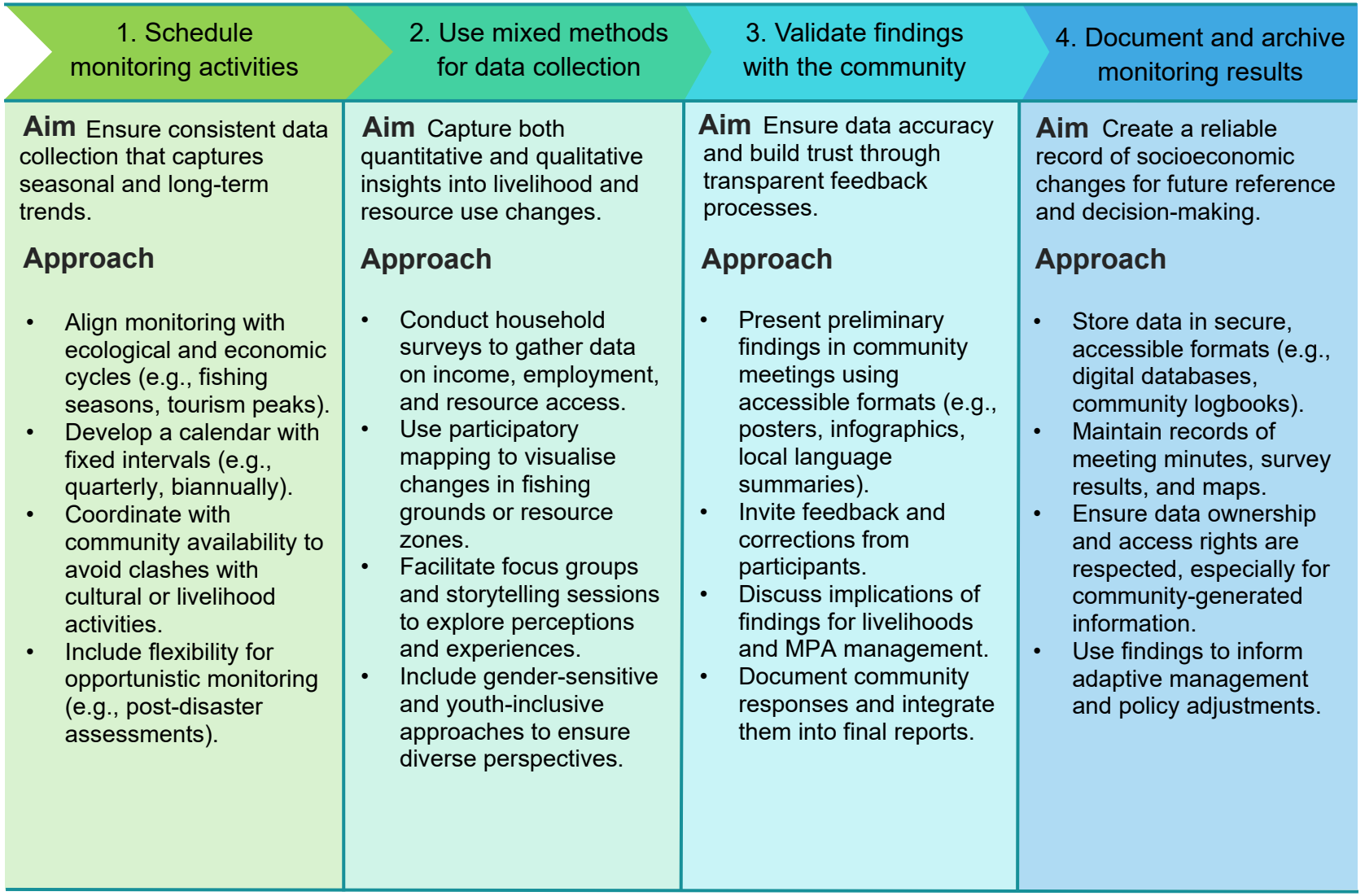


Figure 23. Summary of 4-step approach for monitoring changes in livelihoods and resource use patterns over time.

5.3.3. Action 3: Monitor Compliance and Enforcement

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Monitoring compliance and enforcement in MPAs is essential to ensuring that conservation regulations are respected, enforcement is fair, and ecological goals are achieved. Effective compliance monitoring helps identify areas of non-compliance, assess enforcement strategies, and build legitimacy among stakeholders. It also supports adaptive management by providing data on rule adherence and enforcement outcomes.

In Africa, MPAs face unique challenges related to governance, resource limitations, and historical exclusion of coastal communities. For example, in Eastern Africa monitoring has shown that enforcement is often hindered by limited staff, funding, and community awareness, which can undermine conservation efforts and fuel mistrust (Chukwuka, Adegboyegun and Adeogun, 2025c). Transparent and inclusive compliance monitoring can help address these issues by involving communities in surveillance and reporting, thereby fostering voluntary stewardship and reducing conflict. Compliance monitoring should embed GEDSI principles by ensuring diverse groups are actively involved in surveillance and reporting, and by collecting disaggregated data to track equity in enforcement outcomes. Another example, in South Africa, show that while the country has expanded its MPA network, top-down enforcement approaches have historically excluded local communities, leading to dispossession and resistance (Peer *et al.*, 2022). By integrating community perspectives into compliance strategies (e.g. through co-management and participatory enforcement) trust is built and effectiveness increased.

Ultimately, monitoring compliance is not just about rule enforcement; it is about building a culture of shared responsibility. When communities understand the purpose of MPAs and see enforcement as fair and transparent, they are more likely to support conservation goals and participate actively in protecting marine resources. This makes compliance monitoring vital in underpinning of both ecological success and social equity in MPA management. Incorporating GEDSI considerations strengthens fairness and trust, ensuring compliance strategies reflect the needs and rights of all stakeholders. Figure 24 below summarises a five-step approach to monitoring compliance and enforcement. This is not an exhaustive approach and may be adapted as needed based on the MPA.

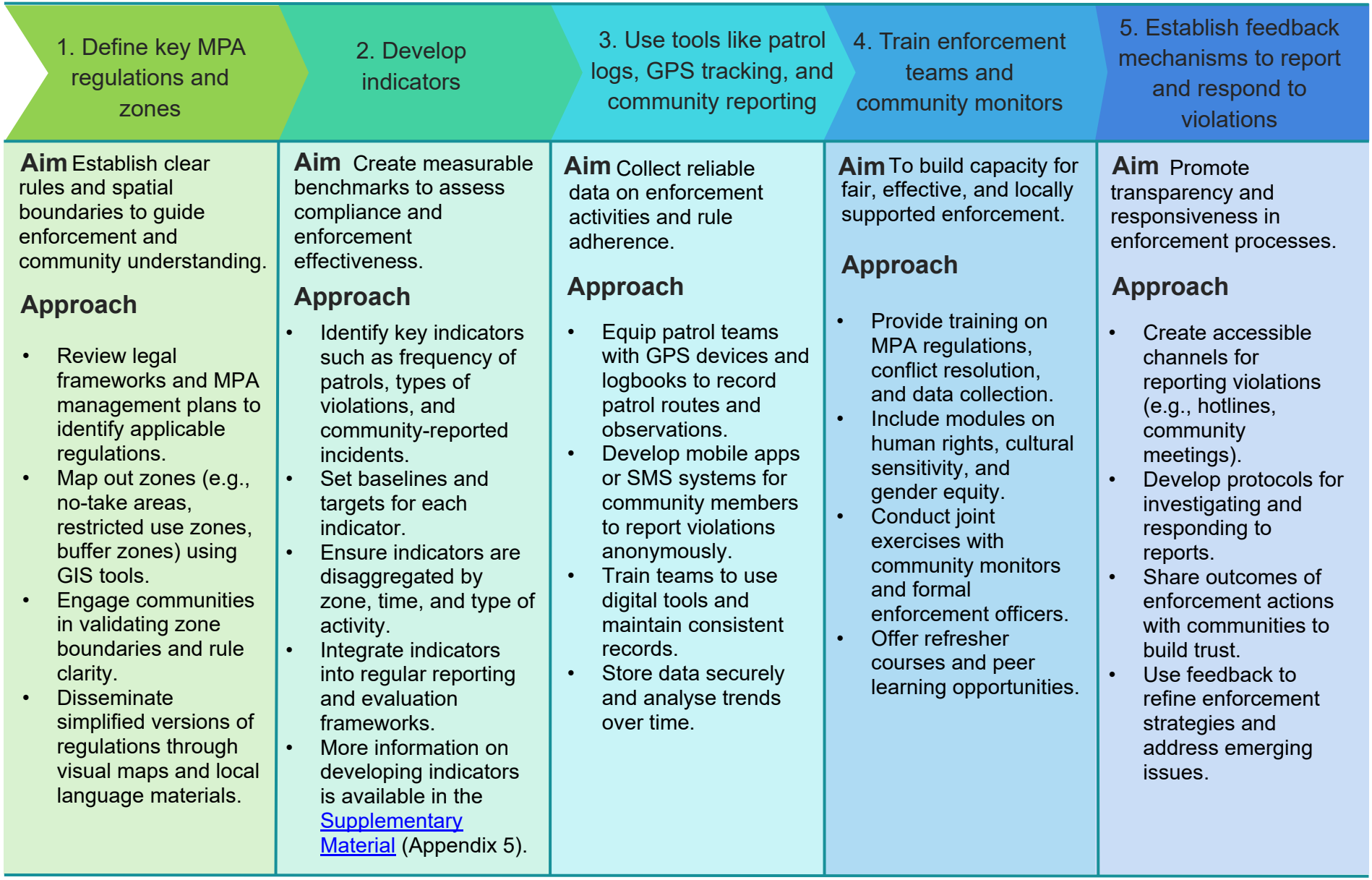


Figure 24. Summary of 5-step approach for monitoring compliance and enforcement.

5.3.4. Action 4: Develop community engagement and education programmes for community monitoring initiatives

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Developing community engagement and education programmes is essential for the success and sustainability of community-based monitoring initiatives in MPAs. These programmes foster local ownership, build capacity, and ensure that conservation efforts are grounded in community values and knowledge systems. Community engagement programmes should embed GEDSI principles by ensuring diverse groups are actively involved and benefit equitably from monitoring initiatives. Education initiatives help communities understand the ecological and socioeconomic importance of MPAs, increasing their willingness to participate in monitoring and stewardship. When communities are informed about the benefits of conservation they are more likely to support and actively contribute to monitoring efforts(Ocean Country Partnership Programme, 2025e).

In South Africa, marine conservation programmes have successfully combined research with community education. Volunteers and marine biologists work alongside local residents to study marine life and deliver outreach activities. These activities have raised awareness about pollution, marine biodiversity, and the role of MPAs in protecting coastal ecosystems. Similarly, Seas4Life's Ocean Guardian Programme (Seas4life, *n.d.*) in Eastern and Southern Africa provides immersive ocean literacy training, combining dive education, marine biology, and youth empowerment. By connecting communities to the ocean through experiential learning, the programme strengthens conservation ethics and builds a new generation of ocean stewards.

Community engagement and education are not just supportive tools; they are foundational to inclusive conservation. They ensure that monitoring is not imposed but co-created, empowering communities to lead in protecting the marine environments they depend on.

Figure 25 below summarises a six-step approach on how to develop community engagement and education programmes for community monitoring initiatives. This is not an exhaustive approach and may be adapted as needed based on the MPA.

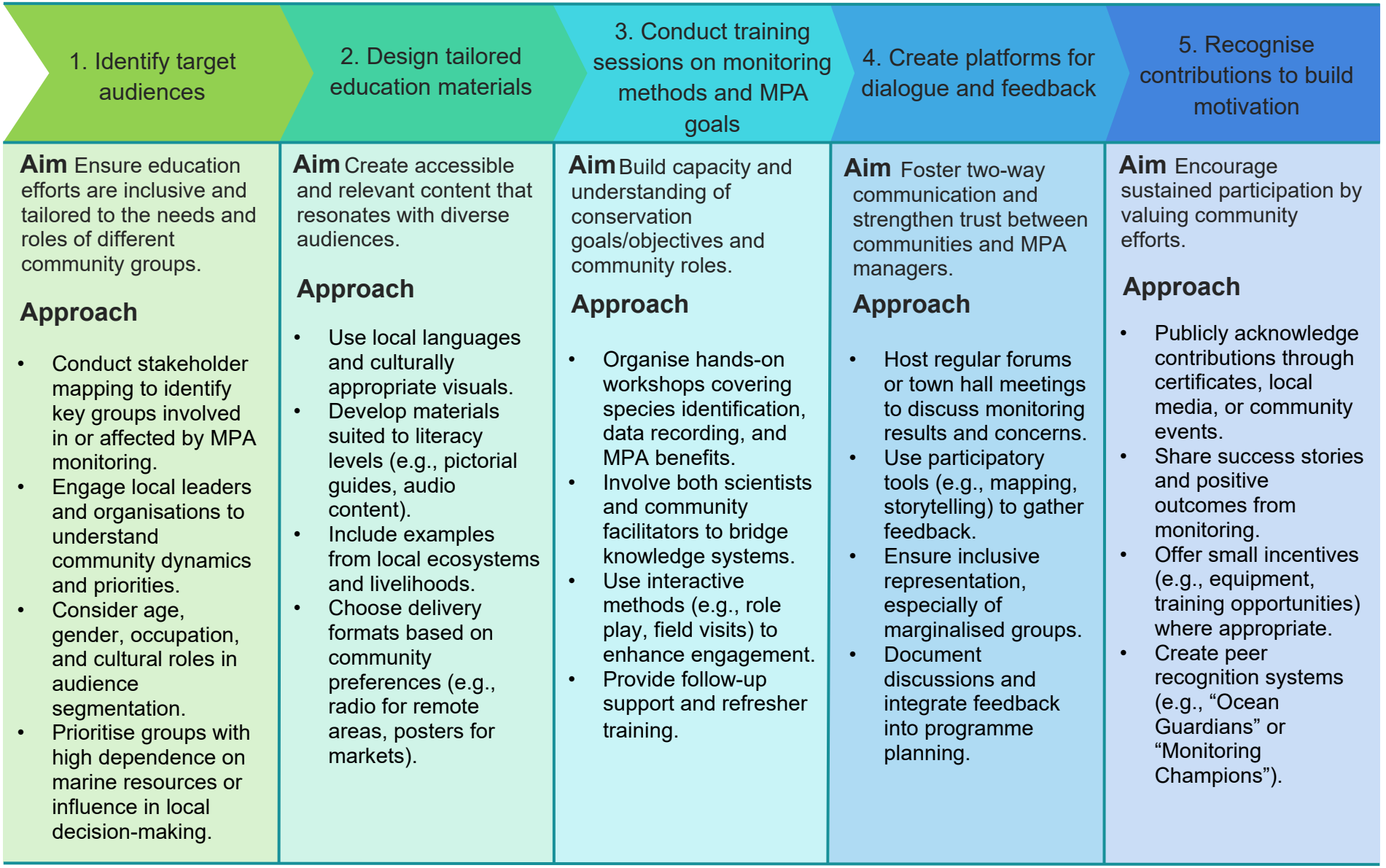


Figure 25. Summary of six-step approach on how to develop community engagement and education programmes for community monitoring initiatives.

6. Assessment

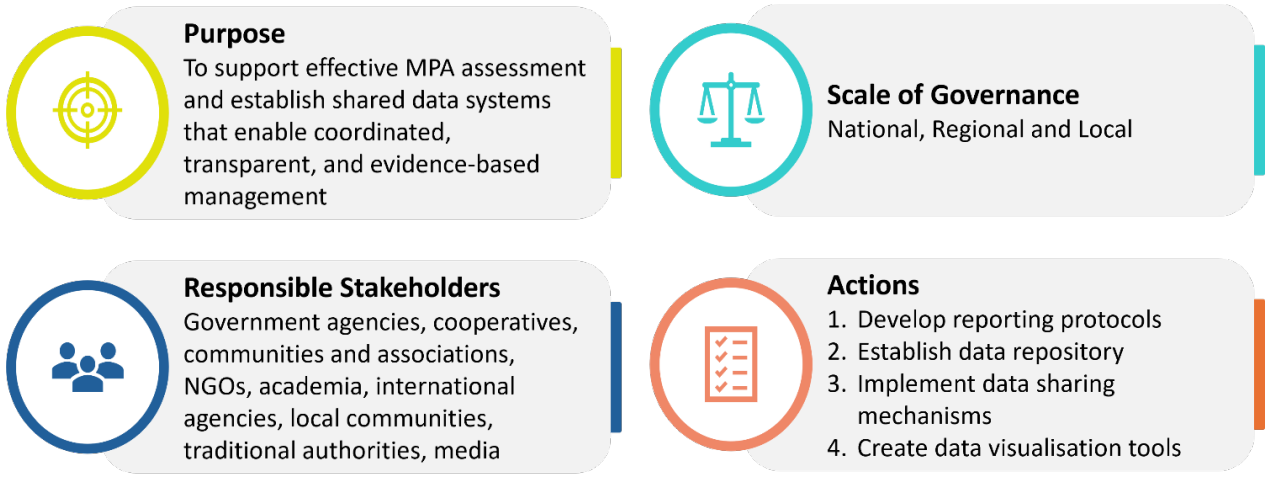
The assessment of an MPA (here after 'assessment') is essential for understanding how effectively an MPA is meeting its conservation goals. Assessment provides a structured approach to evaluating ecological health, including biological indicators such as species abundance, diversity and habitat condition, alongside socio-economic and GEDSI outcomes, and informs whether further management measures are required, using data collected through ongoing monitoring efforts. Socio-economic assessment is also important, as it provides information on how MPAs affect local livelihoods, resource use, community perceptions and the equitable inclusion of different marginalised groups such as women and persons with disabilities. These are factors which can be critical for long-term support and compliance (Mizrahi *et al.*, 2019). Assessments help to establish baseline conditions, such as the status of key species, habitats, and community wellbeing, and track changes over time to inform adaptive management. They also play a role in identifying the of marine ecosystem resilience to both climate-related and human-induced stressors.

Assessments can be at site and/or MPA network level. Site level assessments often focus on specific habitats, such as coral reefs or sandy substrates, that may be protected or unprotected. These habitats are biodiversity hotspots and can support productive fishing grounds. Network level assessments span multiple MPAs within a region and can provide insight into ecological and biological connectivity and broader conservation effectiveness of MPAs. Findings from assessments can highlight the ecological and biological importance of particular areas which can include roles as migratory corridors for marine mammals and resting grounds for commercially important species such as Round sardinella (*Sardinella aurita*) and Madeiran sardinella (*Sardinella maderensis*) which constitute a significant proportion of total marine catches in Ghana (Asiedu *et al.*, 2021).

Beyond insight into the ecological and biological importance of habitats and species in an MPA, assessments can contribute to national and international conservation commitments by providing an evidence base needed to measure progress against agreed targets such as achieving 30% effective protection at the global level for land, sea and inland waters by 2030 (Convention on Biological Diversity, 2022). Establishing clear baselines for ecological and socio-economic targets from the outset of MPA gazettement is crucial, as is the integration of assessment findings into communication strategies and community engagement efforts.

This section outlines the key components of effective MPA assessment through three Strategic Objectives identified in the MPA Roadmap framework to support the implementation of MPAs in Ghana (OCPP, 2025a) and introduces tools and approaches to support the evaluation of goals throughout the MPA implementation cycle (Figure 1).

6.1 Strategic Objective 1: Centralise data sharing and reporting systems



This Strategic Objective focuses on ensuring all stakeholders have access to relevant information for assessing the effectiveness of the MPA against its conservation and management goals. A shared database can facilitate coordination between national and local agencies, and other stakeholders, by streamlining data submission and access, supporting both MPA gazettement and management, as well as monitoring the effectiveness of gazetted and implemented MPAs. These data could be spatial data on the zoning of the MPA, the distribution of habitats, ecological and biological data on marine life, and socio-economic data relevant to communities linked to the site, such as livelihood surveys and indicators of GEDSI. Allowing shared access between stakeholders can allow for data collection efforts to be streamlined and information to be readily available for assessing an MPA's effectiveness. It can also increase the ease at which information can be disseminated to communities.

To achieve this Strategic Objective, four Actions have been proposed (Figure 26). These Actions include all scales of governance across national, regional and local levels and comprise of inputs from government agencies, Metropolitan, Municipal, and District Assemblies (MMDAs), local communities and universities and research institutions.

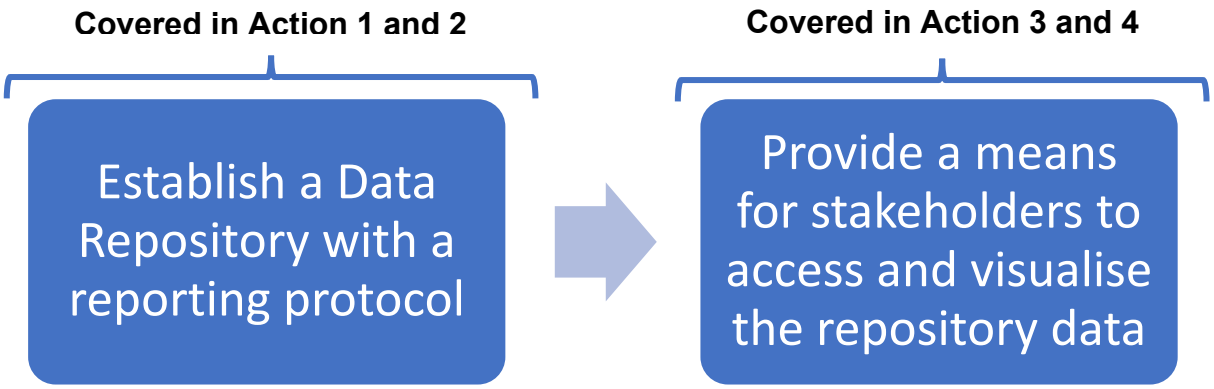


Figure 26. How the four Actions in this section contribute to the Strategic Objective.

6.1.1. Action 1: Develop standardised reporting protocols

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

To ensure consistent and reliable data submission to a national MPA Data Repository (See Action 2), a standardised reporting protocol must first be developed. Protocols can guide relevant stakeholders on what data to collect, how to collect it, and in what format to submit it, ensuring that reporting captures GEDSI dimensions where relevant. By using the same indicators (specific and measurable variables used to track progress towards conservation and management goals/objectives, see Management: Strategic Objective 3 Action 2) and data formats, comparability across MPAs can be evaluated at site and network levels.

A standardised protocol also allows assessments to be tailored to meet reporting obligations for national and international targets, such as the Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework.

It is also important to establish a method for Quality Checking submitted data. This can be achieved by developing an Evidence Quality Assurance (EQA) Policy, which can be shared with relevant stakeholders to ensure a consistent approach to MPA data and reporting. A useful example of this is JNCC's EQA Policy (2022) (JNCC, 2022).

Understanding and communicating 'confidence' in data is also important. Data can be assessed and categorised as having low, moderate or high confidence, which should be based on clearly defined criteria. This helps communicate uncertainty to stakeholders and informs decisions about whether data should be included in reporting, such as when evaluating the condition of a feature of an MPA. An example of how criteria can be applied to define confidence levels can be found in the Supplementary Material (Appendix 10).

All submissions should also include clear metadata and data documentation that includes any licensing terms and intellectual property rights. The presentation of this information should consider accessibility and inclusion for diverse user groups. The British Ecological Society have produced a useful guide to Data Management (British Ecological Society, 2014).

Figure 27 summarises a 4-step process to developing a standardised reporting protocol. This is not an exhaustive list and is highly simplified but demonstrates a basic framework to follow in developing a protocol.

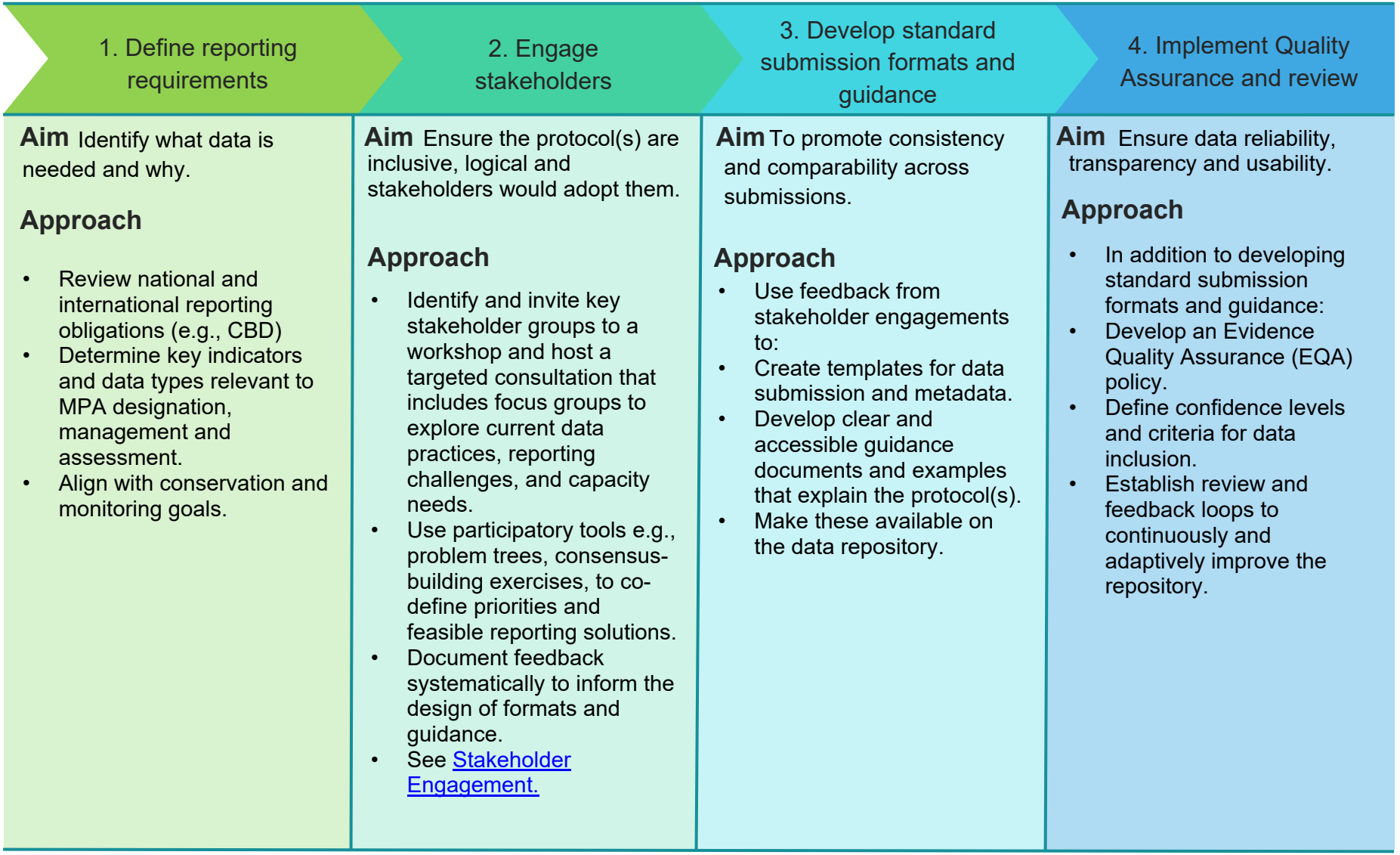


Figure 27. Summary of the four-step process to develop a standardise reporting protocol.

6.1.2. Action 2: Establish a National MPA Data Repository

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

The creation of a national MPA data repository provides a platform for stakeholders to submit data related to MPAs. This would be a centralised database that both stores and is used to manage information. Stakeholders should be able to access the data repository to download and view information related to the MPAs, ensuring accessibility and inclusion for diverse user groups with consideration to GEDSI principles (this will be covered in Action 3 and Action 4 respectively).

Types of information could include:

- Polygon data that may define the area and extent of features – this often consists of modelled data.
- Point data that can provide locations of individual species or habitats, or where sampling took place. This is often ground-truthed data.
- Human activity data showing locations of fixed structures e.g., oil rigs, or areas of impact and intensity, or fishing as discussed in the Management Section, Strategic Objective 1: Identify threats and impacts.

This Action builds on the previous action (Action 1) by providing the platform needed to operationalise the standardised reporting protocols developed. While Action 1 focuses on defining what data is needed and how it should be reported, this Action establishes a centralised national repository where that data can be submitted, stored, and accessed.

This Action supports:

- **Evidence-based decision making** by providing a platform for evidence gathering which can increase knowledge and strengthen decision making.
- **Stakeholder engagement** by providing stakeholders with a means of submitting data that could influence MPA gazettement. This can foster trust and transparency.
- **Research and Development** by collating standardised data which can add further understanding of marine ecosystems and improve decision making.

Examples of data repositories can be found in the Supplementary Material (Appendix 11).

Figure 28 below summarises a 4-step process to developing a centralised National MPA Data Repository. This is not exhaustive and is highly simplified but demonstrates a basic framework to follow in developing the repository.

1. Define purpose and engage stakeholders	2. Gather and standardise data	3. Build and launch the platform	4. Maintain, update and promote
Aim Clarify the repository's goals/objectives and ensure early buy-in from key stakeholders. **Approach** • Consider the feedback from stakeholder engagement undertaken during Action 1: Developing the protocol. • Engage the same stakeholders, as well as any further relevant stakeholders. • Co-develop a shared vision, define the repository's purpose, and clarify roles and responsibilities in writing early on e.g., where will the repository be hosted online, who will perform Quality Checks. • Establish a steering group to guide development and ensure alignment with national priorities.	**Aim** Compile existing MPA-related data and apply consistent formats and standards. **Approach** • Conduct a data audit to identify existing datasets and data holders. • Organise technical working groups with data providers to co-develop or adopt a national standard (e.g., for spatial formats, feature classification and metadata). • Facilitate any necessary training sessions to support stakeholders in aligning their data with agreed formats. • Use feedback loops (e.g., surveys, interviews) to refine standards and ensure usability. • For advice on associated costs, see Sustainable Financing.	**Aim** Develop a user-friendly, centralised system. **Approach** • Choose a suitable platform (e.g., open-source GIS, cloud-based database). • Design with users in mind and ensure the interface is intuitive and accessible. • Pilot the platform with a small group of users prior to launch and act on feedback. • Provide user training and link to the previously developed Protocol(s) (Action 1). • Consider costs and training related to licenses or GIS use.	**Aim** Establish processes for regular updates, governance of data, and capacity building to ensure long-term sustainability and stakeholder engagement. **Approach** • Establish a governance framework for data updates, quality control, and user support. • Schedule regular updates and maintenance cycles, • Promote the repository through outreach, and integration with national reporting systems. • Monitor usage and collect feedback to inform continuous improvement.

Figure 28. Summary of the four-step process to creating a centralised National MPA Data Repository.

6.1.3. Action 3: Implement Data Sharing Mechanisms

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Sharing data openly is important for science and conservation because it:

- **Enables collaboration** which allows stakeholders to work together. This can reduce duplication and improve outcomes through shared knowledge.
- **Supports evidence-based decisions** by providing access to reliable data that helps inform management actions, policy development and conservation planning.
- **Improves Transparency and accountability** by fostering trust amongst stakeholders by making conservation efforts more transparent and measurable and ensuring transparent participation.
- **Enhances monitoring and adaptive management** as long-term, shared datasets allow for tracking changes over time, evaluating the effectiveness of management interventions and adapting strategies as needed.
- **Accelerates innovation and discovery** as open access data can lead to new insights, tools, and technologies that have the potential to benefit marine ecosystems and biodiversity.

Implementing an effective data sharing mechanism requires both technical infrastructure (i.e. a digital platform) and governance processes (establishing protocols and responsible stakeholders). These can be developed through Action 1 and Action 2. This Action requires the development of a public-facing platform that links to the data repository and allows users to download and access data within it. Data should be available to download in multiple formats where appropriate and accompanied by relevant metadata. Examples of existing mechanisms can be found in the Supplementary Material (Appendix 11). Data sharing mechanisms should be accessible for diverse user groups and include socio-economic and GEDSI-related data where relevant to support equitable decision-making.

Information on MPAs, including boundary shapefiles, attributes (such as gazettement type and size) and metadata, should be included in the data repository to ensure it is accessible via the Data Portal. Figure 29 summarises a 4-step process to implement data sharing mechanisms. This is not an exhaustive list and is highly simplified but demonstrates a basic framework.

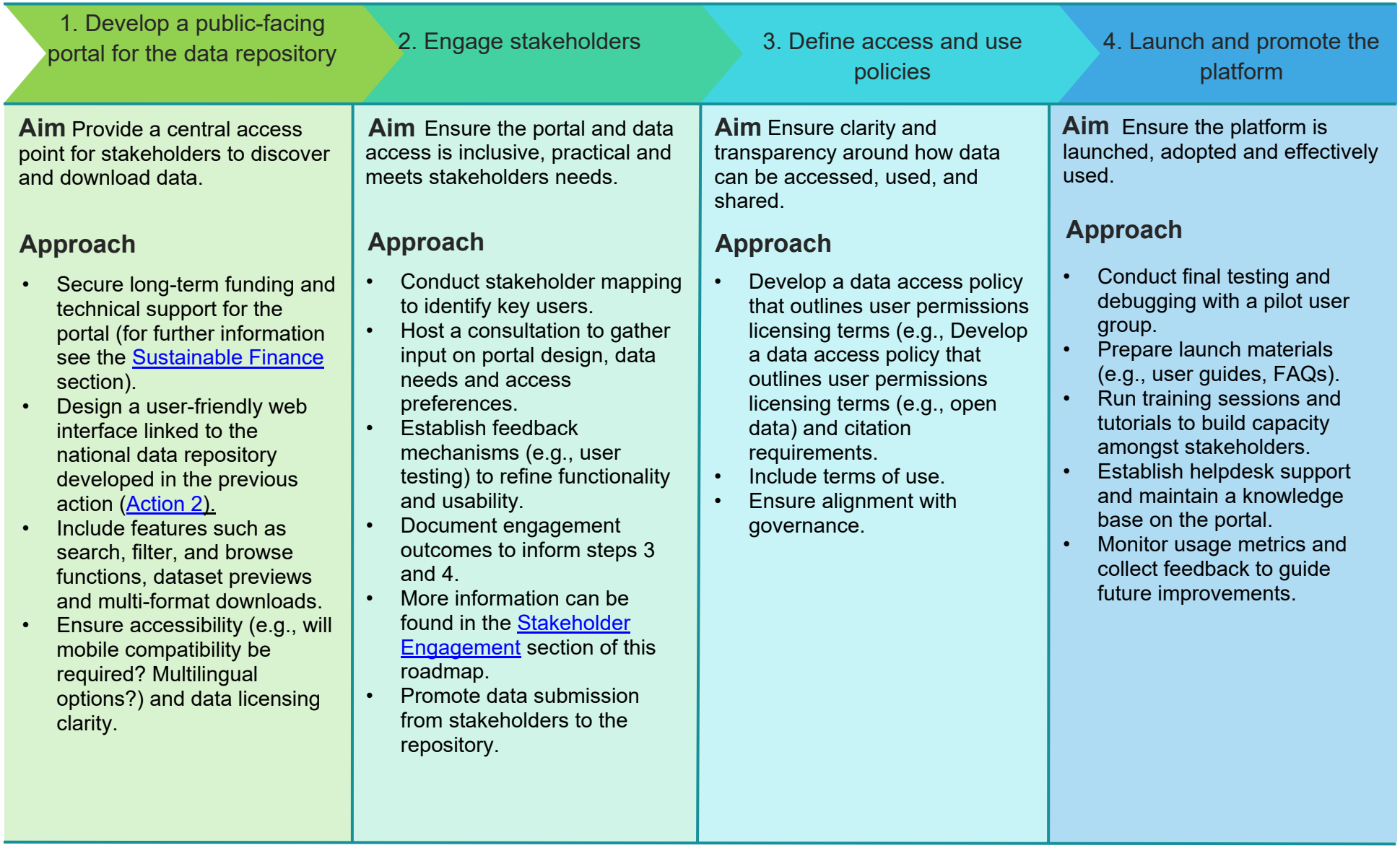
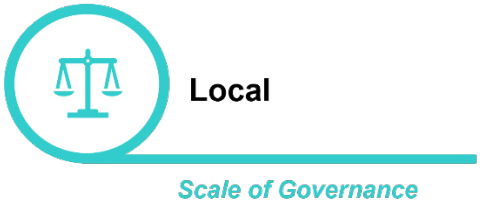


Figure 29. Summary of the four-step process to implement data sharing mechanisms.

6.1.4. Action 4: Create data visualisation tools for decision-makers and communities



Responsible Stakeholders

Lead: Traditional Authorities and Government Agencies (MMDAs)

Supporting:

- Non-Governmental Organisations
- Traditional Authorities
- Local Communities
- Universities and Research Institutions
- Media

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Creating a data visualisation tool alongside the data repository and data portal will make MPA related data more accessible and understandable to a wider range of stakeholders. Visual elements such as maps and dashboards allow users to explore and interpret data before downloading it, supporting faster, evidence-based decision making.

Not all data stored in the repository needs to be visualised through the data visualisation tool(s). However, an MPA mapping tool, for example, could display key spatial layers such as (but not limited to):

- Gazetted MPA boundaries
- Protected habitats and species extents and distributions within an MPA
- Gazetted management zones or areas of activity regulation (e.g., fisheries)
- Oceanographic such as bathymetry.
- Administrative layers such as country Exclusive Economic Zones (EEZs) or regional area boundaries.

There are many examples of data visualisation tools for MPAs, some of these include:

- The Nairobi Convention WIO MPA Interactive Dashboard (Nairobi Convention, *n.d.*)
- The JNCC Mapper (JNCC, 2024)
- The NOAA MPA Data Viewer (NOAA, 2025)

Establishment of data visualisation tools could be run in conjunction with the data portal steps in Figure 28. Examples of existing visualisation platforms can be found in the Supplementary Material (Appendix 11). A user guide should also be developed and provided to any users of the visualisation tool(s). As with the repository and data portal, appropriate resource and capacity will need to be considered in order to establish, maintain and improve these tools. More information can be found in the Sustainable Finance section. In addition, not all local communities may have access to visualisation platforms, and so other ways of communicating information need to be developed in recognition of GEDSI principles. This could include providing printed versions of maps in local dialects to communities and formats accessible to persons with disabilities.

6.2. Strategic Objective 2: Assess and report on the effectiveness of the MPA

This Strategic Objective is focused on evaluating whether the MPA, once gazetted and implemented, is functioning as intended, delivering on its expected performance outcomes, and effectively achieving its conservation goals. Systematic assessment and reporting of ecological and socioeconomic indicators provide critical insights into performance and highlights areas where adaptive management may be needed. Transparent communication of these findings to stakeholders is equally as important, as it can work to foster trust, strengthen community support, and encourage compliance with MPA management measures. Assessment and reporting should also consider GEDSI dimensions to ensure that MPA benefits and impacts are recognised and equitably distributed among all stakeholder groups.

This Strategic Objective should also include assessing if MPA implementation approaches are in alignment with national and international targets such as achieving 30% effective protection at the global level for land, sea and inland waters by 2030 (Convention on Biological Diversity, 2022) for which Ghana has committed to.

To achieve this Strategic Objective, four Actions have been proposed with details provided below. These Actions include all scales of governance across national, regional and local levels and comprise of inputs from local communities, traditional authorities, government agencies, Metropolitan, Municipal, and District Assemblies (MMDAs), universities and research institutions, Non-Governmental Organisations (NGOs) and the media.

6.2.1. Action 1: Assess progress towards meeting national and international targets

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

Ghana is currently a signatory to key international instruments such as the United Nations Convention on the Law Of the Sea (UNCLOS) (United Nations, 2025), Convention on Biological Diversity (CBD) (Convention on Biological Diversity, 2024), the Abidjan Convention (United Nations: Environment Programme, 2025), the United Nations Framework Convention on Climate Change (UNFCCC) (United Nations, 1992; United Nations: Climate Change, *n.d.*) and the FAO Code of Conduct for Responsible Fisheries (FAO, 1995). More information about the international and national obligations for marine conservation and management for Ghana can be found in Section 1.3. of the Analytical review of Marine Protected Area (MPA) implementation policies, legislation, and strategies in Ghana (Ocean Country Partnership Programme, 2025d).

Assessing progress towards national and international marine conservation targets is essential to:

- **Ensure alignment** between national and international obligations to streamline processes, reduce duplication of effort and make more efficient use of resources.
- **Support evidence-based decisions** by identifying what is working and where gaps may exist which can inform strategic actions.
- **Inform resource and capacity planning** in allocating funding, building institutional capacity, and prioritising projects.
- **Enable adaptive management** as it allows for responsive adjustments to ecological and socio-economic changes and / or developments.
- **Build credibility and trust with stakeholders** by demonstrating real-world impact, including equitable outcomes for women, persons with disabilities, and marginalised communities.
- **Understand change** and build a culture of continuous learning and improvement.
- **Identify opportunities for collaboration** when assessment reveals areas where partnerships with e.g., NGO's or academia could fill gaps or advance knowledge.

Figure 30 summarises a 4-step process to assess progress towards meeting national and international targets. This is not an exhaustive list and is highly simplified but demonstrates a basic framework.

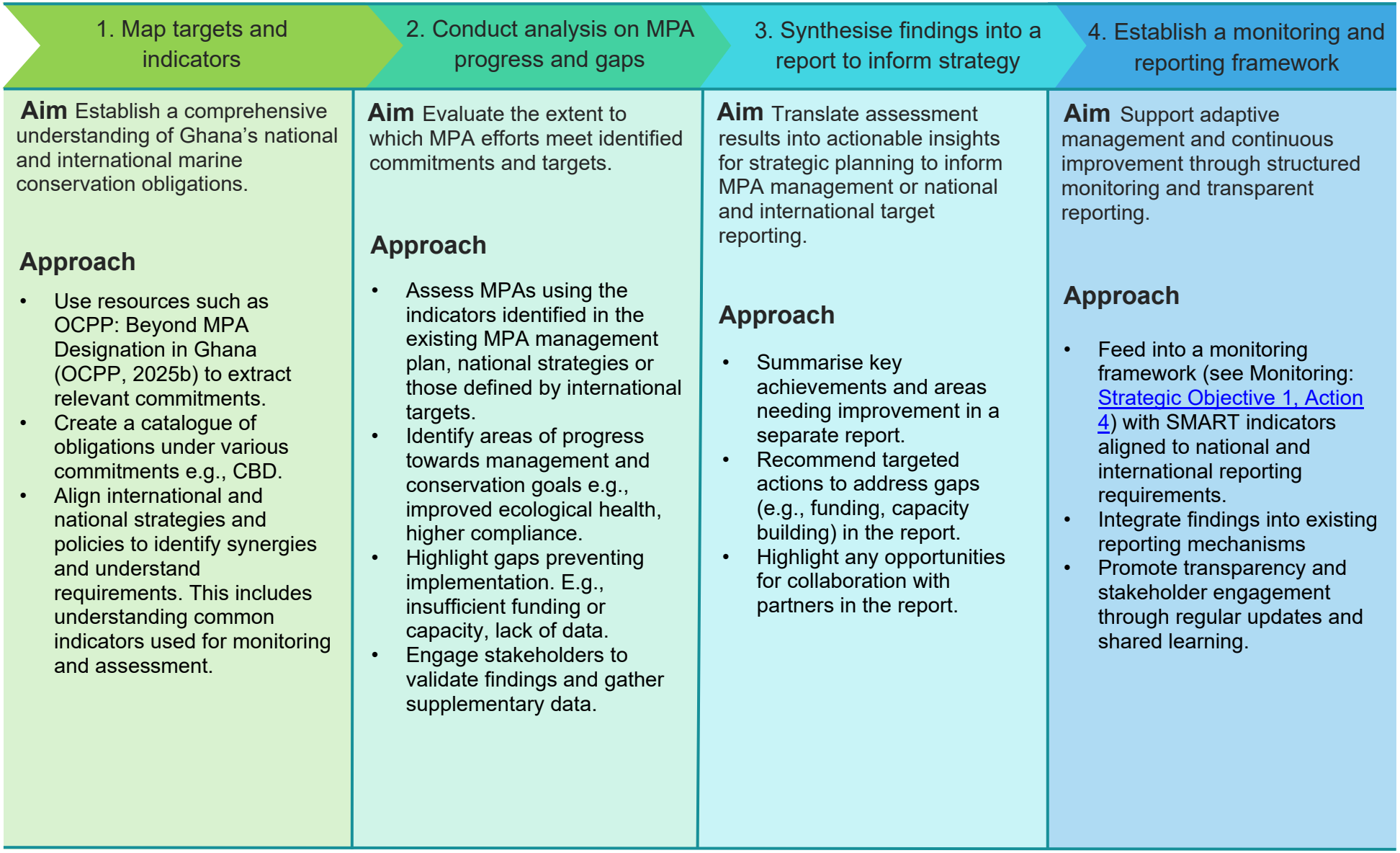


Figure 30. Summary of the four-step process to assess progress to meeting national and international targets linked to MPAs.

6.2.2. Action 2: Conduct regular evaluations using the Management Effectiveness Tracking Tool (METT)

Local

Scale of Governance

Responsible Stakeholders

Lead: Traditional Authorities and Government Agencies (MMDAs)

Supporting:

- Non-Governmental Organisations
- Local Communities
- Universities and Research Institutions

Short-Term: Establishing the foundation for implementation and addressing urgent priorities.

The evaluation of management effectiveness of an MPA involves an assessment of how management interventions are helping the MPA to achieve conservation goals/objectives (Courrau *et al.*, 2006). The IUCN produced a Best Practice Guidance that presents a globally applicable framework for evaluating how well Protected Areas are managed (Figure 31; Courrau *et al.*, 2006). METT is a tool that reflects the IUCN WCPA framework for protected area management effectiveness (PAME). It provides a standardised, practical, and globally recognised method for evaluating how well protected areas are being managed. In 2020, a new version, METT- 4 (Stolton, Dudley and Hockings, 2021; Protected Planet, *n.d*), was developed which is presented as an Excel tool to aid implementation and compilation of results.

Figure 31. The IUCN WCPA framework for assessing management effectives of protected areas (Courrau *et a*l., 2006).

Regular and repeated evaluation is essential for improving management, building trust with stakeholders and demonstrating the tangible impact of an MPA. A shared evaluation framework allows for the flexibility to adapt to local contexts whilst ensuring there is consistency in approach. To be truly effective, evaluation results should be clearly interpreted, communicated and actively used to guide decision-making and adaptive management.

Considerations for conducting METT assessments:

1. **Inclusive participation** – Engage a diverse group of stakeholders, including managers and community members. GEDSI principles should be enacted with intentional inclusion of women, persons with disabilities, and marginalised groups. Some capacity building is advisable, so all participants understand protected area management effectiveness (PAME). More on stakeholder engagement can be found in the dedicated stakeholder section.
2. **Use the tool as designed** – Follow the METT structure without altering questions or scoring. Complete all sections, including attributes and threats, to ensure a comprehensive assessment. The METT is however a generic tool designed for global use, and so adaptation can be undertaken by adding to the format e.g., by providing additional advice on interpretation for local conditions or by additional questions.
3. **Evidence-based scoring** – Base scores on documented evidence and collective knowledge, preferably quantitative data wherever available. Use comment boxes to justify scores and note sources.
4. **Transparent documentation** – Record who participated, how the assessment was conducted and any limitations. This supports repeatability and credibility.
5. **Repeat Assessments over time** – Plan to conduct METT periodically to track progress. Ideally the METT should be an automatic part of annual planning. Consistent methods help monitor trends and evaluate management responses.
6. **Plan the process before undertaking METT** – Review the METT before undertaking it and evaluate the information needed to complete it. Think about capacity and preassessment training needs, timing, scope and scale. METT cannot be completed in an hour and the first time completing it could take up to a day or two.
7. **Completing the METT is the first step of the assessment** - The implementation process should include adaptive management (e.g., a plan of action to implement results) and communication processes to ideally share results nationally and internationally.

METT is not the only tool that exists for evaluating MPA management effectiveness and others can be found in the Supplementary Material (Appendix 12).

6.2.3. Action 3: Compare monitoring results against baselines and goals.

Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time

The first monitoring survey of an MPA should establish a baseline condition for key habitats, species and oceanographic parameters. Given the resource intensive nature of comprehensive surveys, it is often not feasible to consistently monitor every aspect of an MPA or MPA network. In such cases, the use of established indicators (covered in Monitoring: Strategic Objective 1, Action 2) can provide an effective and efficient means of assessment, which can align with national and international obligations.

Subsequent monitoring surveys can then be compared to the baseline to detect changes over time and space. To effectively compare monitoring results against baselines and goals/objectives, it is important to follow a structure as illustrated in Figure 32. The first step is to understand the defined goals/objectives and what targets have been set as well as expected outcome. Once these goals/objectives are clear, a monitoring plan can be developed (see Monitoring section).

It is important to recognise that baseline conditions may not reflect a pristine or healthy state, especially in areas long impacted by human activities. This is known as the concept of 'shifting baselines' (Atmore, Aiken and Furni, 2021). Where historical data exists, it should be considered in order to provide context and improve interpretation.

Following the baseline survey, regular monitoring surveys should be conducted using the same indicators and methods to ensure the consistency and comparability that is required to detect change with roles clearly assigned to lead agencies.

Monitoring results can be compared in two ways:

- **Quantitatively**: Using statistical or threshold comparisons (e.g., changes in coral cover or fish biomass, or livelihood impacts and inclusive participation levels).
- **Qualitatively**: Using condition assessments or expert judgement to determine whether a feature is in a "favourable" or "unfavourable" condition.

These comparisons help determine whether the MPA is progressing toward its management and conservation goals/objectives. Findings should be reported against national and international targets and communicated clearly and inclusively to stakeholders, ensuring GEDSI considerations are recognised and addressed in reporting. Where necessary, management actions can be adapted, and the cycle continues.

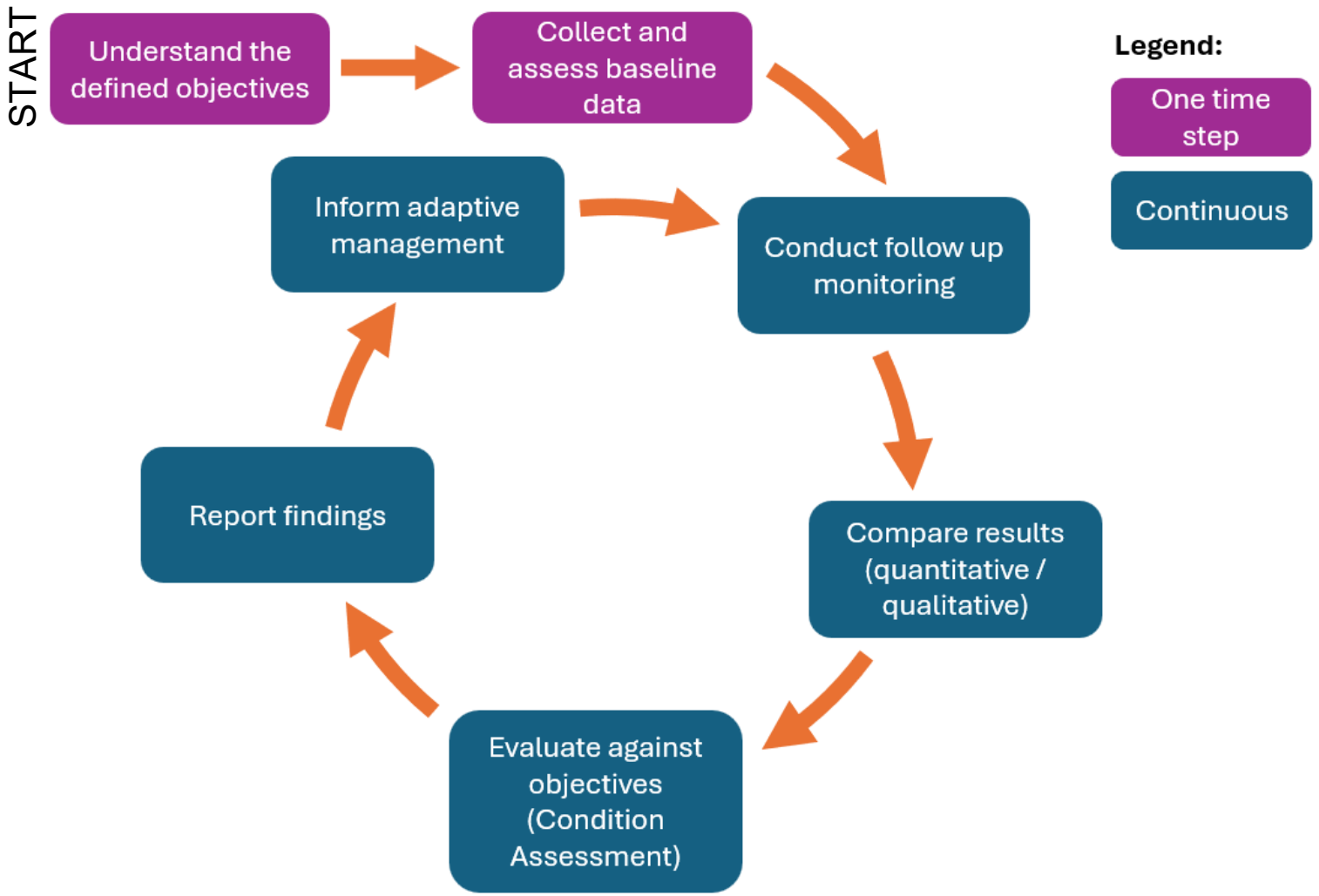


Figure 32. A simplified structured process of how to compare monitoring results against baselines and goals/objectives.

6.2.4. Action 4: Host multi-stakeholder workshops to present findings and gather feedback

Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

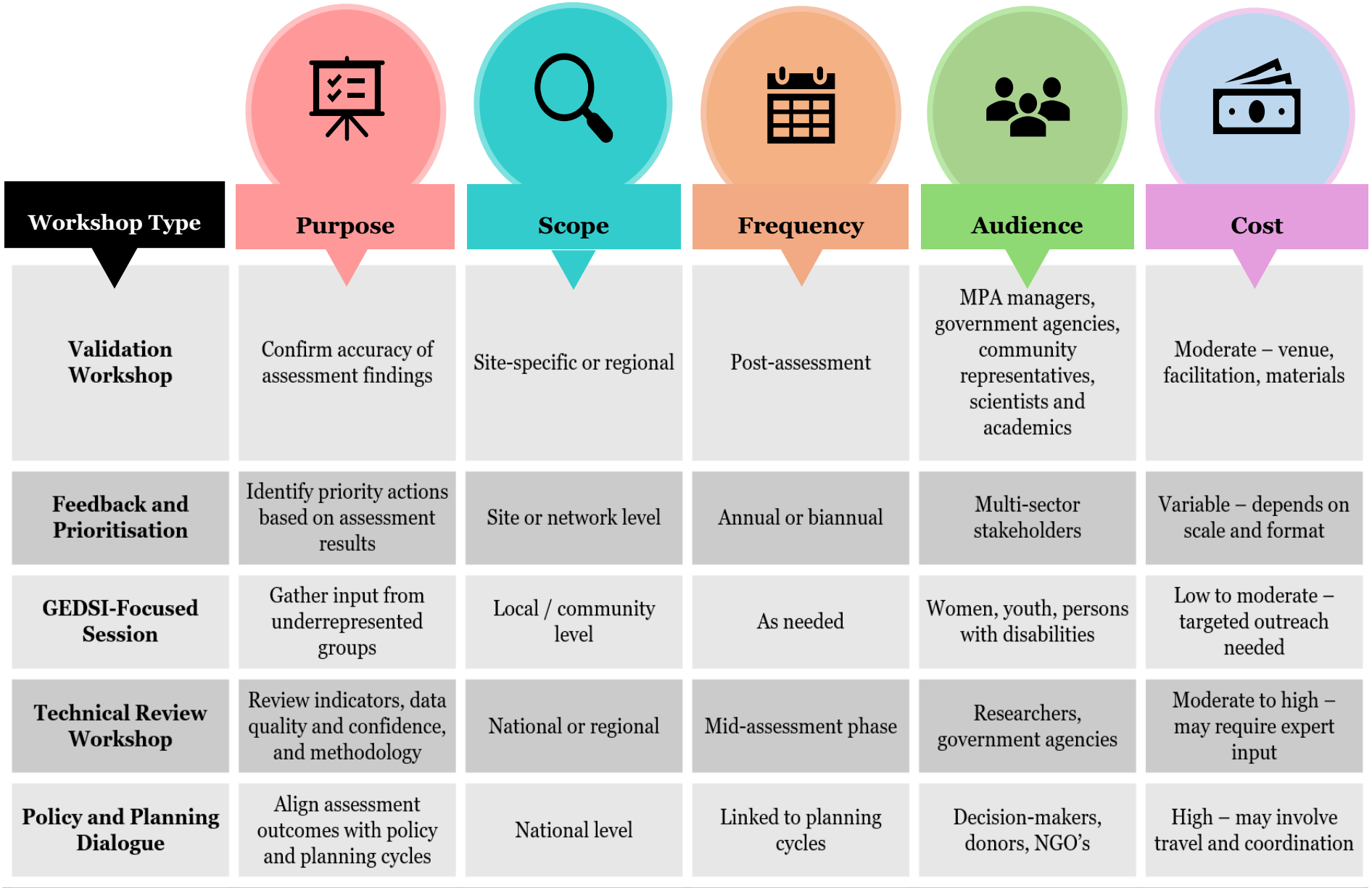
Presenting assessment findings to stakeholders is a critical step in ensuring transparency, building trust, and strengthening the relevance and legitimacy of MPA implementation.

Workshops provide a platform to:

- **Validate ecological and socioeconomic findings** with those directly affected by or involved in the MPA. This should include the equitable impacts on different social groups.
- **Incorporate local knowledge and lived experiences** into the interpretation of results, ensuring the voices of women, persons with disabilities, and marginalised communities are heard.
- **Strengthen legitimacy and trust** in the MPA process by demonstrating openness, inclusivity, and responsiveness.
- **Support adaptive management** by identifying gaps, unintended consequences, or emerging opportunities, including those affecting vulnerable groups.

Workshops also play a role in bridging the gap between technical assessments and community understanding. They can ensure that findings are communicated in accessible formats and that stakeholder feedback, including from diverse groups, is meaningfully integrated into future planning. While broader stakeholder engagement is covered in detail in the Stakeholder Engagement section, this Action focuses specifically on how workshops support MPA assessment. Incorporating stakeholder feedback helps ensure that assessment outcomes are grounded in local realities and can inform revisions to management strategies, monitoring plans, and governance arrangements.

Figure 33 outlines the types of workshops that may be used during the assessment phase, providing suggested goals/objectives, scope, frequency, audience and cost considerations.



Workshop Type	Purpose	Scope	Frequency	Audience	Cost
Validation Workshop	Confirm accuracy of assessment findings	Site-specific or regional	Post-assessment	MPA managers, government agencies, community representatives, scientists and academics	Moderate – venue, facilitation, materials
Feedback and Prioritisation	Identify priority actions based on assessment results	Site or network level	Annual or biannual	Multi-sector stakeholders	Variable – depends on scale and format
GEDSI-Focused Session	Gather input from underrepresented groups	Local / community level	As needed	Women, youth, persons with disabilities	Low to moderate – targeted outreach needed
Technical Review Workshop	Review indicators, data quality and confidence, and methodology	National or regional	Mid-assessment phase	Researchers, government agencies	Moderate to high – may require expert input
Policy and Planning Dialogue	Align assessment outcomes with policy and planning cycles	National level	Linked to planning cycles	Decision-makers, donors, NGO's	High – may involve travel and coordination

Figure 33. Overview of examples of workshops that could be organised during the assessment phase.

6.3. Strategic Objective 3: Use assessment findings to drive adaptive management

Successful MPAs require adaptive management approaches that respond to assessment findings and community expectations, ensuring inclusive communication and recognising GEDSI considerations. This Strategic Objective focuses on integrating assessment results into decision-making processes to modify the conservation goals or management approaches as needed. It establishes the feedback loop that completes the MPA implementation cycle (Figure 1), ensuring that management and monitoring activities adapt based on assessments of MPA effectiveness and equitable outcomes for all stakeholder groups.

This adaptive management approach acknowledges that MPA implementation is not a linear process but rather a continuous cycle of management, monitoring and assessment, with constant refinement. This Strategic Objective ensures that MPA implementation remains responsive to emerging challenges and opportunities, ultimately enhancing its effectiveness in achieving conservation goals.

To achieve this Strategic Objective, four Actions have been proposed with details provided below. These Actions include scales of governance across national and local levels and comprise of inputs from government agencies, local communities, traditional authorities, Metropolitan, Municipal, and District Assemblies (MMDAs), universities and research institutions and NGO's.

6.3.1. Action 1: Develop decision frameworks that link specific assessment outcomes to management responses

Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

This Action ensures that assessment findings, including GEDSI considerations, are not only systematically documented but are also actively integrated into decision-making processes, thereby informing site-level management, monitoring and broader MPA implementation strategies.

A decision framework provides a structured approach to selecting appropriate management responses based on specific conditions and stakeholder priorities. Frameworks typically organise information logically, linking inputs (e.g., monitoring data or stakeholder feedback) to outputs (e.g., management actions or policy adjustments). For example, a decision framework might specify that if habitat degradation is detected through ecological assessments, then restoration measures or restrictions on certain human activities should be prioritised. This could also include the promotion of nature-based solutions which can enhance resilience, deliver co-benefits for biodiversity and communities and support climate adaptation within MPAs. Frameworks should be developed collaboratively, involving local communities and scientists, ensuring representation of women, persons with disabilities, and marginalised groups.

A conceptual framework for environmental assessment and decision-making is the Driver-Pressure-State-Impact-Response (DPSIR) framework. It provides a structured way to understand and respond to changes by linking human activities (drivers) and their pressures to ecosystem states, impacts, and management responses. While not originally developed for MPAs, the framework has been adapted for marine conservation contexts (Ojeda-Martínez *et al.*, 2009; Kelble *et al.*, 2013). A simplified DPSIR model is shown in Figure 34, while an MPA-specific example can be found in the Supplementary Material (Appendix 13).

Condition Assessments can be used as part of a decision framework, as they follow a structured process to evaluate whether the features of an MPA are in a healthy or degraded state, based on the best available scientific data. When new information becomes available a reassessment may be needed. These updated assessments can lead to changes in management guidance, helping ensure that conservation efforts remain effective and responsive to current conditions. More information on Condition Assessments can be found in the Supplementary Material (Appendix 14).

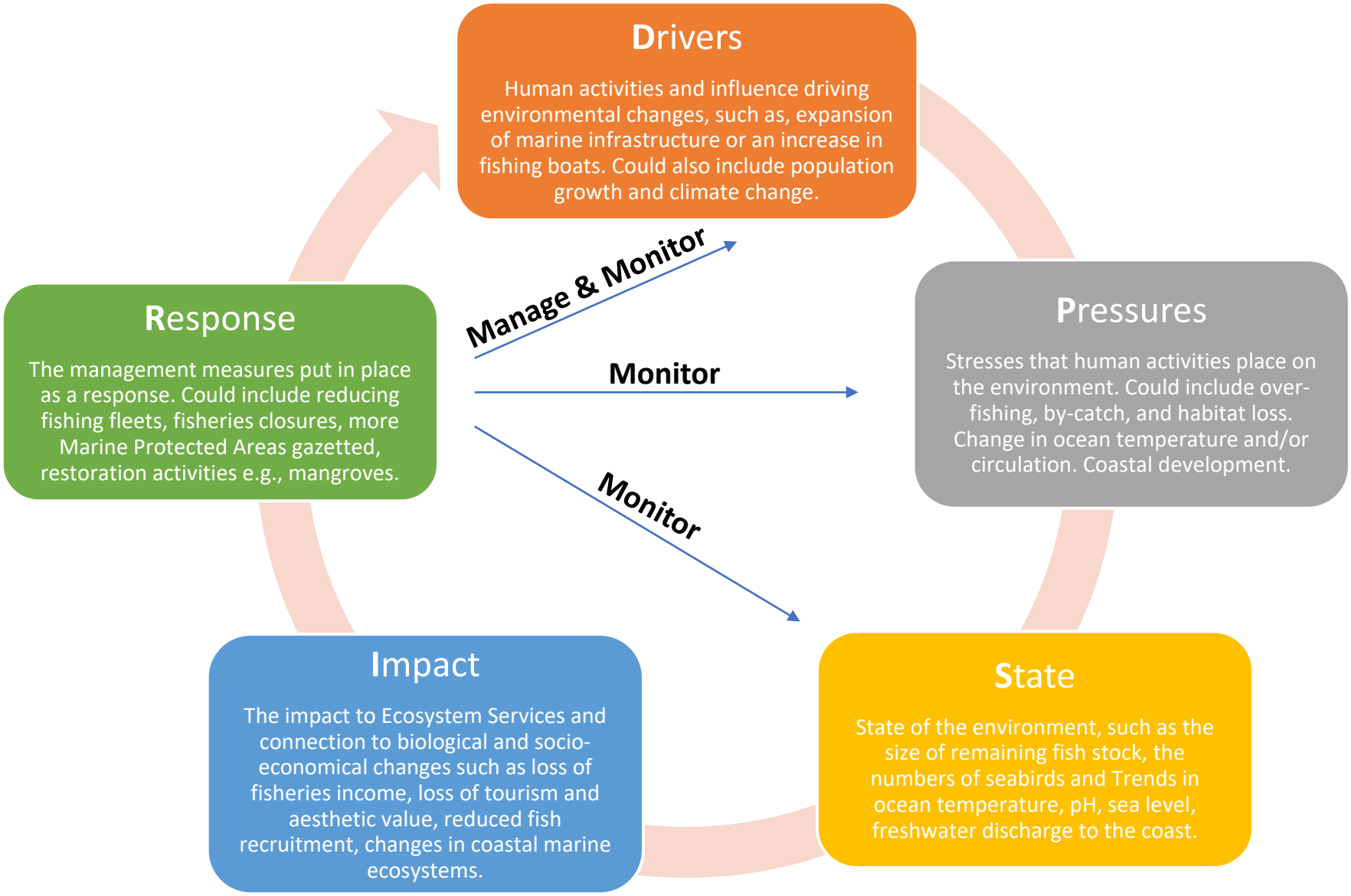


Figure 34. Driver-Pressure-State-Impact-Response (DPSIR) Framework with description and examples. Adapted from Kelble *et al*. 2013.

6.3.2. Action 2: Suggest management measures based on scientific evidence and community feedback

Mid-Term: Building on the foundation to deliver tangible outcomes while aligning short-term actions with long-term goals.

This Action builds on Action 1, which focuses on developing decision frameworks that link assessment outcomes to potential management responses. Action 2 applies these frameworks to interpret ecological and socioeconomic assessment results and suggest appropriate, context-specific management measures. While the development of management measures is addressed in Management: Strategic Objective 2, this step ensures that assessment findings, including GEDSI considerations, are translated into actionable insights that can inform future decisions and help achieve adaptive management.

Assessment data such as ecological trends, habitat condition or compliance levels, should be analysed alongside diverse and inclusive community feedback to identify areas where management may need to be strengthened, adapted or introduced. For example, declining fish biomass observed through monitoring, combined with fisher reports of reduced catches, may suggest the need to review gear restrictions or seasonal closures in the MPA.

This process should:

- **Highlight patterns or thresholds in assessment data** that indicate ecological or social impacts.
- **Incorporate diverse community perspectives** to validate findings and ensure relevance. Intentionally include women, persons with disabilities, and marginalised groups.
- **Suggest evidence-informed options for the management team** to consider (without prescribing specific actions).

These suggestions can then be fed into decision frameworks (see Assessment: Strategic Objective 3, Action 1) or management planning processes (see Management: Strategic Objective 2), ensuring that assessment is not a standalone activity but a driver of adaptive and inclusive MPA governance across all stages of the MPA implementation cycle (Figure 1).

6.3.3. Action 3: Document and share lessons learned across governance levels

Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

Action 3 builds on the adaptive management approach established in Actions 1 and 2 by ensuring that insights gained through assessment and implementation, including GEDSI considerations, are captured, shared and applied. Capturing and sharing lessons learned from successes and challenges, as well as broader insights, can strengthen governance, improve future decision-making and enhance the overall effectiveness of MPA implementation.

Lessons learned should be shared in accessible and inclusive formats that recognise diverse stakeholder needs such as:

- Technical reports and policy briefs
- Stakeholder workshops and peer learning exchanges that ensure representation of women, persons with disabilities, and marginalised groups.
- Online platforms and knowledge hubs
- Community feedback sessions

Sharing can promote consistency, reduce duplication of effort, and encourage the uptake of proven practices. It can also build institutional memory, support capacity development, and foster a culture of continuous learning.

Sharing lessons across governance levels (local, regional, and national) can help to ensure that community knowledge and field experience inform national strategies. This alignment can strengthen coordination and support inclusive and adaptive MPA governance.

Figure 35 summarises a 3-step process to document and share lessons learned across governance levels. This is not an exhaustive list and is highly simplified but demonstrates a basic framework.

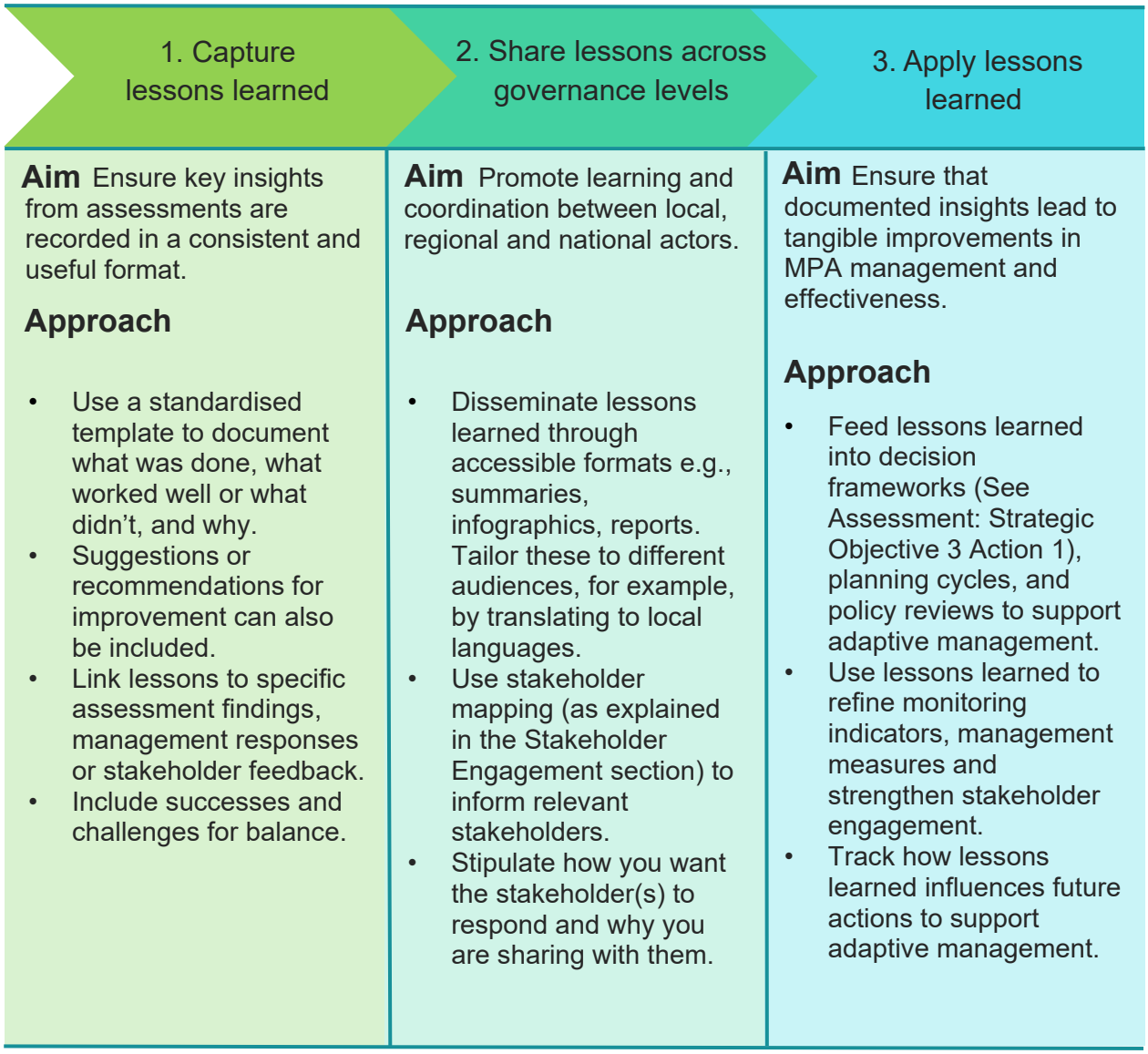


Figure 35. Summary of the three-step process to document and share lessons learned across governance levels.

6.3.4. Action 4: Revise MPA objectives and strategies based on assessment outcomes

Long-Term: Sustained efforts to ensure resilience and adaptability, focused on broader strategic goals and milestones over time.

This Action ensures that MPA goals/objectives and strategies remain relevant, achievable and responsive to changing ecological and social conditions. Assessment activities, such as monitoring, condition assessments, and stakeholder engagement, generate evidence that can reveal whether current conservation goals are being met, whether strategies are effective, and where adjustments may be required in monitoring and management, including equitable outcomes for all stakeholder groups.

Revising goals and strategies based on assessment outcomes is a core component of adaptive management and should feed into the MPA Implementation Cycle (Figure 1). It allows MPA managers and stakeholders to respond to new threats, emerging opportunities or shifts in ecosystem health. This process should be transparent, evidence based, and participatory, ensuring that revisions are informed by both scientific data and stakeholder input. It also helps to build trust and accountability across governance levels, reinforcing the role of assessment as a driver of continuous improvement and adaptive management.

The revision process should be:

- **Transparent**: with clear documentation of changes and rationale. A summary report that is validated by relevant stakeholders can work well for this.
- **Evidence-based**: drawing upon scientific data, monitoring results, and condition assessments.
- **Participatory**: involving relevant stakeholders to ensure legitimacy and shared ownership of decisions.

Key considerations should be:

- **Stakeholder involvement**: Revisions should include input from MPA managers, technical experts, and local communities, ensuring representation of women, persons with disabilities, and marginalised groups. Refer to the stakeholder engagement and GEDSI sections for guidance on inclusive participation.
- **Timing and frequency**: The Management Plan should outline a schedule for reviewing and revising goals/objectives and strategies. This schedule may itself be adjusted based on new insights or changing conditions.

The scope of revision could consider ecological indicators, social outcomes, governance effectiveness, and alignment with national and international targets. Figure 36 summarises a 3-step process to revise MPA goals/objectives and strategies based on assessment outcomes. This is not an exhaustive list and is highly simplified but demonstrates a basic framework.

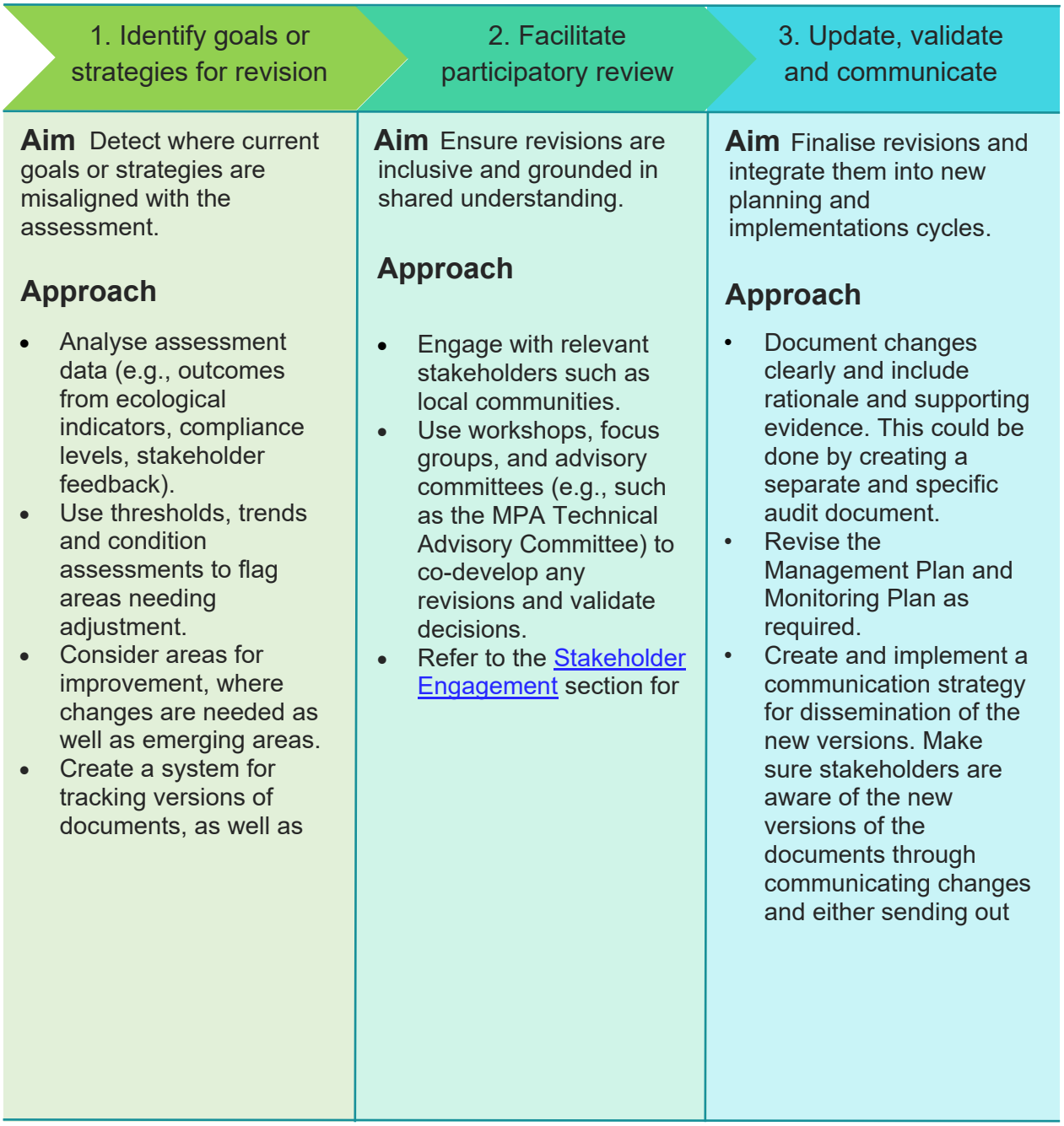


Figure 36. A simplified 3-step process to revise MPA goals/objectives and strategies based on assessment outcomes.

7. Cross Theme Considerations

This MPA Implementation Roadmap is structured around three core phases of MPA implementation, management, monitoring and assessment, each of which includes social, ecological, and governance considerations. However, some elements covered within these phases are foundational to effective and equitable marine conservation and warrant deeper, dedicated attention. This section draws out two such cross-cutting themes: Stakeholder Engagement and Gender Equality, Disability, and Social Inclusion (GEDSI).

Stakeholder Engagement is central to building legitimacy, furthering collaboration, and ensuring that diverse knowledge systems and interests are reflected in decision-making. It enhances the effectiveness and sustainability of MPAs by promoting transparency, trust, and shared ownership.

GEDSI, meanwhile, ensures that marine conservation efforts are inclusive and equitable. It recognises that people experience marine governance differently based on gender, ability, ethnicity, and socio-economic status. Integrating GEDSI principles helps to address systemic inequalities, improve participation, and ultimately strengthen conservation outcomes.

Together, these cross-cutting themes support the creation of MPAs that are not only ecologically sound but also socially just and resilient.

7.1. Stakeholder Engagement

Stakeholder engagement is a foundational element of conservation science and MPA governance. Its effective implementation is widely regarded as on the principal determinants of MPA success, alongside ensuring appropriate enforcement and monitoring and control and surveillance (Giakoumi *et al.*, 2018; Di Cintio *et al.*, 2023). To ensure long-term effectiveness and legitimacy, stakeholders should be meaningfully involved throughout all phases of the MPA process, from initial design through to management, monitoring and assessment. Their inclusion should be recognised not merely as beneficial, but as integral to the strategic planning and execution of marine conservation efforts (Di Cintio *et al.*, 2023). Engagement should also promote nature-based solutions, such as mangrove restoration and other ecosystem-based approaches, by involving local communities in planning and implementation. This ensures that conservation actions align with local priorities and deliver sustainable benefits. Further information on increasing MPA effectiveness through working with local communities is available in Guidelines developed in the Caribbean (Garaway and Esteban, 2003).

Identifying Decision-Making Through Engagement

Stakeholder engagement brings diverse perspectives, values, and expertise into the MPA process, helping to shape decisions that are ecologically sound and socially acceptable. Early involvement allows stakeholders to co-define objectives, identify trade-offs, and contribute local and traditional knowledge that complements scientific data. This improves the relevance and accuracy of spatial planning and management strategies.

Inclusive engagement also builds trust and transparency, enhancing the legitimacy of decisions and encouraging compliance. It supports adaptive management by enabling continuous feedback and learning, and helps align MPA goals with broader policy frameworks such as climate adaptation and sustainable development. Ultimately, stakeholder input strengthens conservation outcomes by ensuring decisions are informed, context-sensitive, and widely supported (McCAY and Jones, 2011; Sayce *et al.*, 2013; Voyer, Gladstone and Goodall, 2014; Christie *et al.*, 2017; Rasheed and Abdulla, 2020).

Identifying, Mapping and Prioritising Stakeholders

Stakeholders encompass individuals or groups affected by, interested in, or capable of influencing decisions related to marine ecosystem health and management. These may include local communities, NGOs, policy-makers, and industry representatives such as fisheries. While inclusive engagement is ideal, practical constraints often necessitate a targeted approach.

Stakeholder mapping involves identifying and categorising key stakeholders based on their level of interest, influence and participation. This process informs tailored engagement strategies throughout the MPA lifecycle and should be revisited regularly to reflect evolving contexts (Ocean Country Partnership Programme, 2022).

Once key stakeholders have been identified, they should be prioritised using tools such as an influence / interest matrix. This helps to determine when and how each group should be engages throughout the MPA process. GEDSI considerations must be integrated during stakeholder mapping to ensure inclusive and equitable participation (See GEDSI section below). The stakeholder mapping exercise undertaken as part of OCPP's Beyond MPA Designation in Ghana Project offers a useful reference for identifying relevant MPA stakeholders in Ghana (Ocean Country Partnership Programme, 2025d).

Tools and Methods for Engagement

A variety of tools and methods can be used to engage stakeholders depending on context and goals/objectives. This can include, but is not limited to:

- **Workshops**: Useful for gathering input, building consensus and co-development.
- **Community mapping**: Helps visualise resource use, cultural sites, and areas of concern.
- **Surveys and interviews**: can capture detailed perspectives and identify trends.
- **Participatory GIS**: Allows stakeholders to contribute to spatial data and visualise management scenarios. Tools such as SeaSketch (SeaSketch, *n.d.*) can be utilised. While this is primarily designed for Marine spatial Planning, it can and has been effectively used in MPA planning, particularly for stakeholder engagement involving spatial visualisation and collaborative scenario development.
- **Digital communications**: Online forums, apps, and social media can extend reach and facilitate ongoing dialogue. Consultations that gather responses can also be hosted online.
- **Local communication channels**: This includes using radio, community forums, and engagement through chiefs and local leaders, which are particularly effective for reaching a broader audience and ensuring more inclusive participation.
- **Empower local MPA Champions**: Identify and support individuals who commit to advocating for MPAs within their communities. Provide targeted capacity-building in facilitation and environmental advocacy, offer logistical support for outreach activities, and connect them with traditional leaders, women's groups, and youth associations to amplify messaging and promote grassroots ownerships.

Challenges and How to Address Them

Stakeholder engagement is important, but can be challenging, especially as certain stakeholder groups may have conflicting interests in marine space and resources.

- **Mistrust or historical conflicts**: This can be addressed through transparent communication and confidence-building measures.
- **Limited capacity and resources**: Provide training and support through sensitisation activities.

- **Power imbalance**: Use facilitation techniques to ensure equitable participation and avoid dominance by more powerful groups. Consider GEDSI when planning engagements.
- **Engagement fatigue**: Be mindful of stakeholder time and avoid over-consultation.
- **Language and cultural barriers**: Use local languages where appropriate as well as culturally appropriate methods and visual aids.
- **Women's competing responsibilities**: Schedule meetings at convenient times and provide support (e.g., childcare) to enable women balancing domestic and economic duties to participate

Monitoring and Evaluating Engagement

Monitoring stakeholder engagement helps to ensure that it remains effective, inclusive and responsive which ultimately builds trust with stakeholders and can improve conservation outcomes. Key steps include:

- **Developing indicators**: Track metrics such as participant diversity, satisfaction and changes in knowledge or attitudes.
- **Feedback mechanisms**: Gain feedback through surveys, interviews or informal conversations.
- **Documentation**: Maintain transparent records of meetings, decisions, and outcomes (e.g. post-workshop reports).
- **Adaptive management**: use evaluation findings to refine engagement strategies and incorporate lessons learned into future processes.

A range of resources can be found to support effective stakeholder engagement in MPA planning and management. The BiodivERsA Stakeholder Engagement Handbook (Durham *et al.*, 2014), while not specific to marine conservation, offers valuable guidance on engagement principles and methods. For more targeted advice, the Stakeholder Participation Toolkit for Identification, Designation and Management of Marine Protected Areas (RAC/SPA and IUCN-Med, 2013) provides practical insights tailored to the MPa context, though in less detail. Additionally, The U.S. Fish & Wildlife Service have collated a list of further Stakeholder Engagement Resources (U.S. Fish & Wildlife Service, *n.d.*) that may offer further support. These materials can help inform inclusive and transparent engagement processes that are central to successful implementation.

Monitoring and evaluating engagement also aligns with the actions under the Assessment Section, Strategic Objective 3: "Use assessment findings to drive adaptive management," as engagement evaluations provide critical feedback loops that inform and improve future strategies.

7.2. Gender Equality, Disability, and Social Inclusion (GEDSI)

What is GEDSI and Why It Matters

GEDSI refers to the deliberate integration of gender equality, disability rights, and broader social inclusion into policy and practice. In marine conservation and MPA implementation, GEDSI ensures that all individuals regardless of gender, ability, ethnicity, or socio-economic status have equitable access to decision-making, benefits and opportunities. Embedding GEDSI is important for social justice and for improving conservation outcomes. Inclusive participatory processes can build broader community support, improve compliance and integrate diverse knowledge systems into MPA management. In contrast, exclusion could lead to mistrust, conflict and ineffective implementation.

The Ghanaian Context

The OCPP Ghana Stakeholder Mapping and Gender Analysis report (Ocean Country Partnership Programme, 2025d) and explores how gender influences stakeholder roles and participation in marine resource management. It highlights a gendered division of labour, where men typically dominate fishing and decision-making, while women are more involved in post-harvest activities such as processing and marketing. The report identifies six key barriers to gender equality in marine governance:

- Entrenched patriarchal norms
- Cultural taboos
- Limited access to education and training,
- Time constraints due to domestic responsibilities,
- Lack of financial resources
- Social stigma against female leadership

Findings from the OCPP GEDSI Analysis: Ghana (Social Development Direct, 2025) further reinforce these challenges, showing that women, persons with disabilities, LGBTQI+ people, children and Indigenous groups remain among the most marginalised in coastal communities, with limited visibility in marine governance data and policy frameworks. The analysis also highlights several cross-cutting issues, including heightened risks of gender-based violence (GBV) associated with the fisheries trade and persistent exclusion from decision-making processes. These intersecting vulnerabilities underline the need for marine governance approaches that meaningfully incorporate the perspectives and priorities of all marginalised groups.

Together, these structural barriers significantly constrain women's ability to participate in MPA planning and implementation. Compounding this, evidence indicates that women and girls in coastal communities face elevated risks of GBV, driven by harmful gender

stereotypes, economic pressures and limited access to justice and support services (USAID, 2022). GBV is in itself a significant barrier to gender equality (USAID, 2022). It relates strongly to Sexual Exploitation, Harassment and Abuse (SEAH) which is discussed later in this section.

Incorporating GEDSI

Several core steps should be applied to ensure incorporation of GEDSI into marine conservation (Social Development Direct, 2026). These include, but are not limited to:

- **Conducting a baseline GEDSI Assessment** to identify key issues and opportunities for inclusion. Rapid field-based assessments, including interviews and focus groups with diverse women in fisheries, can reveal systemic exclusion, stratification within roles, and gaps in representation (Musah, Owusu and Schuttenberg, 2025). Such assessments should be participatory and context-specific to capture the lived experiences of underrepresented groups.
- **Undertaking inclusive stakeholder mapping** that integrates GEDSI considerations. Ensure that stakeholder mapping includes not only formal actors, but also informal groups such as head porters, descalers, and shellfish harvesters, who are frequently excluded from governance processes despite their critical roles in the fisheries value chain (Musah, Owusu and Schuttenberg, 2025).
- **Capacity building** to empower underrepresented groups to participate meaningfully such as skills training for women and youth. Associations such as National Fish Processors and Traders Association (NAFPTA) (NAFPTA, *n.d.*) and Development Action Association (DAA) (DAA, *n.d.*) have successfully delivered training in hygienic fish handling, financial literacy, and leadership development. These efforts have improved women's skills, visibility, and access to markets, demonstrating the value of targeted capacity-building initiatives.
- **Developing tailored engagement strategies** that reflect diverse needs, languages, and cultural contexts, this should include targeting migrant fishers. Mechanisms such as mentorship programs, and outreach to younger and informal workers are recommended to reduce barriers to participation and foster generational renewal in leadership (Musah, Owusu and Schuttenberg, 2025). Provision of disability support such as assistive devices during sensitisation events should also be considered.
- **Integrating policy and governance** to align the MPA processes with national and international GEDSI frameworks. The 2024 Fisheries Sector Gender Strategy and the establishment of a Gender Unit within the Fisheries Commission are key steps toward institutionalising gender equity through the inclusion of calls for quotas and mechanisms to ensure grassroots women’s representation in co-management platforms.
- **Allocating appropriate resource** that ensures equitable access to funding, training, and benefits for all stakeholder groups. Associations have facilitated access to

equipment, credit, and welfare support, but challenges remain around donor dependency and financial sustainability (Musah, Owusu and Schuttenberg, 2025).

- **Monitoring, reporting and communicating** the progress of GEDSI integration to share outcomes transparently and promote further inclusivity. Ensure clear communication between national and local levels of associations to build trust and encourage participation (Musah, Owusu and Schuttenberg, 2025).

To support more inclusive practice, the GEDSI Toolkit, developed by the OCPP, provides a practical, comprehensive resource for mainstreaming and monitoring GEDSI integration across all areas of the blue economy, including marine biodiversity, sustainable seafood and marine pollution (Social Develop Direct, 2026). Part A offers actionable guidance and tips for embedding GEDSI principles into programmes and projects, while Part B includes adaptable tools and templates designed to operationalise this guidance across diverse environmental and cultural contexts. The toolkit adopts an explicitly intersectional lens, recognising that individuals may experience multiple, overlapping forms of inequality based on characteristics such as gender, disability, age, race, ethnicity, religion, sexual orientation, migration or displacement status, or rurality. It is designed to support inclusive programming that meaningfully reflects the needs of historically marginalised groups, including women and girls, people with disabilities, LGBTQI+ people, Indigenous communities, older adults, children and youth, and remote or rural populations.

Complementing this, the Gender Equality, Disability and Social Inclusion Self-Assessment Tool (Water For Women, 2025) provides a structured approach for organisations to identify gaps and opportunities in their GEDSI integration. This self-assessment tool can be used at multiple stages of programme design and delivery, making it a valuable diagnostic and planning resource alongside the OCPP GEDSI toolkit.

GEDSI integration must go beyond technical fixes to address structural inequalities, power dynamics, and social norms. As recommended in Musah *et al.* (2025) it must also strengthen women's collective voice as not only a pathway to equity, but as a lever for systemic change and ecological sustainability.

Monitoring and Accountability

As highlighted in UK International Climate Finance (ICF): gender equality, disability and social inclusion guidance (Foreign, Commonwealth & Development Office, Department for Environment, Food & Rural Affairs and Department for Energy Security and Net Zero, 2025), the ambitions of an MPA process can be linked to three broad levels of GEDSI integration (Figure 37).

To ensure meaningful integration of GEDSI principles throughout the MPA process, the following mechanisms are recommended:

- **GEDSI Indicators**: develop clear, context specific indicators to track the progress across ambition levels.

- **Feedback loops**: establish inclusive mechanisms for stakeholders to provide ongoing input and influence decision-making.
- **Regular review and reporting**: Implement structured processes for assessing GEDSI outcomes and adapting strategies accordingly.
- **Strategic Partnerships**: Collaborate with gender rights groups, disability advocacy organisations, and other relevant actors to strengthen accountability and inclusion.

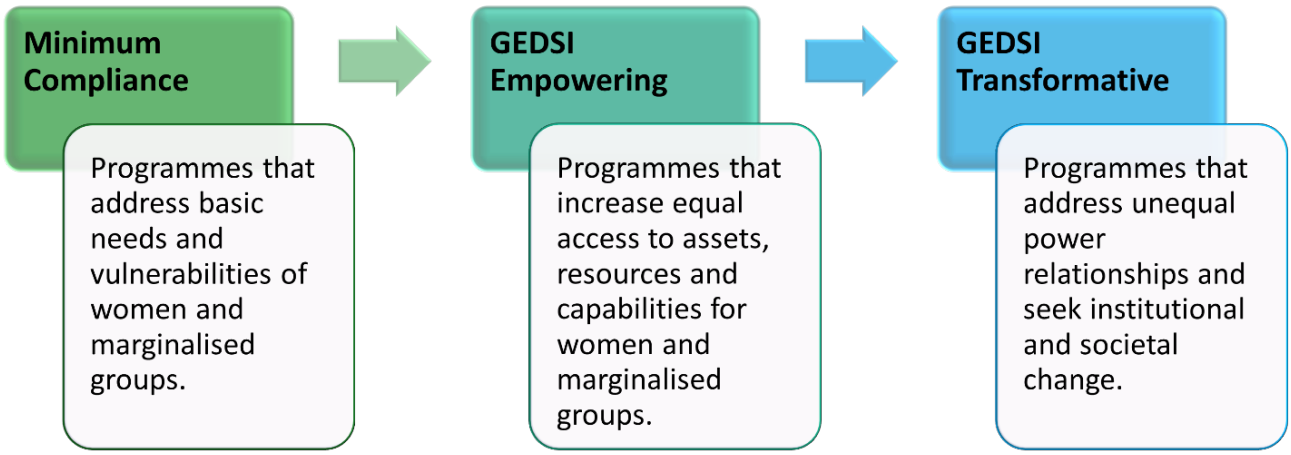


Figure 37. GEDSI Ambition Scale taken from the UK International Climate Finance (ICF): gender equality, disability and social inclusion guidance.

Considering Sexual Exploitation, Abuse and Harassment (SEAH) in MPA Implementation

Addressing Sexual Exploitation, Abuse, and Harassment (SEAH) within Marine Protected Area (MPA) activities in Ghana is essential for safeguarding both ecological integrity and human well-being. Evidence from the GBV Vulnerability Assessment in Fisheries Communities (USAID, 2022) demonstrates that harmful gender norms, economic marginalisation, and weak institutional responses exacerbate risks of gender-based violence and exploitation in coastal communities. These vulnerabilities are compounded by poverty, declining fish stocks, and informal transactional arrangements that place women and girls at risk of coercion and abuse in exchange for access to fish or economic opportunities. Such practices are often driven by structural inequalities and the absence of social safety nets, leaving women, particularly adolescent girls and informal workers, highly exposed to exploitation, including through the practice of Sex for Fish (USAID, 2022).

Similarly, the report Organizing Women in Ghana's Fisheries (Musah, Owusu and Schuttenberg, 2025) highlights systemic exclusion of women from decision-making and

the need for stronger accountability in fisheries governance, alongside precarious working conditions for informal labourers such as head porters and descalers. These groups often face unsafe environments, unpredictable earnings, and lack of social protection, making them vulnerable to abuse and harassment. Migrant status and youth further exacerbate these risks, as mobility and isolation reduce access to support networks and increase exposure to exploitative practices (USAID, 2022; Musah et al., 2025).

To mitigate SEAH risks in MPAs, mandatory social impact should be integrated into all project activities and management interventions. These assessments must identify vulnerabilities among women and informal workers, outline preventive measures, and embed monitoring mechanisms within operational plans. Responsibility for implementing these safeguards should rest jointly with those delivering the work, contractors, implementing partners, and field teams, supported by transparent reporting channels and zero-tolerance policies. Linking SEAH safeguards to Ghana's co-management structures and gender strategies will ensure that MPAs not only protect biodiversity but also uphold social justice and gender equity. Where social inequalities and harm persist, the goals of biodiversity conservation are often also hindered, a demonstration of the need for all pillars of sustainability to be met in order to achieve sustainable development.

Embedding these measures will help ensure that MPAs not only protect biodiversity but also uphold social justice and gender equity, reducing risks of exploitation and promoting inclusive, sustainable ocean governance (USAID, 2022; Musah et al., 2025).

7.3. Alternative Livelihoods

MPAs are an important spatial management tool for restoring marine ecosystems and ensuring long-term sustainability of fisheries. They provide sustainable pathways for communities whose economic and social wellbeing depend heavily on marine resources. However, for coastal communities in Ghana and across West Africa, many of whom rely heavily on small-scale fishing, MPAs can lead to reduced access to traditional fishing grounds and income loss. To ensure that conservation efforts are socially equitable and economically viable, it is essential to develop comprehensive mitigation strategies that include livelihood diversification, alternative income sources, and social safety nets (Chukwuka, Adegboyegun and Adeogun, 2025).

The concept of 'Alternative Livelihoods' refers to interventions that aim to develop and support sustainable, socially and economically competent, gender-responsive, and inclusive livelihood opportunities that enhance household resilience, promote conservation-compatible income sources, and strengthen community ownership of MPA goals/objectives.

Approach

- **Participatory Design and Ownership:** Work with communities to identify feasible livelihood options based on local realities, ecological suitability, and market potential. Livelihood planning must involve women, youth, PWDs, migrant fishers, and other vulnerable groups to ensure equity in benefits and decision-making.
- **Viable Livelihoods**: Promote livelihood options that are economically, socially and environmentally sustainable. Priority areas include aquaculture, mangrove restoration, eco-tourism, artisanal crafts, value-added fish processing, and non-fish-based trades (e.g., carpentry, masonry, and tile-laying).
- **Capacity Building:** Provide targeted training on vocational skills, entrepreneurship, and financial literacy, with attention to the unique barriers faced by women, PWDs and youth. Align capacity-building programs with government and NGO initiatives. Training schedules should consider women's caregiving and market responsibilities to enable full participation.
- **Safeguarding and GEDSI Integration:** Ensure that all livelihood programs integrate safeguarding and GEDSI standards that prevent exploitation, promote fair access, and protect participants from gender-based violence and other abuses. Community focal points should monitor implementation, and report concerns through established safeguarding channels. Self-empowerment and resilience-building trainings should also be incorporated into livelihood initiatives to strengthen participants' confidence and awareness of rights.
- **Financial Linkages:** Strengthen connections with microfinance institutions, cooperatives, and private sector actors to enhance value chains and ensure sustainability. Explore social protection mechanisms such as revolving funds, and village savings and loans association (VSLAs) for economically vulnerable households.

Potential Alternative Livelihood Options in Ghana

In Ghana, several alternative livelihoods have strong potential to support coastal communities affected by MPA restrictions. When well-designed and supported, these options can reduce pressure on marine ecosystems while enhancing economic resilience and social inclusion:

Aquaculture

Aquaculture presents a promising transition for fishers, as it builds on existing skills while responding to the growing domestic demand for protein. Despite its potential, challenges such as high start-up costs, limited technical expertise, and disease management must be addressed. To overcome these barriers, targeted training, improved access to finance, and the promotion of cooperative models should be prioritised to reduce individual risk and enhance economies of scale. As an example, Tilapia cage aquaculture on Lake Volta has emerged as a viable alternative livelihood for fishers in Ghana, offering income and food security while requiring careful regulation, training, and environmental safeguards to ensure sustainability and resilience within MPA-affected communities (Ragasa *et al.*, 2022).

Eco-tourism and Cultural Tourism

Eco-tourism and cultural tourism offer promising alternative livelihoods for coastal communities in Ghana by leveraging biodiversity and heritage to generate income and promote conservation. However, increased tourism can raise living costs, risking displacement and inequality. Community concerns, such as fears of outsiders from Accra or abroad driving gentrification and pushing out locals, underscore the need for safeguards. Realistically, a balance is needed between enabling locals to capitalise on MPA-related eco-tourism and welcoming non-local investment that supports infrastructure and growth. To ensure benefits are inclusive and sustainable, initiatives must be community-led, supported by training, infrastructure, and governance frameworks, and include safeguards such as affordable housing and benefit-sharing mechanisms. Eco-tourism development in Ghana's coastal communities such as Ada and Keta has shown potential to generate income and promote conservation, but also highlights risks of rising living costs and social exclusion, underscoring the need for inclusive planning, benefit-sharing, and safeguards for local communities to protect local livelihoods (Ofori, 2021).

Small-Scale Processing and Value Addition

Small-scale processing and value addition, such as fish smoking and cassava processing, can boost income and create jobs for women and youth in coastal communities. These activities help retain more value locally and reduce post-harvest losses. However, challenges include limited access to equipment, hygiene compliance, and market connectivity. Addressing these requires targeted training, shared facilities, and stronger links to local and regional markets. With the right support, value addition can become a sustainable livelihood option that complements MPA goals and strengthens community resilience. As an example, value addition in small-scale fisheries, such as fish smoking and trading, has provided an

important alternative livelihood for coastal communities in Ghana, particularly for women, in response to the pressures of industrialisation and overfishing (Ayilu *et al.*, 2023).

Other potential alternative livelihoods in Ghana include handicrafts and artisanal production. These options offer long-term employment and cultural value but face challenges like limited market access, competition from mass-produced goods, and the need for technical training and institutional support. While less researched than aquaculture, eco-tourism, and value addition, national strategies such as the Green Jobs Strategy (Ministry of Employment and Labour Relations, 2021) and the National Alternative Employment and Livelihood Programme (NAELP) (NAELP, 2020) are beginning to explore their potential.

Mitigation Measures for MPA Transition

To reduce socio-economic vulnerability during the transition to MPA implementation, targeted mitigation measures are essential. Compensation schemes, such as cash transfers and subsidies, can buffer short-term income loss, especially for fishers and processors affected by access restrictions. Ghana's Livelihood Empowerment Against Poverty (LEAP) program (Ministry of Gender, Children and Social Protection, *n.d.*), for example, currently supports over 350,000 households with direct cash transfers to improve consumption and resilience. Microfinance and insurance schemes can enable entrepreneurship and reduce risk, particularly for women and youth entering new livelihood sectors. Public employment programs, such as Labour-Intensive Public Works (LIPW) (The Government of Ghana, *n.d.a*), have provided seasonal income and built community assets, including in conservation and restoration activities.

Ongoing engagement with local communities, both to gather input and provide timely updates, is critical for sustaining trust and confidence in MPA implementation. Further guidance on effective approaches can be found in the Stakeholder Engagement section.

Enabling Conditions for Long-Term Success

To achieve lasting impact, communities must be engaged early and consistently in the design and implementation of alternative livelihoods. Capacity building, especially for women and youth, should be prioritised to support uptake and ensure inclusive participation. Livelihoods must be aligned with MPA conservation goals and national development frameworks, such as the Ghana Productive Safety Net Project (The Government of Ghana, *n.d.b*), to maximise coherence and impact. Expected results include:

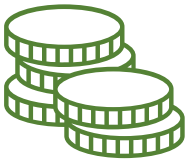
- Diversified and sustainable livelihood options that reduce pressure on marine ecosystems.
- Improved economic security for vulnerable groups, including women, youth, PWDs, and migrant fishers.
- Strengthened social cohesion, community ownership, and trust in MPA management.
- Reduced economic vulnerability and overreliance on extractive fishing.
- Clear alignment between biodiversity protection and socio-economic development.

7.4. Sustainable Finance

Establishing and maintaining effective MPAs requires sustained access to financial resources. For MPAs to deliver long-term and meaningful conservation outcomes, they must be adequately managed, monitored and assessed, all of which depend on reliable and sustainable financing mechanisms. It is critical to embed sustainable financing into or alongside management planning. A comprehensive approach should be taken to consider key dimensions of sustainable financing (Schramm, 2025):

Strategic Financial Planning

A dedicated financial strategy should be developed in parallel with MPA management and monitoring plans to ensure alignment and long-term viability. This strategy should clearly identify funding needs, prioritise expenditures, and assess potential gaps, while also evaluating the reliability, diversity, and risk of different funding sources. Conducting a financial needs assessment is a critical first step, helping to estimate the full cost of effective MPA management, including staffing, enforcement, monitoring, and community engagement, and guiding the selection of appropriate financing mechanisms. Integrating financial planning early in the process strengthens resilience and supports adaptive management over time.



Revenue Generation and Management

To sustain the existence of an MPA, it may require 'blended finance', where an MPA requires a combination of funding mechanisms such as public funding, self-generated revenues and market-based instruments to achieve financial sustainability (Schramm, 2025). As an example, Belize has successfully implemented a blended finance model for its Turneffe Atoll MPAs (WWF, 2022) by combining government support, tourism revenues, and international conservation funding.

Top funding priorities for MPAs have been found to include personnel, scientific monitoring, facilities, equipment, fuel and outreach and education activities (WWF-UK, 2018; Bohorquez *et al.*, 2023). Different mechanisms for sustainable finance are described in Table 1. Please note this is not exhaustive and the reliability of funding can vary widely which is something that should be considered. For example, tourism revenue can vary in reliability as tourism can be impacted by variables such as seasonality, socioeconomic events and geopolitics. Government funding as part of a budget can be considered as reliable but is still at the whim of political priorities from the sitting government.

Table 1. A combination of financial mechanisms that could be considered to support sustainable financing. Adapted from the Reef Resilience Network (Reef Resilience Network, 2012).

Traditional funding sources		
Government sources • Direct allocation • Bonds and taxes • Lotteries, stamps and license plates • Concessions • Real estate tax surcharges • Debt relief • National, state and local development bank's loans	**Grant revenue** • Bilateral and multilateral donors • Private foundations • Non-governmental organisations • Conservation trust funds	**Tourism revenue** • Protected area entry fees • Diving or yachting fees • Airport passenger or cruise ship fees • Hotel taxes • Voluntary donations • Merchandise sales • Concessions
Fishing revenue • License and permit sales • Quotas • Catch levies • Fines	**Energy and mining** • Oil spill funds • Right of way pipelines • Royalties	**Private sector contributions** • Corporate donations • Local business donations
Innovative approaches		
Private sector investments promoting biodiversity conservation	National conservation trusts linked to e.g., initiatives such as the Caribbean Biodiversity Fund	Payment for ecosystem services – incentives offered to landowners in exchange for managing their natural resources to provide ecological service (e.g., watershed protection, erosion control.)
Debt for nature swaps - debt owed by a developing country can be renegotiated with creditors to fund nature conservation activities. Capital can be applied through trust funds or foundations.	Carbon offsets	Biodiversity prospecting
Fish levies through eco-labelling or certification	Fishing access payments	Alternative livelihoods that enhance local tax revenue
Examples		
Merchandise stores at the Roatan Marine Park, Honduras	Diver tags at the Bonaire Marine Park	Cruise ship passenger head tax in the Cozumel Reefs National Marine Park, Mexico

Financial Administration and Governance

Transparent and accountable financial management is essential. Key considerations and steps towards this include:

- Developing a MPA finance strategy that assesses the reliability and risk of funding sources.
- Standardising accounting and reporting across MPAs to improve transparency and enable efficient fund allocation. There should be a protocol laying out clear, consistent accounting and reporting practices across the MPA(s). Consistency of reporting methods across MPAs was shown to be critical for attracting and efficiently allocating funds, especially when emergency funds were needed on short notice (Bohorquez *et al.*, 2023).
- Building capacity through targeted training among MPA staff and stakeholders in relation to financial planning and administration.
- Establishing emergency funding protocols for rapid response to ecological or operational crises.
- Integrating financial performance indicators into MPA monitoring frameworks.
- Ensuring equitable benefit-sharing and community involvement in financial decision-making.
- Reviewing legal and policy frameworks to enable financing mechanisms.

Strategic Support Organisations and Tools

Sustainable Finance in marine conservation is an ever-growing area. Several organisations aim to promote, support and resource sustainable financing. These organisations provide useful guidance and case studies in relation to sustainable finance in marine conservation:

- Blue Alliance – Marine Protected Areas: Supports governments in developing reef-positive businesses to close the marine conservation financing gap (Blue Alliance, *n.d.*).
- Global fund for Coral Reefs - Mobilises blended finance for coral reef resilience and local economies, aligned with SDG 14 and the Global Biodiversity Framework (GFCR, *n.d.*).
- Global Ocean Accounts Partnership (GOAP) - Supports countries to measure and manage ocean-based sustainable development beyond Gross Domestic Product. GOAP currently supports pilot ocean accounting projects in Kenya, Mozambique, Madagascar and Ghana (The Global Ocean Accounts Partnership, 2020).
- Western Indian Ocean MPA Management Network – MPA Finance Toolkit - Offers a comprehensive MPA Finance Toolkit designed for MPA managers, with templates, case studies, and planning guides covering various aspects of financial management such as funding mechanisms, revenue generation, budget planning, and stakeholder engagement (WIOMPAN, 2024).
- BLUESEEDS – Guide on financing mechanisms for MPAs - Provides practical guides for MPA managers to consolidate financial strategies and implement management plans (BlueSeeds, *n.d.*).

8. References

African Union Commission (2015) *Agenda 2063: the Africa we want*. Addis Ababa: African Union Commission. Available at: https://au.int/sites/default/files/documents/36204-doc-agenda2063_popular_version_en.pdf.

Andrachuk, M. *et al.* (2025) *Guidebook for assessing and improving social equity in marine conservation*. IUCN. Available at: https://portals.iucn.org/library/node/52587 (Accessed: 3 November 2025).

Asiedu, B. *et al.* (2021) 'A fishery in distress: An analysis of the small pelagic fishery of Ghana', *Marine Policy*, 129, p. 104500. Available at: https://doi.org/10.1016/j.marpol.2021.104500.

Ateweberhan, M. *et al.* (2012) *The Nearshore Rocky Reefs of Western Ghana, West Africa: Baseline ecological research surveys*. London, United Kingdom: Blue Ventures Conservation, p. 104.

Atmore, L.M., Aiken, M. and Furni, F. (2021) 'Shifting Baselines to Thresholds: Reframing Exploitation in the Marine Environment', *Frontiers in Marine Science*, 8. Available at: https://doi.org/10.3389/fmars.2021.742188.

AU-IBAR (2019) *Africa Blue Economy Strategy*. Nairobi, Kenya. Available at: https://faolex.fao.org/docs/pdf/au228027.pdf.

Ayilu, R.K. *et al.* (2023) 'Blue economy: industrialisation and coastal fishing livelihoods in Ghana', *Reviews in Fish Biology and Fisheries*, pp. 1–18. Available at: https://doi.org/10.1007/s11160-022-09749-0.

Blue Alliance (n.d.) *Explore our MPAs*, *Blue Alliance*. Available at: https://bluealliance.earth/explore-our-mpas/ (Accessed: 25 November 2025).

BlueSeeds (n.d.) *Guide on financing mechanisms for MPAs*. Available at: https://blueseeds.org/en/outils/guide-financing-mechanisms-marine-protected-areas/ (Accessed: 25 November 2025).

Bohorquez, J.J. *et al.* (2023) 'A novel framework to evaluate the financial sustainability of marine protected areas', *Biological Conservation*, 283, p. 110083. Available at: https://doi.org/10.1016/j.biocon.2023.110083.

British Ecological Society (2014) *A Guide to Data Management in Ecology and Evolution*. Available at: https://www.britishecologicalsociety.org/wp-content/uploads/Publ_Data-Management-Booklet.pdf.

Bryce, K. and Hunter, K.L. (2024) 'Enhancing climate change planning and adaptive management in marine protected areas through targets, thresholds, and social-ecological objectives', *Frontiers in Marine Science*, 11. Available at: https://doi.org/10.3389/fmars.2024.1339871.

Cavalcante de Oliveira Júnior, J.G. *et al.* (2021) 'Linking social organization, attitudes, and stakeholder empowerment in MPA governance', *Marine Policy*, 130, p. 104543. Available at: https://doi.org/10.1016/j.marpol.2021.104543.

Christie, P. *et al.* (2017) ‘Why people matter in ocean governance: Incorporating human dimensions into large-scale marine protected areas’, *Marine Policy*, 84, pp. 273–284. Available at: https://doi.org/10.1016/j.marpol.2017.08.002.

Chukwuka, A.V., Adegboyegun, A.D. and Adeogun, A.O. (2025c) ‘Marine protected areas of Africa: current challenges and future opportunities in conservation’, *Aquatic Sciences*, 87(3), p. 61. Available at: https://doi.org/10.1007/s00027-025-01188-w.

Coastal Resources Center and Friends of the Nation (2011) *Assessment of Critical Coastal Habitats of the Western Region, Ghana.* Narragansett, RI: Coastal Resources Center, Graduate School of Oceanography, University of Rhode Island.: ntegrated Coastal and Fisheries Governance Initiative for the Western Region of Ghana, p. 132.

Convention on Biological Diversity (2022) ‘Decision 15/4: Kunming–Montreal Global Biodiversity Framework (CBD/COP/DEC/15/4)’, in *Fifteenth meeting – Part II*. *Conference of the Parties to the Convention on Biological Diversity*, Montreal, Canada, p. 15.

Convention on Biological Diversity (2024) *The Convention on Biological Diversity*. Available at: https://www.cbd.int/intro (Accessed: 25 November 2025).

Courrau, J. *et al.* (2006) *Evaluating effectiveness: a framework for assessing management effectiveness of protected areas*. IUCN. Available at: https://portals.iucn.org/library/node/8932 (Accessed: 31 July 2025).

DAA (n.d.) *Development Action Association*, *https://daawomen.org/*. Available at: https://daawomen.org/ (Accessed: 25 November 2025).

Day, J.C. (2022) ‘Key principles for effective marine governance, including lessons learned after decades of adaptive management in the Great Barrier Reef’, *Frontiers in Marine Science*, 9. Available at: https://doi.org/10.3389/fmars.2022.972228.

Di Cintio, A. *et al.* (2023) ‘Avoiding “Paper Parks”: A Global Literature Review on Socioeconomic Factors Underpinning the Effectiveness of Marine Protected Areas’, *Sustainability*, 15(5), p. 4464. Available at: https://doi.org/10.3390/su15054464.

Di Franco, A. *et al.* (2020) ‘Improving marine protected area governance through collaboration and co-production’, *Journal of Environmental Management*, 269, p. 110757. Available at: https://doi.org/10.1016/j.jenvman.2020.110757.

Durham, E. *et al.* (2014) ‘The BiodivERsA Stakeholder Engagement Handbook’. BiodivERsA. Available at: https://www.biodiversa.eu/wp-content/uploads/2022/12/stakeholder-engagement-handbook.pdf.

Eli, A., Raimi, M. and Amachree, D. (2025) *Evaluating the Role of Marine Protected Areas (MPAs) in Enhancing Biodiversity and Supporting Sustainable Economic Growth in the Blue Economy*. Available at: https://doi.org/10.2196/preprints.74970.

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

Eriksen, S.S. (2018) ‘The Fisheries Sector in Ghana: A Political Economy Analysis’. Available at:

https://www.academia.edu/70389158/The_Fisheries_Sector_in_Ghana_A_Political_Economy_Analysis (Accessed: 6 November 2025).

FAO (1995) *Code of Conduct for Responsible Fisheries*. Rome: FAO, p. 41. Available at: https://openknowledge.fao.org/server/api/core/bitstreams/23312a48-cb99-4abf-b7e9-4f2f38604695/content.

Foreign, Commonwealth & Development Office, Department for Environment, Food & Rural Affairs and Department for Energy Security and Net Zero (2025) 'UK International Climate Finance (ICF) gender equality, disability and social inclusion guidance'. Available at: https://www.gov.uk/government/publications/uk-international-climate-finance-icf-gender-equality-disability-and-social-inclusion-guidance.

Fromont, C. *et al.* (2024) 'Long-term socio-environmental monitoring of protected areas is a persistent weak point in developing countries: Literature review and recommendations', *Biological Conservation*, 290, p. 110434. Available at: https://doi.org/10.1016/j.biocon.2023.110434.

Garaway, C. and Esteban, N. (2003) 'Increasing MPA effectiveness through working with local communities. Guidelines for the Caribbean'. MRAG Ltd. Available at: https://assets.publishing.service.gov.uk/media/57a08d0bed915d3cfd001794/R7976Guide.pdf.

GFCR (n.d.) *Global Fund for Coral Reefs*. Available at: https://globalfundcoralreefs.org/about/ (Accessed: 25 November 2025).

GFRA (2024) *Fisheries Co-Management Training Report*. Available at: https://henmpoano.org/wp-content/uploads/2025/03/GFRA-Fisheries-Co-management-Report_June-2024.pdf.

Giakoumi, S. *et al.* (2018) 'Revisiting "Success" and "Failure" of Marine Protected Areas: A Conservation Scientist Perspective', *Frontiers in Marine Science*, 5. Available at: https://doi.org/10.3389/fmars.2018.00223.

Grorud-Colvert, K., Sullivan-Stack, J., Roberts, C., Constant, V., Horta E Costa, B., *et al.* (2021) 'The MPA Guide: A framework to achieve global goals for the ocean', *Science*, 373(6560), p. eabf0861. Available at: https://doi.org/10.1126/science.abf0861.

Grorud-Colvert, K., Sullivan-Stack, J., Roberts, C., Constant, V., Horta e Costa, B., *et al.* (2021) 'The MPA Guide: A framework to achieve global goals for the ocean', *Science*, 373(6560), p. eabf0861. Available at: https://doi.org/10.1126/science.abf0861.

Jentoft, S., van Son, T.C. and Bjørkan, M. (2007) 'Marine Protected Areas: A Governance System Analysis', *Human Ecology*, 35(5), pp. 611–622. Available at: https://doi.org/10.1007/s10745-007-9125-6.

JNCC (2016) 'JNCC's Approach to Improving Conservation Advice for UK Offshore Marine Protected Areas'.

JNCC (2022) *Evidence Quality Assurance (EQA) Policy*. Policies and Procedures. Available at: https://data.jncc.gov.uk/data/5f7aa652-69b5-48ab-8239-dbccc5333d09/jncc-eqa-version-17-2022-08.pdf (Accessed: 25 November 2025).

JNCC (2024) *Marine Protected Area Mapper | Advisor to Government on Nature Conservation | JNCC*. Available at: https://jncc.gov.uk/our-work/marine-protected-area-mapper/ (Accessed: 25 November 2025).

Karakara, A.A.-W., Peprah, J.A. and Dasmani, I. (2024) 'Marine biodiversity conservation: The cultural aspect of marine protected areas in Ghana', *Aquatic Conservation: Marine and Freshwater Ecosystems*, 34(4), p. e4138. Available at: https://doi.org/10.1002/aqc.4138.

Kelble, C.R. *et al.* (2013) 'The EBM-DPSER Conceptual Model: Integrating Ecosystem Services into the DPSIR Framework', *PLoS ONE*. Edited by M.G. Chapman, 8(8), p. e70766. Available at: https://doi.org/10.1371/journal.pone.0070766.

Kelleher, G. (1999) *Guidelines for Marine Protected Areas*. IUCN, p. 107pp.

Koomson, E. (2022) 'Developing A Comprehensive National Integrated Maritime Strategy – CEMLAWS Africa'. Available at: https://cemlawsafrica.org/developing-a-comprehensive-national-integrated-maritime-strategy/ (Accessed: 25 November 2025).

Long, R.D., Charles, A. and Stephenson, R.L. (2015) 'Key principles of marine ecosystem-based management', *Marine Policy*, 57, pp. 53–60. Available at: https://doi.org/10.1016/j.marpol.2015.01.013.

McCAY, B.J. and Jones, P.J.S. (2011) 'Marine Protected Areas and the Governance of Marine Ecosystems and Fisheries', *Conservation Biology*, 25(6), pp. 1130–1133. Available at: https://doi.org/10.1111/j.1523-1739.2011.01771.x.

Ministry of Employment and Labour Relations (2021) 'National Green Jobs Strategy 2021-2025'. Available at: https://www.melr.gov.gh/files/publications/National_Green_Jobs_Strategy_%282021-2025%29.pdf.

Ministry of Gender, Children and Social Protection (n.d.) *Livelihood Empowerment Against Poverty (LEAP): Eradicating Poverty in Ghana*. Available at: https://leap.mogcsp.gov.gh/ (Accessed: 25 November 2025).

Mizrahi, M. *et al.* (2019) 'A Systematic Review of the Socioeconomic Factors that Influence How Marine Protected Areas Impact on Ecosystems and Livelihoods', *Society & Natural Resources*, 32(1), pp. 4–20. Available at: https://doi.org/10.1080/08941920.2018.1489568.

MoFA (2020) *Co-Management Policy for the Fisheries Sector, Government of Ghana*. Accra, Ghana: Ministry of Fisheries and Aquaculture Development, p. 41.

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

Murray, C.C. *et al.* (2025) 'Safeguarding marine protected areas from cumulative effects: a review of methods, best practices, and applications', *Environmental Management*, 75(11), pp. 3010–3024. Available at: https://doi.org/10.1007/s00267-025-02146-w.

Musah, B.S., Owusu, D. and Schuttenberg, H.Z. (2025) *Organizing Women in Ghana's Fisheries: Understanding the Capacity of Ghanaian Women's Organizations to Contribute*

to Fisheries Management Solutions for Human Wellbeing and Ecological Sustainability. Fisheries Governance Project, p. 39.

NAELP (2020) *The National Alternative Employment and Livelihood Programme*. Available at: https://naelp.gov.gh/about/ (Accessed: 25 November 2025).

NAFPTA (n.d.) *National Fish Processors & Trade Association*. Available at: https://www.nafpta.org/ (Accessed: 25 November 2025).

Nairobi Convention (n.d.) *WIO Marine Protected Areas (MPA) Interactive Dashboard | Nairobi Convention Clearinghouse Mechanism*. Available at: https://www.nairobiconvention.org/clearinghouse/wio_mpa_dashboard (Accessed: 25 November 2025).

NOAA (2025) *Marine Protected Areas Data Viewer*. Available at: https://coast.noaa.gov/digitalcoast/tools/mpaviewer.html (Accessed: 25 November 2025).

Ocean Country Partnership Programme (2022) 'Stakeholder mapping for the Ocean Country Partnership Programme: India'. Available at: https://hub.jncc.gov.uk/assets/081c022a-4cd1-45bc-8bc3-16c4494d02f3#ocpp-indiastakeholder-mapping.pdf.

Ocean Country Partnership Programme (2025a) *An MPA roadmap framework to support the implementation of MPAs in Ghana*, p. 22. Available at: https://data.jncc.gov.uk/data/44f40c78-de5a-4e59-9cbc-8f59ae8cda80/ocpp-ghana-framework-for-mpa-implementation-roadmap.pdf.

Ocean Country Partnership Programme (2025b) *An MPA roadmap framework to support the implementation of MPAs in Ghana*, p. 22.

Ocean Country Partnership Programme (2025c) *Ocean Country Partnership Programme: Beyond MPA Designation in Ghana*, *JNCC Resource Hub*. Available at: https://jncc.gov.uk/resources/44f40c78-de5a-4e59-9cbc-8f59ae8cda80#ocpp-ghana-framework-for-mpa-implementation-roadmap.pdf (Accessed: 25 November 2025).

Ocean Country Partnership Programme (2025d) *Ocean Country Partnership Programme: Beyond MPA Designation in Ghana*. Available at: https://hub.jncc.gov.uk/assets/44f40c78-de5a-4e59-9cbc-8f59ae8cda80 (Accessed: 31 July 2025).

Ocean Country Partnership Programme (2025e) *Recommendations for future MPA awareness raising and marine environmental educational tools in Ghana*, p. 23.

Ofori, F., N, K (2021) 'The Socio-economic Challenges and Opportunities of Ghana's Coastal Communities: The Cases of Ada and Keta'. Available at: https://regions.regionalstudies.org/ezine/article/ghana-coastal-communities/?doi=10.1080/13673882.2021.00001101 (Accessed: 28 October 2025).

Ojeda-Martínez, C. *et al.* (2009) 'A conceptual framework for the integral management of marine protected areas', *Ocean & Coastal Management*, 52(2), pp. 89–101. Available at: https://doi.org/10.1016/j.ocecoaman.2008.10.004.

Peer, N. *et al.* (2022) ‘Community and Marine Conservation in South Africa: Are We Still Missing the Mark?’, *Frontiers in Marine Science*, 9. Available at: https://doi.org/10.3389/fmars.2022.884442.

Piet, G.J. *et al.* (2015) ‘Evaluation of ecosystem-based marine management strategies based on risk assessment’, *Biological Conservation*, 186, pp. 158–166. Available at: https://doi.org/10.1016/j.biocon.2015.03.011.

Pomeroy, R.S., Parks, J.E. and Watson, L.M. (2007) *How is your MPA doing? a guidebook of natural and social indicators for evaluating marine protected area management effectiveness*. Gland: IUCN - The world conservation union.

Protected Planet (n.d.) *Management Effectiveness (PAME)*. Available at: https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame?tab=METT (Accessed: 25 November 2025).

RAC/SPA and IUCN-Med (2013) ‘Stakeholder Participation Toolkit for Identification, Designation and Management of Marine Protected Areas’. Available at: https://www.rac-spa.org/sites/default/files/mpa_stakeholder_toolkit.pdf.

Ragasa, C. *et al.* (2022) ‘Accelerating Pond aquaculture development and resilience beyond COVID: Ensuring food and jobs in Ghana’, *Aquaculture*, 547, p. 737476. Available at: https://doi.org/10.1016/j.aquaculture.2021.737476.

Rare (n.d.) *Fish Forever*, *Rare.org*. Available at: https://rare.org/program/fish-forever/ (Accessed: 25 November 2025).

Rasheed, A.R. and Abdulla, A. (2020) ‘Evaluating stakeholder participatory processes in policy development for Marine Protected Areas’, *Marine Policy*, 112, p. 103737. Available at: https://doi.org/10.1016/j.marpol.2019.103737.

Sagoe, A.A. *et al.* (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, p. 104336. Available at: https://doi.org/10.1016/j.marpol.2020.104336.

Sayce, K. *et al.* (2013) ‘Beyond traditional stakeholder engagement: Public participation roles in California’s statewide marine protected area planning process’, *Ocean & Coastal Management*, 74, pp. 57–66. Available at: https://doi.org/10.1016/j.ocecoaman.2012.06.012.

Schramm, A. (2025) *Financing to Secure a Sustainable Future for Marine Protected Areas*, *The Global Ocean Accounts Partnership*. Available at: https://www.oceanaccounts.org/financing-to-secure-a-sustainable-future-for-marine-protected-areas/ (Accessed: 22 October 2025).

Seas4life (n.d.) *Ocean Explorers, Marine Education, Youth Expeditions & School Partnerships*. Available at: https://www.seas4life.com/ocean-explorers-1 (Accessed: 25 November 2025).

SeaSketch (n.d.) *The platform for Marine Spatial Planning*. Available at: https://www.seasketch.org/ (Accessed: 25 November 2025).

Social Development Direct. 2025. OCPP GEDSI Analysis: Ghana. Developed through the Ocean Country Partnership Programme. 42pp. Available from: https://sddirect.org.uk/sites/default/files/2025-07/OCPP%20GEDSI%20Analysis%20-%20Ghana%20-%20Final_For%20Publishing.pdf

Social Development Direct. 2026. Toolkit on mainstreaming gender equality, disability and social inclusion (GEDSI), developed by the Ocean Country Partnership Programme.

Stolton, S., Dudley, N. and Hockings, M. (2021) *METT Handbook: A guide to using the Management Effectiveness Tracking Tool (METT)*. Second edition guidance for using METT-4. Gland, Switzerland: WWF.

The Global Ocean Accounts Partnership (2020) *Africa Community of Practice*. Available at: https://www.oceanaccounts.org/africa-community-of-practice/ (Accessed: 25 November 2025).

The Government of Ghana (n.d.a) 'The Ghana Productive Safety Net Project'. Available at: https://gpsnp.gov.gh/lipw/ (Accessed: 25 November 2025).

The Government of Ghana (n.d.b) *Ghana Productive Safety Net Project (GPSNP)*. Available at: http://mlgrd.gov.gh/gpsnp/index.php/about-the-project/background (Accessed: 25 November 2025).

UNDP (2021) *Environment and Climate Change in Ghana: Policy Brief*.

United Nations (1992) 'United Nations Framework Convention on Climate Change', in. Available at: https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf.

United Nations (2025) *Overview - Convention & Related Agreements*. Available at: https://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm (Accessed: 25 November 2025).

United Nations: Climate Change (n.d.) *United Nations Framework Convention on Climate Change*. Available at: https://unfccc.int/ (Accessed: 25 November 2025).

United Nations: Environment Programme (2025) *Abidjan Convention | UNEP - UN Environment Programme*. Available at: https://www.unep.org/abidjan-convention (Accessed: 25 November 2025).

U.S. Fish & Wildlife Service (n.d. *Stakeholder Engagement Resources | FWS.gov*. Available at: https://www.fws.gov/stakeholder-engagement/resources (Accessed: 25 November 2025).

USAID (2022) *Understanding the Scope and Drivers of GBV Vulnerabilities in Fisheries Communities in Ghana*.

Voyer, M., Gladstone, W. and Goodall, H. (2014) 'Understanding marine park opposition: the relationship between social impacts, environmental knowledge and motivation to fish', *Aquatic Conservation: Marine and Freshwater Ecosystems*, 24(4), pp. 441–462. Available at: https://doi.org/10.1002/aqc.2363.

Water For Women (2025). ‘Gender Equality, Disability and Social Inclusion Self-Assessment Tool: Towards Transformation in Development and Climate Resilience Programs – Facilitation Guide’. Available at: https://www.waterforwomenfund.org/en/learning-and-resources/resources/KL/Extension-Phase/Water-for-Women_2025_GEDSI-SAT_FINAL_web.pdf.

Westlund, L. *et al.* (2017) *Marine protected areas: interactions with fishery livelihoods and food security*. 603 FAO Fisheries and Aquaculture Technical Paper. Rome: Food and Agriculture Organization of the United Nations.

WIOMPAN (2024) *Introducing the MPA Finance Toolkit*. Available at: https://wiomsa.org/wiompan/2024/07/18/introducing-the-mpa-finance-toolkit/ (Accessed: 25 November 2025).

WWF (2022) ‘Blended finance for Marine Protected Areas (MPAs)’. Available at: https://www.wwf.org.uk/sites/default/files/2022-07/case_study_lended_finance_MPAs.pdf.

WWF-UK (2018) *Sustainable financing mechanisms for Marine Protected Areas in North Devon*. Available at: https://ukseasproject.org.uk/cms-data/reports/North%20Devon%20sustainable%20finance%20mechanisms%20report%20FINAL.pdf (Accessed: 21 October 2025).

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.