A MARINE SPATIAL PLANNING (MSP) FRAMEWORK FOR THE ABIDJAN CONVENTION COUNTRIES

GUIDANCE AND EXAMPLES

http://mamiwataproject.org
A MARINE SPATIAL PLANNING (MSP) FRAMEWORK FOR THE ABIDJAN CONVENTION COUNTRIES

GUIDANCE AND EXAMPLES

Miles Macmillan-Lawler, Alison Amoussou, Taibou Ba, Fofana Alimata, Célestina Deku, Paul Lamin

April 2018

CONTENTS

1. A MARINE SPATIAL PLANNING (MSP) FRAMEWORK FOR THE ABIDJAN CONVENTION COUNTRIES ........ 5
2. AN INTRODUCTION TO MSP .............................................................................................................. 6
3. MARINE SPATIAL PLANNING: A STEP BY STEP APPROACH .......................................................... 8
4. CONDUCTING AN MSP PROCESS .................................................................................................... 13
   Step 1. Identifying need and establishing authority........................................................................ 13
   Step 2. Obtaining financial support ................................................................................................. 14
   Step 3. Organizing the process through pre-planning .................................................................. 15
   Step 4. Organizing stakeholder participation ............................................................................... 15
   Step 5. Defining and analysing existing conditions ...................................................................... 16
   Step 6. Defining and analysing future conditions ....................................................................... 17
   Step 7. Preparing and approving the spatial management plan ..................................................... 19
   Step 8. Implementing and enforcing the spatial management plan ................................................. 20
   Step 9. Monitoring and evaluating performance .......................................................................... 20
   Step 10. Adapting the marine spatial management process ........................................................... 20
5. DATA AVAILABLE .................................................................................................................................. 21
6. MSP IN MAMI WATA ........................................................................................................................ 26
7. ANNEXES ........................................................................................................................................... 27
**ACRONYMS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIS</td>
<td>Automatic Identification System</td>
</tr>
<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
</tr>
<tr>
<td>EBM</td>
<td>Ecosystem-based management</td>
</tr>
<tr>
<td>EBSA</td>
<td>Ecologically or Biologically Significant Areas</td>
</tr>
<tr>
<td>EEZ</td>
<td>Exclusive Economic Zone</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
</tr>
<tr>
<td>GEF STAP</td>
<td>Global Environment Facility, Scientific and Technical Advisory Panel</td>
</tr>
<tr>
<td>GIS</td>
<td>Global Information System</td>
</tr>
<tr>
<td>IBA</td>
<td>Important Bird Biodiversity Area</td>
</tr>
<tr>
<td>ICZM</td>
<td>Integrated Coastal Zone Management</td>
</tr>
<tr>
<td>IOM</td>
<td>Integrated Ocean Management</td>
</tr>
<tr>
<td>ISME</td>
<td>International Society for Mangrove Ecosystems</td>
</tr>
<tr>
<td>ITLOS</td>
<td>International Tribunal on the Law of the Sea</td>
</tr>
<tr>
<td>ITTO</td>
<td>International Tropical Timber Organization</td>
</tr>
<tr>
<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
</tr>
<tr>
<td>KBA</td>
<td>Key Biodiversity Area</td>
</tr>
<tr>
<td>MPA</td>
<td>Marine Protected Area</td>
</tr>
<tr>
<td>MSP</td>
<td>Marine/Maritime Spatial Planning*</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
</tr>
<tr>
<td>OSPAR</td>
<td>Convention for the Protection of the Marine Environment of the North-East Atlantic</td>
</tr>
<tr>
<td>PRCM</td>
<td>Regional Partnership for Coastal and Marine Conservation</td>
</tr>
<tr>
<td>RAMPAO</td>
<td>Regional Network of Marine Protected Areas in West Africa</td>
</tr>
<tr>
<td>SDI</td>
<td>Spatial Data Infrastructure</td>
</tr>
<tr>
<td>SOME</td>
<td>State of the Marine Environment</td>
</tr>
<tr>
<td>TNC</td>
<td>The Nature Conservancy</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>UNEP-WCMC</td>
<td>United Nations Environment Programme - World Conservation Monitoring Centre</td>
</tr>
<tr>
<td>UNESCO-MAB</td>
<td>United Nations Educational, Scientific and Cultural Organization's Man and the Biosphere Programme</td>
</tr>
<tr>
<td>UNU-INWEH</td>
<td>United Nations University Institute for Water, Environment and Health</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wildlife Fund</td>
</tr>
</tbody>
</table>

*The terms Marine spatial planning and Maritime Spatial Planning both are abbreviated to MSP. These terms have been used interchangeable; however, the term marine spatial planning is more commonly used in single sector led approaches, typically involving the designation of protected areas. The term maritime spatial planning is more typically used where there are multi-sectoral planning approaches and is often linked to the designation of marine areas for sectoral activities. Maritime spatial planning is particularly common in Europe, where it has been adopted by the European Commission as part of their blue growth strategy. This document will use the term marine spatial planning.*
1. A MARINE SPATIAL PLANNING (MSP) FRAMEWORK FOR THE ABIDJAN CONVENTION COUNTRIES

1.1. About this guide

This document is intended as a guide to assist countries of the Abidjan Convention Regional Sea Convention to establishing a marine spatial planning (MSP) process. The guide provides practical advice on the activities required to run a successful MSP process. It frames the activities under a series of steps designed to lead the user through a successful MSP process. This guide also frames MSP as part of an ongoing management cycle.

The guide uses examples to illustrate each of the stages of an MSP process, with specific focus on examples from the countries of the Abidjan Convention or countries that have faced similar challenges from outside the region. It also includes best practice examples where a country has been particularly successful at achieving one or more steps in the MSP process. Finally, the guide is not meant to be prescriptive, instead it provides advice and examples so that each member country of the Abidjan convention can develop a process that suits their local setting and conditions.

The guide is a living document and will be updated based on the lessons learned from the pilot projects being conducted as part of the Mami Wata Project. The Mami Wata working group on marine spatial planning will take the lead role in updating this document during the duration of the project.
2. AN INTRODUCTION TO MSP

The marine and coastal environment of the African Atlantic coast is home to a range of biodiversity hotspots and highly productive ecosystems. These natural assets provide important services to western, central and southern African communities and are essential to people’s wellbeing. They also hold important livelihood opportunities and will continue to be fundamental for social and economic development. However, coastal and marine living resources and ecosystems are in widespread decline due to human activities.

The management of marine and coastal ecosystems is challenging for a range of reasons – the complexity of managing a high variety of potentially conflicting activities in an environment subject to constant change is one of them. Integrated ocean management (IOM) brings together all relevant government bodies, sectors; stakeholders and local communities is an approach for more effective and sustainable management. Mami Wata aims to strengthen national and regional action to capture the value of marine and coastal ecosystems through a dual approach, building capacity through training and applying State of Marine Environment Assessments (SOME), CBD Ecologically and Biologically Significant marine Areas (EBSA) and Marine spatial planning (MSP), in an IOM framework.

Marine spatial planning (MSP) is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process.

Marine Spatial Planning – A Step-by-Step Approach towards Ecosystem-based Management

Figure 1. Zoning of the Saint-Louis Protected Marine Area (Sources: DAMCP, July 2014)

Figure 2. Participatory zoning of the MPA in Los (Guinea)
Marine spatial planning is a process that is increasingly being used around the globe to improve marine management. MSP focuses on the allocation of marine space for the range of activities that occur in the marine environment. These activities include shipping, fishing, extractive activities, renewable energy, recreation, traditional use and conservation.

Increasingly MSP is also being used as a tool to address impacts of climate change. It can help improve the resilience of ecosystems to climate change by reducing adverse impacts, can be used to protect species across their range, and finally can take into account different climate scenarios to look at the future impacts of different spatial plans.

Within the Abidjan Convention member countries there are several examples of MSP. Often this planning is driven by the needs of a single sector. For example, in the West African sub-region marine spatial planning has focused on conservation, sustainable management of habitats and species than the management of commercial activities such as transport, communication, and oil and gas exploitation.

In West Africa, there are several examples of marine protected areas (MPAs) being created through a process of participatory zoning,* delimiting and defining the different uses (Figure 2). This process establishes participatory management rules that are compatible with the laws and regulations in force in countries. This is the case in Senegal with several MPAs, including those of Saint-Louis (North Senegal), Santa Luzia in Cape Verde and the MPA of the Los Islands complex in the Republic of Guinea (Figure 1, Figure 3 and Figure 4).

*Zoning an area is a participatory process of identifying, delimiting and documenting the different areas for use. This process aims to establish management rules for each area. In the context of MPAs, this process is carried out jointly with the technical services of the environment and fisheries, but also with the members of the Management Committee of the MPA.
3. MARINE SPATIAL PLANNING: A STEP BY STEP APPROACH

Characteristics of an MSP process include being ecosystem-based, area-based, integrated, adaptive, strategic and participatory.

Within the European Union marine spatial planning it is often referred to as maritime spatial planning, which the EU defines as a cross-cutting policy tool enabling public authorities and stakeholders to apply a coordinated, integrated and trans-boundary approach. The application of an ecosystem-based approach will contribute to promoting the sustainable development and growth of the maritime and coastal economies and the sustainable use of marine and coastal resources. Some of the key points of the European approach is that it explicitly includes trans-boundary issues and is linked to growth of the maritime and coastal economies – sometimes referred to as blue growth or the blue economy.

In the Abidjan Convention Region, Operation Phakisa, a South African’s project, was launched in June 2014 to develop and enhance the blue economy in South Africa. The project identified four priority sectors to develop the blue economy:
- Aquaculture;
- Transportation and manufacturing;
- Offshore oil and gas;
- Ocean Governance.

The project has objectives such: taking into account solidarity, participation of the population, job creation and industrialization of aquaculture.

One of the key benefits of running an MSP process is that it can create a forum for open and transparent dialog between the different sectors utilising the marine estate. This can allow the sectors to articulate their priorities, share data, information and knowledge. In successful cases MSP can lead to a shared vision for the ocean space which balances social, economic and environmental considerations and provides prosperity for future generations. MSP has been used to address conflict between existing users, identify synergies, partition ocean space to provide certainty of users and future investment and to identify areas for additional management including protected areas.

The development of a marine spatial plan is not a one off exercise that is done and then put on the shelf. Instead, MSP is part of an evolving management cycle (Figure 5). This is important for several reasons. Firstly, it is widely acknowledged that it is very difficult to ‘get it right’ the first time when developing a maritime spatial plan.

**Maritime Spatial Planning (MSP) is a process that never ends, it is a process where continuous improvement is possible.**

Maritime Spatial Planning (MSP) in Belgium – Analysis of the period 2000-2011

For this reason, it is often advised to start with small ambitions both in terms of the area of focus and the goals of the planning and progressively expand these in subsequent iterations. Secondly, the marine environment is a dynamic system, similarly social and economic factors will change over time and new opportunities will sometimes arise that may require a rethink on the existing priorities.

3.1. The benefits of MSP

3.1.1. Conflict resolution and avoidance

Central to MSP is that it is a multi-stakeholder process, with open and transparent dialog. This means that each sector or user of the marine environment can articulate their priorities for access and use of the resources found there. In many cases, multiple users may be interested in the same resource or in resources in the same spatial and temporal location (i.e. occurring in the same place and at the same time). In some cases, the different priorities for these resources may cause conflict between the users. MSP allows these conflicts to be addressed within the planning process. MSP does not automatically lead to a win-win situation, in many cases the decision making process will result in one activity being prioritised over another for a specific area. It is important that this part of the process is open and transparent so that all stakeholders can see how these decisions are made.

MSP can also allow the avoidance of potential conflicts in the future. This is especially important when there is a strong push for building up the maritime economy, often referred to as the blue economy. For example, offshore wind farming is an emerging industry in many parts of the world. This industry has specific space requirements in the marine environment related to the depth, substrate stability and proximity to the coast. In both the United States of America and within Europe MSP has been used to identify areas for future wind farm development so that they will have minimal impact on existing users.
Finally, MSP can identify synergies between different uses of the marine environment and look to collocate these activities. Within Europe there is considerable work investigating the feasibility of collocating wind farm and aquaculture infrastructure. The benefits of this approach would be efficient use of the marine space and shared infrastructure and transportation costs, potentially leading to economic benefits.

3.1.2. Cross-border MSP

Increasingly MSP is being seen as a useful tool for addressing cross-border issues. Typically, planning is done at a local or national level, with administrative boundaries used to define the area. In many cases a resource being managed may straddle these boundaries. For example, a single fish stock may be found in two neighbouring countries or an oil reserve may straddle a border. Within the EU cross border marine spatial planning is promoted to develop energy grids, shipping lanes, pipelines, submarine cables and other activities, but also to develop coherent networks of protected areas.

In West Africa, the example of the Dioudj-Diawling Transboundary Biosphere Reserve of Senegal (Figure 7) between Mauritania and Senegal, built in 2005 with a project for a transboundary marine protected area, can be cited.

The Seychelles and Mauritius have jointly submitted a claim to an area of extended continental shelf covering parts of the Mascarene Plateau (Figure 6). The approach to generating this area and examining the different management options is a form of MSP. In 2015 they established a Joint Management Authority to act as an administrative and legal body for the region. The agreement provides for cooperation between the two coastal states in matters of environmental protection, exploration and marine resources management, including fisheries and hydrocarbons. This approach to shared management and resources demonstrates how cross-border MSP can allow countries to cooperate on management issues.
Figure 7. Senegal River Delta Transboundary Biosphere Reserve (Sources: IUCN, 2005)
3.1.3. MSP as a tool to realising the potential of Blue Economy/Sustainable development

The final benefit of MSP is that it can help a country to realise the potential of its blue economy by promoting sustainable development. For example, the basis of the EU MSP framework is specifically to promote sustainable blue growth. One of the strengths of MSP is that it is a forward-looking process. MSP can support the blue economy by providing a framework for the different sectors to come together and identify their future priorities for resource use. MSP then allows these future priorities to be assessed and balanced to ensure that they meet with economic, social and environmental priorities. In the case of designating an area for a specific activity, MSP provides certainty for access to that resource and thus for investment in that sector.

Over and above driving the growth of economic activities, MSP includes social and environmental considerations into planning decisions. A key outcome of MSP is that areas can also be set aside for non-commercial activities that support local communities and environmental health. These areas can include artisanal fishing areas that restrict commercial fishing, and marine protected areas where the primary management focus is on ensuring the health of the marine environment.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Description</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>European MSP Platform</td>
<td>Web resources</td>
<td>Shares experience of MSP in Europe</td>
<td><a href="http://www.msp-platform.eu/">http://www.msp-platform.eu/</a></td>
</tr>
<tr>
<td>Open Channels</td>
<td>Web Resource</td>
<td>Collation of web resources including a blog, articles and tools related to sustainable ocean management</td>
<td><a href="https://www.openchannels.org/">https://www.openchannels.org/</a></td>
</tr>
<tr>
<td>Blue Solutions</td>
<td>Web Resource</td>
<td>Collects and promotes successful solutions to environmental management</td>
<td><a href="https://bluesolutions.info/">https://bluesolutions.info/</a></td>
</tr>
<tr>
<td>IOC UNESCO MSP Programme</td>
<td>Web Resource</td>
<td>Collection of information on MSP around the globe</td>
<td><a href="http://msp.ioc-unesco.org/">http://msp.ioc-unesco.org/</a></td>
</tr>
<tr>
<td>Mami Wata project</td>
<td>Regional Initiative</td>
<td>Project supporting MSP in the Abidjan Convention Region</td>
<td><a href="https://mamiwataproject.org/">https://mamiwataproject.org/</a></td>
</tr>
</tbody>
</table>
3.2. Relevant international references and initiatives

There are a number of key references and initiatives related to marine spatial planning. These are presented in Table 1. These resources provide a broad range of background information on different aspects of MSP. The resources have been divided into different types. Guidance documents contain how to information and are useful at different stages of the MSP process. Review documents cover specific issues relating to MSP and are useful in understanding how others have approached specific challenges. Policy resources give an example of how an MSP policy has been developed. Finally, web resources are collations of useful information relating to MSP and can contain a number of relevant documents and contacts of MSP practitioners.

3.3. The relationship of MSP with, inter alia, MPAs, ICMZ, EBM, IOM, EBSAs, sectoral spatial management (e.g. fisheries, oil and gas etc.)

The Mami Wata project is supporting marine spatial planning (MSP), the identification of ecologically or biologically significant areas (EBSAs) and state of the marine environment (SOME) reporting as tools to achieve integrated ocean management (IOM). These tools are also seen as key tools for ecosystem based management (EBM). Additionally, IOM can be seen as a seaward extension of the principles of integrated coastal zone management (ICZM). It is important to understand how these different tools and concepts inter-relate. The following section will outline the relationships between each of these tools under the Mami Wata project (Figure 8).

Within the Mami Wata project integrated ocean management (IOM) is a strategic and plan-based approach for sustainable marine management at the national level. The approach is holistic and considers the marine environment, relationships between the different ecosystem components, and dependent socio-economic sectors as a whole. A key part of this approach is to consider the cumulative impacts on the environment from all activities, taking an ecosystem based management approach.

Marine spatial planning is a key tool for integrated ocean management. State of marine environment reporting can provide information on the condition of the environment and links to human activities into an MSP process. This may assist in prioritising species, habitats or ecosystems or environmental trends that can be the focus of an MSP process. Similarly, the identification of ecologically or biologically significant areas can provide scientific input into MSP and be used to focus management actions on these areas where applicable (Figure 8). Routine monitoring used for state of marine environment reporting can also form part of the monitoring the effectiveness of a marine spatial plan.

Traditional sectoral management, which forms part of integrated ocean management also have strong linkages with MSP. For example, existing sectoral spatial management measures, such as fisheries closures, oil and gas leases and marine protected areas are key inputs into any marine spatial planning process. The MSP process can then refine these sectoral measures and provide benefits back to the sectoral management.


---

**Figure 8.** The relationship between MSP and other tools and management approaches.
4. CONDUCTING AN MSP PROCESS

This guide presents the MSP process as part of an ongoing management cycle. That is MSP is a process that is run and reviewed and forms part of a toolkit of management tools. In order to structure the guide a step-wise approach has been adopted.

4.1. Steps-by-step approach to MSP

This cook book has adopted the framework presented in the IOC-UNESCO publication Marine spatial planning: A Step-by-Step Approach towards Ecosystem-based Management (Ehler & Douvere 2009). This framework presents ten steps required for developing and conducting a marine spatial planning process. These steps are:

1. Identifying need and establishing authority
2. Obtaining financial support
3. Organizing the process through pre-planning
4. Organizing stakeholder participation
5. Defining and analysing existing conditions
6. Defining and analysing future conditions
7. Preparing and approving the spatial management plan
8. Implementing and enforcing the spatial management plan
9. Monitoring and evaluating performance
10. Adapting the marine spatial management process

These ten steps provide a framework for developing and running a marine spatial planning process and the subsequent monitoring, evaluation and revision of the resulting marine spatial plans. It is essential to remember that a marine spatial plan should be part of a dynamic and responsive management cycle that can adapt to changes in social, economic and environmental conditions. The ten steps are part of the ongoing management cycle (Figure 9). At each stage of the management cycle there may be several activities running in parallel.

Each of the 10 steps is now presented in detail, with relevant regional examples to highlight possible mechanisms for implementation in the Abidjan Convention countries.

**Figure 9. The 10 steps for successful Maritime Spatial planning related to the management cycle.**
also evolve over time due to emerging sectors, for example in Europe and the United States of America the emergence of offshore wind-farming has created a need for marine spatial planning due to potential conflicts with existing sectors. Environmental variability, including climate change, may also lead to changing needs over time.

Once the need has been established, it is important to determine who has the authority. In addressing who has the authority there are two considerations that should be made:

- Who has the authority to run an MSP process?
- Who has the authority to implement MSP?

Running an MSP process involves the operational side of collating information, bringing stakeholders together, exploring different scenarios and making decisions on what a spatial plan will look like. Implementation on the other hand translates this plan into management actions. Implementation will include the legal aspects of how the plan will come into force, how it will be monitored and ultimately reviewed. Many plans have been developed with the best intentions but have failed to be implemented because this step was not addressed at the beginning of the process.

The same organisation may have the authority to both run and implement an MSP process; however, this does not necessarily need to be the case. Often the authority to run and implement MSP is established through legislation – through either a dedicated marine spatial planning legislation, or an overarching oceans policy. However, many countries do not have clear legislation for running or implementing an MSP process, or alternatively may have many different sectoral legislation that covers different aspects of MSP. For example, the fisheries department may be responsible for the spatial management of fisheries, the resource department may plan for offshore oil and gas exploration and the environment department may plan protected areas. In these cases there may be the need to adjust the existing legislation or alternatively develop new legislation to ensure coordination and facilitate implementation.

In West Africa, many countries have an Authority that could federate all these preoccupations in order to play the leading role in MSP. This is the case in Senegal of the High Authority in charge of the Coordination of Maritime Safety, Maritime Security and Protection of the Marine Environment created by decree in 2006, attached to the Prime Minister’s Office, and exercising its powers in maritime and fluvial waters under Senegalese jurisdiction. This authority extends for search and rescue to the maritime area under the responsibility of Senegal. Its resources come from the state of Senegal, taxes and subsidies paid by socio-economic actors benefiting from its services or taking advantage of the opportunities of the sea, but also from international cooperation funds.

This Authority could easily manage the MSP with the strong involvement of local communities, which are actors and beneficiaries of marine and coastal resources.

**Step 2. Obtaining financial support**

Running an MSP process requires financial support. It is important from the outset to identify the amount of support required and where this will come from. Financial support
is required for technical expertise, information gathering, stakeholder engagement, implementation, and monitoring. Financial support commonly comes from the government funding, which often shows long term commitment to the process and provides certainty for stakeholders to engage in the process. The process of articulating a strong need for MSP in step 1, can help strengthen the request for financial support as does having existing legislation related to MSP.

The amount of financial resources required to complete an MSP process will depend on the scale of the proposed MSP. This can include the geographic scale, the timeline and the number of stakeholders involved. A whole of country exclusive economic zone (EEZ) scale MSP may require significantly more resources than planning at the local scale. It is important to also be realistic on what can be achieved with the available resources. It is better to do a smaller scale MSP process well than be overly ambitious and not have sufficient resources to complete the process.

How much funding is required is a difficult question to answer. As a basic guide there should be enough funding to cover each of the steps included here - including the implementation. Many of the steps are not particularly resource intensive, with the most resource intensive being steps 5. Defining and analysing existing conditions and step 6. Defining and analysing future conditions and step 8. Implementation.

Where insufficient funding is available through direct means, such as government funding, then there may be options for alternative funding. Some of these alternatives include grants and donations, for example through donor agencies or non-governmental organisations (NGOs), and user-fees. User-fee systems charge users to pay a fee for their use. These fees have been applied to the tourism, energy, mining, fishing and marine transport sectors. Applying fees to users can generate revenues to support management; however, in adopting a fee approach transparency is important. In general, there must be some perceived benefit or sign of improved management.

In addition to these sources of funding, we could add corporate social responsibility, which large firms now practise as a means of mitigating and compensating for environmental damage. The same process could be applied to the funds resulting from mitigation and compensation measures, which are themselves derived from the environmental and social management plans as part of the environmental assessments of offshore oil and gas projects.

In addition, the greatest financial support is the commitment of populations who could use their physical resources for the smooth running of the MSP.

**Step 3. Organizing the process through pre-planning**

It has been said that if you fail to plan then you plan to fail. This is equally true in MSP, where the pre-planning step is essential. At the pre-planning step the following should be addressed:
- organising a team with the appropriate skills
- developing a work plan for the process including timing and duration of each of the phases
- identify the extent of the area being planned
- agree on goals for the planning
- agree on a set of principles to guide the process

Marine spatial planning is a multidisciplinary process. There is need for a broad set of skills that are usually not found in a single individual. As such, there is a need for a team of suitable skilled people to move the process forward. This team can include marine managers, planners, mapping and data analysts, economists, social scientists and facilitators. The team may also include representatives of the different sectors and even and mainly, a community representative, with indigenous knowledge that is not negligible in this process? This community representative could attest an important consideration for local communities.

Once a team has been established, the next step is to create a work plan for the process. The work plan should set out the duration of the process and identify the key milestones and who is responsible for each of these. The work plan should cover the remaining steps including implementation, monitoring and review. At this stage it can also be checked whether the budget allocation is realistic for the proposed work.

The next stage of pre-planning lays the groundwork for the actual planning process to begin. Actions here include agreeing on the extent of the area being planned. The boundaries of a planning area these may be set according to geographic boundaries, administrative boundaries or ecological / biological boundaries. An example of geographic boundaries may be a large embayment or the area surrounding a port. Administrative boundaries may include local Government areas, fisheries management areas or a national marine jurisdiction. Finally, ecological and / or biological boundaries may include bioregions (e.g. Large Marine Ecoregions) or ecosystems or groups of ecosystems (e.g. the continental shelf), but also ecologically and/or biologically important areas such as seamounts, nursery areas, turtle nesting sites. In all cases it is important to ensure that there is the appropriate authority to plan and implement in the defined area.

The final step of the pre-planning involves agreeing on the goals for the planning process and a set of principles to guide the process. The goals define what the process sets out to achieve and the principles how this will be achieved. For example, the Australian Government set out 4 goals and 20 guiding principles for its bioregional planning process. In setting goals and principles it is important to have agreement between all the major stakeholders in the process. One way to achieve this is to co-create the goals and principles in partnership with stakeholders. One possibility is to decide on objectives and principles in collaboration with stakeholders.

**Step 4. Organizing stakeholder participation**

By definition, marine spatial planning is a public process that is open to all stakeholders. In order to engage stakeholders in the process there needs to be a mechanism for this engagement. Further, the more involved the stakeholders the
more likely they are to have ownership of the process and the results of the process (Figure 10). This ownership will increase the chance of successful implementation of the plan.

Coastal zones and the ocean are used by varied stakeholders namely the environmental sector, fisheries, tourism, transportation, energy and sea mining, academia, private sector, local communities etc. It is therefore important to adopt a cross-sectorial approach in the MSP process through effective stakeholder mapping needs identification and building synergies.

The process involves:
- Identifying all relevant stakeholders based on their roles and relevance
- Identifying interests, needs, and expectations
- Analysing needs, interests and expectations using appropriate planning tools
- Establishing a clear and common understanding of needs, interests expectations through consultations and dialogue
- Building trust and effectively engaging stakeholders at various stages of the MSP process.

The mapping of stakeholders provides an avenue for establishing alliances. It also sets the tone for projecting into the future available sector plans and policies on a Coastal zone and Marine base map. This brings out areas of conflicts and incompatibility and sets the tone for formulating marine spatial interventions.

Getting stakeholder involvement and feedbacks may be difficult as such the process should be made relevant to them. Where possible, they should be engaged less. It is essential to always put something concrete on the table for discussion.

In order to organise effective stakeholder participation, the stakeholders first need to be identified. In many cases there are obvious stakeholders which may include fishing sectors (industrial/commercial, artisanal and recreational), offshore resource sectors (oil and gas, marine minerals), tourism (hotels, cruise operators, dive operators, charter fishing operators), ports and shipping, and aquaculture. Other less obvious stakeholders include coastal communities, maritime businesses and telecommunications sector with large offshore cables.

Once the different stakeholders are identified then it should be determined how they best engage in the process. There are different levels of engagement ranging from informing to active participation. The level of engagement may also be different at different stages of the process for the same stakeholder. Finally, some stakeholder groups may be well organised with a representative body who can speak on their behalf, whilst engagement with others may require considerable effort to meet as many of the operators as possible.

The next two steps of the process are the steps that build an understanding of the current situation and then investigate future scenarios under different management arrangements. This is the main stage of an MSP process where much of the discussion and decision making occur. It must be emphasised that stakeholder engagement is the driving force behind these two steps.

**Step 5. Defining and analysing existing conditions**

Before planning can be undertaken, it is important to get a common understanding of the existing conditions in the planning area. The existing conditions include the current management arrangements, the existing human uses (socio-economic data), and the environment and its condition. The starting point of this stage of the planning process is to collate the information (including data) that exists for the planning area. Because of the spatially explicit nature of MSP, much of the information to support it will be spatial in nature, thus the use of geographical information systems (GIS) and maps is key at this stage.

The Canary Current countries, the PRCM and RAMPAO each have a geographical information system on species and habitats in the coastal and marine zone. This information, which is generally more accurate than information from global databases, can be used as a basis for the PSM in this space. Government statistics including fisheries and socio-economic data are also a useful source of information for marine spatial planning. In addition, the Abidjan Convention’s project for the establishment of a regional resource centre on marine and coastal ecosystems will support MSP in West Africa.

Information on the existing management arrangements should be available from the relevant governing bodies (such as government ministries). Typical information can include national and local maritime boundaries, port areas, fisheries

---

**Figure 10. Benefits of Stakeholder participation in MSP – from Marine spatial planning: A Step by Step Approach.**
management zones, and protected or other managed areas. Information on the existing human uses can include fisheries catch data, shipping data (such as AIS data), offshore lease areas (oil and gas, mining and aquaculture) and information on tourism infrastructure. In many cases, human use information may not be readily available in a useable format and will need to be collated by working closely with the stakeholders. Finally, information on the environment is available from many sources, including some global databases. The scientific community also often have good information on the environment, for example Centre de Suivi Ecologique collate spatial marine data for the West Africa region. State of the Marine Environment Reporting can also provide information on the condition of the environment, which is often an important consideration in planning. Due to this it can be useful to conduct a state of marine environment reporting process prior to beginning an MSP process.

In the absence of data, information can be produced from information from several actors; from maps or georeferenced images of a given marine area. Resource persons can identify and delineate the different important habitats and sites for biodiversity, but also the migration corridors of certain species. This map will then, be digitized by the GIS expert to produce useful data for the MSP (Figure 11).

Once information has been collated, it needs to be shared and verified by the relevant stakeholders. Verification is important as it helps ensure that the information is accepted as the best available by all users. It can also lead to improvements in the information, including the identification of new sources. Engaging with the stakeholders at this stage can also add context to the information, such as seasonality of use or dependence on other factors.

Beyond spatial information, there may also be a need to collate socio-economic information. This can include information on employment or participation in different sectors, number of vessels operating out of certain ports, hotel structures, petroleum and mining actors and economic values of different sectors. There is also a need to collate information on the interactions between different sectors including; are they compatible, and where can they co-exist.

Most often, these data are available at the level of fisheries services and merchant navy of countries.

Based on information on the existing condition of the planning area, a consensus can be reached on which issues need to be addressed in the spatial plan – creating a shared vision and mission before investigating different scenarios for management. It should be noted that not all issues have a solution that can be achieved using spatial planning. Spatial planning is just one of many management tools needed for integrated ocean governance, in many cases traditional sectoral management measure may also be effective in addressing an issue. Issues that can be addressed with a spatial solution can then be addressed in the next step.

The first step is to analyse the available information, then define a mission and vision for the MSP before moving on to the next stage of future conditions.

## Step 6. Defining and analysing future conditions

Once the existing condition has been established, the next step of spatial planning is to explore the implications of possible management actions. This step involves exploring a series of scenarios to examine the benefits and trade-offs in each scenario. These scenarios should be designed to address the goals identified step 3. Many tools can facilitate scenario exploration including process tools and technical tools.

The basic process tools are designed to facilitate open dialog around the issues in order to draw on the knowledge and experience of all stakeholders. This can be as simple as sitting around maps of the planning area, which show the different information collated in step 5. It is important in this type of dialog is well facilitated. The guiding principles for the planning process can be used here to help guide the discussion.

At times, there may be need for more specialist technical tools to help provide additional information that can support the exploration of the scenarios. Some of these tools include GIS, Marxan, InVEST, SeaSketch, modelling and the BlueBRIDGE MPA reporting tool. A brief explanation of these tools is provided in Table 2. Many of these tools require specific technical skills or answer specific problems. Care should be taken in choosing the correct tools to ensure that they are relevant to the planning process.

However, as far as possible, open source solutions (free software) should be encouraged to take into account the African context marked by limited financial resources.

The future scenarios should not only address existing issues such as conflict between sectors or improved conservation but should also look at things that may arise in the future. For example, offshore wind farming is an emerging sector in many parts of the world. Marine spatial planning has been used to identify sites for future wind farming zones. In West Africa there have been recent discoveries of offshore gas reserves which will also need to be considered in any MSP process. The future scenarios should also recognise existing spatial and non-spatial management measures in the area.

Additionally, climate change is likely to result in changes in the marine environment over the next decades. This can lead to shifts in biodiversity, which can create both opportunities for emerging industries (such as new fisheries) but also impact on existing industries. This also presents a challenge for the conservation of biodiversity, with marine spatial planning playing a key role in maintaining the resilience of many species, communities and ecosystems.

The final part of the future scenario exploration is to agree on which future scenario will be included in the final plan. The agreed upon scenario should align well with the goals established in step 4. It important to consider the impacts of this chosen scenario on all stakeholders. Whilst the aim is for solutions that benefit all stakeholders, there will be trade-
Figure 11. Participatory mapping (actors) in Senegal.
offs with every decision. Often these trade-offs will be framed within the goals and guided by the guiding principles for the planning. It is also important to recognize that it is better to start with modest ambitions in the first round of the MSP process, then monitor the effectiveness of these, and adapt in later cycles of the MSP process.

A spatial plan will highlight a series of spatial measures that will be enacted, for examples protected areas, fishing zones, areas for aquaculture or windfarm expansion. This is often referred to as zoning, and is similar to zoning in terrestrial settings. For example, on land different areas will be zoned for residential, industrial and commercial. Similarly, in the marine environment different areas may be designated for different activities. In the process of zoning both boundaries of zones and the types of activities allowed need to be determined. A spatial plan does not need to zone every part of the marine space, and may instead focus on only priority areas.

Applied to land resources, the MSP is almost equivalent to a land use and occupation plan where land use zones (agricultural, pastoral, fish farming, etc.) are identified and delineated with consensual management rules in line with the laws and regulations in force in the zone. However, it will be necessary to avoid a possible conflict between the legitimacy emanating from the communities and the legality represented by the administration through the various resource management codes (forestry, fisheries, mining, water).

Table 2. Description of common technical tools.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Information Systems (GIS)</td>
<td>Generic systems (ArcGIS, QGIS) that allow the analysis of spatial data and creation of maps – requires specialist technical skills</td>
<td><a href="http://www.esri.com">www.esri.com</a> (commercial) <a href="http://www.qgis.org">www.qgis.org</a> (free)</td>
</tr>
<tr>
<td>Marxan</td>
<td>A suite of tools designed to help decision makers find good solutions to conservation planning problems</td>
<td><a href="http://www.marxan.org">www.marxan.org</a> (free)</td>
</tr>
<tr>
<td>InVEST</td>
<td>InVEST is a suite of free, open-source software models used to map and value the goods and services from nature that sustain and fulfill human life</td>
<td><a href="https://www.naturalcapitalproject.org/">https://www.naturalcapitalproject.org/</a> (free)</td>
</tr>
<tr>
<td>BlueBRIDGE</td>
<td>BlueBRIDGE contains the Protected Areas Impact Maps application that allows the user to analyse the seafloor features in protected areas</td>
<td><a href="http://www.bluebridge-vres.eu/services/protected-area-impact-maps-production">http://www.bluebridge-vres.eu/services/protected-area-impact-maps-production</a> (free)</td>
</tr>
<tr>
<td>SeaSketch</td>
<td>SeaSketch puts powerful tools into the hands of ocean planners, stakeholders and the public that were once limited to GIS professionals, enabling participatory marine spatial planning processes that are closely tied to the relevant science and information</td>
<td><a href="http://www.seasketch.org/">http://www.seasketch.org/</a> (commercial)</td>
</tr>
</tbody>
</table>

Implement

Step 7. Preparing and approving the spatial management plan

Preparation of a marine spatial plan takes the preferred scenario and frames it into a plan that can be easily understood and accessed by all stakeholders. Where specific marine planning legislation exists, the plan will need to be written to comply with the legislation. The minimum requirements of a marine spatial plan are that it outlines the specific location of spatial management measures and identifies the management arrangements for these areas. It should also be clear who has the authority of management, monitoring and compliance.

For each management measure it is important to specify the objectives of that measure. For example, a marine protected area (management measure) may have the objective of preventing damage to a fragile habitat. In articulating this in the plan, it can then be a focus of monitoring and evaluating the effectiveness of the measure in step 9. This way when the plan is reviewed it can be determined whether there is need to modify this management measure.

The process of drafting the marine spatial plan is often a task for the planning team (established in step 3), or even a sub-set of the team. It is important that during the drafting process there is sufficient opportunity for review of the plan by the different stakeholder groups. It may also be feasible for stakeholder groups to contribute to the writing of the plan.
The marine plan, as well as outlining the spatial management measures, should also include information on its duration, and when and how it will be reviewed (and optionally validated). This information is important as the marine spatial planning is an ongoing process that seeks to adapt and improve over time.

Before a spatial plan is implemented, it needs to be approved. The approval process is generally at the governmental level. For example, a plan may need to be approved by ministries, cabinet or even by a head of state. In order to get this approval there may need to be briefing and supporting information provided. There needs to be sufficient time built into the process to allow for the approvals process.

There may also need to be endorsement from the different sectors. Including the different sectors in the process will help facilitate this endorsement by giving them both an understanding and ownership over the plan.

**Step 8. Implementing and enforcing the spatial management plan**

Implementation of a marine spatial plan is the ultimate end goal. Typically, a spatial plan is implemented under existing legislation or by the body designated to carry out the process, but may require additional legislation. Implementation happens after all the official approvals have been granted. At the point of implementation it is important the plan is readily available to all stakeholders. In many cases, especially where there may be additional or changed management measures, there may need to be additional efforts to raise awareness of these new measures and how they affect the different stakeholders.

Awareness of the plan is very important to ensure that the different stakeholders comply with its new actions. With any new management measure, including those contained in a spatial plan, enforcement is an important consideration. Firstly, it must be feasible to enforce any new management measure. Secondly, there needs to be sufficient resources, which are used efficiently to enforce the measures. The focus of enforcement should be on compliance that is that all stakeholders comply with the prescribed spatial management measures. Key elements of this can include monitoring, reporting and surveillance.

**Monitor/evaluate**

**Step 9. Monitoring and evaluating performance**

Monitoring and evaluation of a spatial plan is important, so that when the plan is reviewed there is sufficient information to determine what is working and what can be improved. In designing a monitoring process, there needs to be sufficient resources available for the programme to be properly executed. The focus should be on determining what information is required to assess whether a management measure is successful and who is responsible for this and with which resources. This task can be made easier if each management measure has clearly articulated objectives in the management plan.

Evaluating the effectiveness of the plan can be an ongoing process, but should also be done on a regular frame. For example, many spatial plans are implemented for a set timeframe, e.g. 5 or 10 years. At the end of this period there will be a review of the spatial plan, which will feed into the next cycle of planning. The monitoring program may have interim monitoring targets identified which can help track the progress of a management measure and may also be used to trigger additional management responses.

**Revise plan**

**Step 10. Adapting the marine spatial management process**

The final step in the spatial planning process is to adapt the MSP process. This step is necessary prior to initiating the next MSP cycle. In this step it is important to recognise what worked and what didn't in the previous MSP round. This step should focus on the process itself and critically examine each of the elements. For example, did the stakeholder engagement work well, did the planning group function well, etc. These lessons learned will lead to a better MSP process the next time around.
5. DATA AVAILABLE

A wide range of data is required to support marine spatial planning within the Abidjan Convention Region. This data may reside in global or regional data bases, with governments, academic institutions or may be collected as part of an MSP process from stakeholders. It is important to have a clear framework for the sharing of data.

Data can be divided into global, regional, country and local data. The following section primarily focuses on global scale data, which is relevant to all the countries in the region. In many cases the global data is the best available, and can be supplemented by regional, country or local scale data where available. The available global data includes physical, biological/ecological and human use data.

5.1. Physical Data

5.1.1. Bathymetry

Information on the depth of the seafloor (bathymetry) is an important input for maritime spatial planning. Many activities are limited to specific depth ranges and depth has a strong influence on the structure of marine biodiversity.

There are three available global bathymetric datasets available; the Shuttle Radar Topography Mission derived bathymetry (SRTM30_PLUS and SRTM15_PLUS), the General Bathymetric Chart of the Oceans (GEBCO) and the ETOPO1. Each of these global models use bathymetry estimated from satellite altimetry for unsurveyed ocean areas supplemented with measured bathymetry from ship based instruments (e.g. echo sounders). Details of each of these three are given in Table 3.

In West Africa, more precise bathymetric data from either acoustic probes or bathymetric chart digitization is held by the Partenariat Régional pour la Conservation de la zone Côtière et Marine en Afrique de l’Ouest (Figure 12).

5.1.2. Nautical charts

Nautical charts are an important source of both depth information and also provide information on some regulatory arrangements related to port facilities and safety of navigation (Figure 13). These are important inputs into maritime spatial planning. Nautical charts are available from national hydrographic services.

Table 3. Summary of global bathymetric data sets.

<table>
<thead>
<tr>
<th>Data set</th>
<th>Year</th>
<th>Resolution</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRTM30_PLUS v11</td>
<td>2014</td>
<td>30 arc seconds (1km)</td>
<td><a href="http://topex.ucsd.edu/WWW_html/srtm30_plus.html">http://topex.ucsd.edu/WWW_html/srtm30_plus.html</a></td>
</tr>
<tr>
<td>SRTM15_PLUS v11</td>
<td>2014</td>
<td>15 arc seconds (500m)</td>
<td><a href="http://topex.ucsd.edu/WWW_html/srtm30_plus.html">http://topex.ucsd.edu/WWW_html/srtm30_plus.html</a></td>
</tr>
<tr>
<td>GEBCO</td>
<td>2014</td>
<td>30 arc seconds (1km)</td>
<td><a href="http://www.gebco.net/">http://www.gebco.net/</a></td>
</tr>
<tr>
<td>ETOPO1</td>
<td>2008</td>
<td>1 arc minute (2km)</td>
<td><a href="https://ngdc.noaa.gov/mgg/global/global.html">https://ngdc.noaa.gov/mgg/global/global.html</a></td>
</tr>
</tbody>
</table>

Figure 12. Bathymetric map of a part of West Africa.

Figure 13. Example of Nautical chart for Port of Tema, Ghana showing depths and port facilities.
5.1.3. Seafloor geomorphology

There are several global data sets related to seafloor habitats. These include the global seafloor feature map which maps 29 different geomorphic features including seamounts, submarine canyons, and the continental shelf, slope and abyss (Figure 14). Geomorphology is an important proxy for biodiversity, with different geomorphic features likely to support different ecosystems and their associated species. The global seafloor geomorphology layers are available from the Blue Habitats website www.bluehabitats.org.

In West Africa, the Canary Current countries have a layer of data on the marine substrate (Figure 15).

5.2. Biological/ecological features

Understanding the importance biological and/or ecological features in a region is important for improved conservation and also the sustainable use of the marine environment by other sectors. There are a number of global data sets that can be used to provide information on these features. These can be supplemented with local scientific knowledge. This is the case in West Africa, with the use of stakeholder mapping to identify the distribution of broad seafloor habitats (Figure 10).

5.2.1. Ecologically and/or Biologically Significant Marine Areas (EBSAs)

Ecologically and/or Biologically Significant Marine Areas (EBSAs) are special areas in the ocean that serve important purposes, in one way or another, to support the healthy functioning of oceans and the many services that it provides. States and competent intergovernmental organizations identify EBSAs through a science driven process and supported by the best available data. EBSAs are identified based on seven scientific criteria:

1. Uniqueness or Rarity
2. Special importance for life history stages of species
3. Importance for threatened, endangered or declining species and/or habitats
4. Vulnerability, Fragility, Sensitivity, or Slow recovery
5. Biological Productivity
6. Biological Diversity
7. Naturalness

EBSA workshops, run by the Convention on Biological Diversity (CBD) have been held in almost all of the major seas including: Western South Pacific, Wider Caribbean & Western Mid-Atlantic, Southern Indian Ocean, Eastern Tropical & Temperate Pacific, North Pacific, South-Eastern Atlantic, Arctic, North-West Atlantic, and Mediterranean (Figure 16). EBSAs have no direct management implications, however potential
impacts on these areas from other users should be considered in an MSP process. EBSA data is available from the CBD website (https://www.cbd.int/ebsa/).

5.2.2. Key Biodiversity areas and Important Bird & Biodiversity Areas

Key Biodiversity Areas (KBA) are sites that contribute to the global persistence of biodiversity, including vital habitat for threatened plant and animal species in terrestrial, freshwater and marine ecosystems. The Global Standard for the identification of Key Biodiversity Areas was adopted by the IUCN in April 2016.

Important Bird and Biodiversity Areas (IBAs) are KBAs identified for birds using internationally agreed criteria applied locally by BirdLife Partners and experts (Figure 17). Similar to EBSAs, these sites do not have a direct management implication, however in an MSP process the impacts of other users should be considered in these areas. The IBAs can be accessed from BirdLife International (http://datazone.BirdLife.org/site/mapsearch)

Figure 16. Identified EBSAs off the Atlantic Coast of Africa. Map taken from https://www.cbd.int/ebsa/.

Figure 17. Important Bird and Biodiversity Areas in west and central Africa. Map taken from BirdLife International.
5.2.3. Seagrass, Mangroves and Coral reefs

Global layers exist for seagrass, mangroves and coral reefs. These three coastal and marine habitats are found in various parts of the Abidjan Convention Region. Further information on these data sets can be found on the Ocean Data Viewer application (http://data.unep-wcmc.org). Additionally, each member country of the Abidjan Convention has its own data, for example data on mangroves.

Seagrass: This dataset shows the global distribution of seagrasses, and is composed of two subsets of point and polygon occurrence data. The data were compiled by UNEP World Conservation Monitoring Centre in collaboration with many collaborators (e.g. Frederick Short of the University of New Hampshire), organisations (e.g. OSPAR), and projects (e.g. the European project Mediterranean Sensitive Habitats “Mediseh”), across the globe (full list available in “Seagrass_Metadata_v4.dbf”).

Mangroves: This dataset shows the global distribution of mangroves, and was produced as joint initiatives of the International Tropical Timber Organization (ITTO), International Society for Mangrove Ecosystems (ISME), Food and Agriculture Organization of the United Nations (FAO), United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), United Nations Educational, Scientific and Cultural Organization’s Man and the Biosphere Programme (UNESCO-MAB), United Nations University Institute for Water, Environment and Health (UNU-INWEH) and The Nature Conservancy (TNC). Major funding was provided by ITTO through a Japanese Government project grant; the project was implemented by ISME. Furthermore, due to their importance and vulnerability, almost all countries of the Abidjan Convention have digital data on the mangrove ecosystem. Several sustainable mangrove management projects have been implemented in the region with support from IUCN, WWF and Wetlands International.

Coral Reefs: Reefs at Risk Revisited uses a global map of coral reefs at 500-m resolution. The Reefs at Risk Revisited report provides a detailed assessment of the status of and threats to the world’s coral reefs. It evaluates threats to coral reefs from a wide range of human activities, and includes an assessment of climate-related threats to reefs. It also contains a global assessment of the vulnerability of nations and territories to coral reef degradation (www.wri.org/publication/reefs-risk-revisited.)

5.3. Human Use and management

There is a large amount of human use data that is useful in marine spatial planning. This includes uses such as fisheries, aquaculture, tourism, oil and gas, mining, transportation, ports etc. Country governments will hold much of this data. There are also some global data available, for example the Ocean Health Index (http://www.oceanhealthindex.org/) has collated a number of global data layers on human uses.

Fisheries are an important source of both food and employment for coastal communities. The Sea Around Us project (http://www.seaaroundus.org) has reconstructed fisheries catch at the global scale. The data can be viewed on the Sea Around Us website. Fisheries data is also available from national fisheries management agencies.
Existing management areas including fisheries areas/closures, oil and gas leases and marine protected areas are commonly available from the responsible ministry. There are also global and regional databases for marine protected areas such as the protected planet (https://protectedplanet.net/) and through the regional partnerships on marine protection.

5.4. The African Coastal and Marine Atlas

The African Coastal and Marine Atlas (www.africanmarineatlas.net) was initiated as a continental-scale online resource of public-domain geospatial data (Figure 19). The project was designed to identify, collect and organize data sets into an atlas of biophysical themes, including: basemaps, geosphere, hydrosphere, atmosphere, biosphere and the human and built environment. A second aim was to provide training to increase the use of Geographic Information Systems (GIS) and spatial data products for the dissemination of appropriate, timely and relevant information. The inventory of data sets in the atlas is also a useful indicator of gaps, either in the knowledge base or the availability of the data in the public domain. The Coastal and Marine Atlases currently have more than 3,500 maps for different features from the coastal areas of 20 countries. Five regional atlases have also been developed for the Large Marine Ecosystem regions as follows: Agulhas and Somali Current, Benguela Current, Canary Current, Guinea Current, and the Mediterranean and Red Sea regions. The national and regional atlases can be accessed at: www.africanmarineatlas.org, while the related metadata is available at: www.geonetwork.iode.org/geonetworkAMA/.
6. MSP IN MAMI WATA

6.1. Synergies with EBSA and SOME information

Within the Mami Wata project MSP is one of three key tools that will help countries move towards Integrated Ocean Management. These three tools are complementary and have many synergies. The information required for all three tools is often the same - that is information on the marine environment and the human uses. As such, information collected for one tool is likely to be re-useable for the other tools. There can therefore be benefits in creating a space for this information to be stored so that it can be collected once and used multiple times.

A spatial data infrastructure (SDI) is an online system that allows the storage, discovery and visualisation of spatial data and metadata. SDIs can have permission systems that allow only registered or specific members to access certain information. A key feature of an SDI is that users can find out about the data using searchable metadata - metadata is the information that describes the data. Metadata is important as it allows the users to assess whether data is fit for their purpose. SDIs also allow user to visualise data, often in context with other data. A well set up SDI can be a key input into all three tools supported under the Mami Wata project.

The EBSA and SOME tools will also produce information that is relevant to MSP. For example, the EBSA tool will help identify areas that are ecologically or biologically important. These areas can be incorporated in the MSP process as areas that should have a particular management focus to ensure that human activities have minimal impact on biology and/or ecology of these areas. Similarly, SOME reporting will identify issues and potentially areas that need some management action. MSP again can provide a process to address some of these issues using spatial management measures.

6.2. MSP within Integrated Ocean Management

MSP is one of three tools being supported under the Mami Wata project. These three tools are part of an Integrated Ocean Management (IOM) approach. The tools form a logical progression between understanding the environment, identifying the human interactions with the environment and creating management measures to address these issues (Figure 20). The Mami Wata tool box is designed to work alongside traditional sectoral management to create an integrated approach to ocean management.

The three tools in the Mami Wata toolkit do not in themselves constitute an integrated ocean management approach. Instead they provide the key tools to link environmental management and traditional sectoral management.

State of the marine environment (SOME) reporting provides the status and trends in the condition of key environmental features based on the assessment of published data, expert opinion and traditional knowledge. For example, the status and trends for seagrass beds might be assessed as OK but decreasing through a SOME report. The report may also identify particular areas where these trends are strongest. This information can be used to prioritise management actions at both the sectoral level and also at an integrated level, for example through marine spatial planning.

The identification of ecologically or biologically significant areas (EBSAs) under the Convention on Biological Diversity criteria is a scientific exercise. EBSAs are spatially defined areas that meet one or more of the criteria. EBSAs themselves do not have management implications, however they provide a focus area for sectoral and integrated management.
7. ANNEXES

7.1. Cote d'Ivoire – baseline sensitivity map

Figure 21. Map of the biological potentiality of the Côte d'Ivoire's coastline.

Figure 22. Sensitive socio-economic activities map along the Côte d'Ivoire's coastline.
Figure 23. Côte d’Ivoire coastline Land use map.

Figure 24. Côte d’Ivoire coast protected areas - example of the Ramsar zone in Assinie and the mangroves in Ehotilés Islands.
Figure 25. Oil concession on the Côte d'Ivoire coast (Petroci).

Figure 26. Coastal erosion sensitivity map of Jacqueville-Port-Bouët
7.2. Environmental sensitivity map for coastal areas of Ghana

7.2.1. Background

The Environmental Sensitivity Map for the Coastal Area of Ghana was prepared in 2004 as part of efforts geared towards strengthening the planning capabilities of Ghana to perform sustainable coastal zone management. The Sensitivity Map was supported by the UNDP with financial assistance from the Fund for Danish Consultancy Services administered by UNOPS.

The project which was carried out between 2003 and 2004 sought to develop a GIS based environmental planning tool for coastal zone management, develop a management tool for use in planning and implementation of oil spill response, and train staff of the Environmental Protection Agency (EPA) in operating the GIS system. The EPA is the focal point for coastal zone management activities in Ghana and responsible for the National Oil Spill Contingency Plan.

7.2.2. Output Documents

The outputs of the project are in three volumes, namely the Environmental Sensitivity Atlas, Coastal Environment Report and Oil Spill Sensitivity Ranking Report.

The Atlas contains 96 maps with a scale of 1:20,000, covering the entire coastline of Ghana. It shows important coastal environmental features in a coastal strip of approximately 5 km. The maps illustrate geological, ecological and human use features relevant in coastal zone management and in oil spill combat.


7.2.3. Coastal/Off Shore Ecosystems

Ecosystem in the coastal area or off shore included open waters, sandy beaches, rocky shores and coastal lagoons. Human use feature in the coastal area or off shore included fishery and fishery activities, industrial and agriculture activities, tourism and recreational uses and historical monuments and amenities.

7.2.4. Main findings

The main findings in ranking the sensitivity of the coast of Ghana to marine oil spills revealed that about 3% of the coastline has a very high sensitivity in terms of ecological features. These areas include the mouths of estuaries and open lagoons which are important feeding and roosting areas for internationally important numbers of migrant birds (i.e. mainly Ramsar sites) and/or having stands of mangroves. About 20% of the coast has been ranked as having a very high sensitivity in terms of human use features. These areas include important beach seining locations and mouths of lagoons in which salt production and/or lagoon fishing takes place.

7.2.5. Relevance for MSP

The Environmental Sensitivity Map for the Coastal Area of Ghana and its supporting documents, though more than a decade year old contain invaluable information that can serve as vital baseline data input for the preparation of Marine Spatial Plans for Ghana and by extension the Mami Wata Project.

7.3. Dispute concerning delimitation of the maritime boundary between Ghana and Côte d’Ivoire

7.3.1. Background

The maritime boundary between Ghana and its neighbouring country, Côte d’Ivoire was not a subject of dispute until the period between 2007 and 2009 when Ghana discovered oil in commercial quantities. The Tano Basin, a proven petroleum-rich basin was at the centre of the controversy. Côte d’Ivoire rejected Ghana’s claim of the area in question and demanded that the maritime boundary between both countries be delimited.

7.3.2. Bilateral Negotiation / Arbitration with ITLOS

Between 2008 and 2014, ten (10) bilateral negotiation meetings were held. Except for the agreement on the exact location of the land boundary terminus (BP 55), these meetings generally failed to resolve the maritime boundary dispute. With both parties being members of the United Nations and parties to the United Nations Convention on the Law of the Sea (UNCLOS- ratified by Ghana on 7th June 1983 and Côte d’Ivoire on 26th March 1984), Ghana in 2014 “instituted an arbitral proceeding under Annex VII to the UNCLOS in the dispute concerning the maritime boundary between Ghana and Côte d’Ivoire.”

The International Tribunal on the Law of the Sea (ITLOS) held consultations with both parties and held that the parties submit the dispute to a special chamber of the Tribunal, to which both parties agreed on 3rd December 2014.

The subject of the dispute related to the establishment of the single maritime boundary between Ghana and Côte d’Ivoire in the Atlantic Ocean, the delimitation of the territorial sea, exclusive economic zone (EEZ) and continental shelf, including the continental shelf beyond 200 NM. Ghana, however, was of the opinion that the case was not of maritime delimitation but Côte d’Ivoire thought otherwise.

7.3.3. Provisional Orders of Special Chamber

Provisional orders were issued on 25 April 2015 by the Special Chamber pending its final decision to the parties. Ghana especially was ordered to ensure that no new drillings took place in the disputed area, prevents the use of information not already in the public domain and monitor activities in...
the area. Additionally, the parties were ordered to prevent serious harm to the marine environment, cooperate and refrain from any unilateral action that might lead to aggravating the dispute.

7.3.4. Ruling/Judgement

After several hearings, the Chamber delivered its judgement on 23rd September 2017. The chamber ruled that it had jurisdiction to delimit the maritime boundary between the Parties in the territorial sea, in the exclusive economic zone and on the continental shelf, both within and beyond 200 nm.

It was established that there was no tacit agreement between the Parties to delimit their territorial sea, exclusive economic zone and continental shelf both within and beyond 200 nm contrary to Ghana’s claim.

The Chamber decided that the single maritime boundary for the territorial sea, the exclusive economic zone and the continental shelf within and beyond 200 nm starts at BP 55+ with the coordinates 05° 05’ 23.2” N, 03° 06’ 21.2” W in WGS 84 as a geodetic datum. The chamber provided corresponding coordinates and geodetic lines to define the turning points.

Ghana was also found to not have violated the sovereign rights of Côte d’Ivoire, article 83 paragraphs 1 and 3 of the Convention and the provisional measures prescribed by the Special Chamber in its Order of 25 April 2015, contrary to Côte d’Ivoire’s claim.

7.3.5. Acceptance and Commitment to Terms

Following the judgement, both parties in a joint communique issued on 23rd September 2017, accepted the decision of the Special Chamber of ITLOS. The parties reiterated their mutual commitment to abide by the terms, collaborate for its implementation and work together to strengthen and intensify a cordial neighbourly relationship between Ghana and Côte d’Ivoire.
This document is intended as a guide to assist countries of the Abidjan Convention Regional Sea Convention to establishing a Marine spatial planning (MSP) process. The guide provides practical advice on the activities required to run a successful MSP process. It frames the activities under a series of steps designed to lead the user through a successful MSP process. This guide also frames MSP as part of an ongoing management cycle.