Western Indian Ocean Climate Change Workshop for Coastal and Marine Protected Areas

Cape Town, South Africa

February 8 - 10 , 2012

Workshop Overview and Objectives

Through the Adaptation Partnership, 39 participants from nine Western Indian Ocean (WIO) countries and the United States gathered in Cape Town, South Africa to identify climate change capacity building needs for coastal and marine protected areas in the WIO region. The workshop took place February 8-10, 2012 and was organized by the United States Agency for International Development (USAID), United States Department of State (DOS), and the National Oceanic and Atmospheric Administration (NOAA) on behalf of the Adaptation Partnership, with regional assistance provided by the Western Indian Ocean Marine Science Association (WIOMSA). NOAA provided technical leadership, tailoring their International Marine Protected Area Capacity Building Program to fit the needs of WIO participants and the Adaptation Partnership's objectives.

The purpose of the workshop was to identify the capacity requirements for managers of Marine Protected Areas (MPAs) within the WIO region to conduct vulnerability assessments and build adaptive responses to climate change impacts within their management areas. It is anticipated that the outcome will be capacity building activities that can be implemented across the regional MPA network.

Workshop Structure

The program opened with an overview of the Adaptation Partnership and an explanation behind the decision to focus this particular workshop on MPAs in the WIO region. A roadmap for the three days was laid out and the workshop process was discussed (see Figure 1 below) before introductions were made around the room. The first activity was a poster session where representatives from each of the WIO countries present shared information about the types of changes or impacts that they are witnessing that may be attributable to climate change; formal approaches or methods for observing current or predicting future climatic changes and/or impacts; measures to address, mitigate or adapt to impacts from climate change (either proactively or reactively); lessons learned to date on efforts made to address impacts from climate change; and any national or local climate change initiatives or projects either being planned or currently underway. Participants had a chance to view the posters and listen to representatives at each poster talk about the climate change impacts and efforts underway in each country before the group was brought back together to reflect on commonalities and synergies that they identified during the poster session.

To familiarize everyone with climate change, MPA management, and capacity building efforts underway by those present and in the region, much of the first day consisted of presentations by MPA managers, researchers, and NGOs working on climate change issues in marine and coastal areas. Presentations were organized and grouped according to three capacity building categories: information, tools, and experiential learning. On the second and third days of the workshop, participants broke into five groups to identify climate and non-climate stressors to key MPA resources (corals, fisheries, mangroves, sea turtles, and seagrasses). They then identified some of the impacts of these stressors and management actions to address identified impacts before going on to categorize and prioritize capacity building needs to address these impacts.

Figure 1. Workshop Process Overview

Step 1

Understanding Climate Change Capacity Building Options

1. Information Sources in the WIO for Predicting and Responding to Climate Change

2. Tools to Inform and Provide Guidance for Climate Change Planning

3. Training and Experiential Learning to Build Skills & Knowledge for Responding to Climate Change

Step 2

Profiling Management in the WIO MPAs

4. Identifying Non-climate Stressors on Key MPA Target Resources

5. Addressing Impacts of Non-climate Stressors on Key MPA Target Resources

6. Identifying Management Gaps for Addressing Non-climate Stressors

Step 3

Assessing Climate Impacts

7. Assessing Potential Climate Impacts on Key MPA Target Resources

8. Leveraging Current Management Actions to Address Both Non-climate and Climate Stressors

Step 4

Identifying Climate Change Capacity Building Needs

9. Identifying the Capacity Building Needs for Addressing Climate Change Impacts

10. Categorizing Capacity Building and Needs

11. Prioritizing Capacity Building Activities

12. Identifying Outcomes and Outputs of Capacity Building Activities

13. Identifying and Characterizing Target Audiences for Capacity Building Activities

Step 5

Understanding Climate Change Capacity Building Options

14. Finding Synergies Between Capacity Building Priorities for Each Team

15. Securing Commitments from Each WIO Country on Addressing Climate Impacts

16. Framing the Plan for Capacity Building

Target Resource Breakout Discussions

Workshop participants were divided into five groups and asked to work through a series of worksheets to help identify capacity building needs, in which they identified climate change impacts on a target resource and capacity building needs to address these impacts. The findings of each group on the most immediate capacity building needs for their target resource are summarized below.

Corals

The corals group identified non-climate stressors threatening corals as those activities related to fishing (coral trampling, aquaculture, destructive gear, etc.), coral extraction, snorkeling (trampling, habitat disturbance, anchorage), and land use (sedimentation and run off). Existing management approaches to combat these stressors include education and raising awareness about the destruction of coral, monitoring the impact of stressors on the health of corals, and protecting corals by limiting access with zoning, permits, and enforcement. There is an overall sense that most of these management approaches are effective to some degree in protecting corals. Participants have witnessed changes in boating, anchorage, and extraction behaviors, and a moderate degree of compliance with fishing regulations. However, it is difficult to know if these changes are resulting in a positive change in the health of corals.

Potential climate change stressors include more frequent and/or more intense storms that are expected to cause damage to coral structures, resulting in potentially significant changes in habitat coverage and health. Increases in air and water temperatures are expected to increase the rate of coral bleaching as well as changes in the community structure, and increased precipitation may increase turbidity and disease outbreaks in coral communities. The group did not think that there was enough information available to understand how changes in ocean circulation patterns and acidification will affect corals. The capacity needs most critical to improving the management of climate change impacts on corals were identified as:

- Improved education and awareness tools and training.
- Improved data, information, and tools to better understand climate change impacts and vulnerabilities, and thresholds of corals.
- An assessment of effective management techniques.
- Harmonization across sectors and institutions that help to manage MPAs in order to strengthen policy.

Fisheries

The fisheries group identified three main fishing subcategories (commercial, recreational, subsistence) and the main non-climate stresses to their resource within these to be destructive practices, such as the use of dynamite (small-scale commercial fisheries), unsustainable harvesting strategies, such as the use of small-mesh nets (commercial, subsistence), overfishing by both foreign fleets (commercial) and local fishermen (small-scale commercial, subsistence) driven by increased demand, greater fishing effort and improved gear/techniques. These practices are reducing stocks, destroying habitat, and impacting livelihoods in and around MPAs. Current management measures such as establishing no-take areas, limiting catch allowances, and restricting the type of gear allowed are only as good as the resources available for patrolling and enforcement. Raising awareness through education and outreach to fishers and local communities is one management technique that has been suggested as a way to complement policy/legislative restrictions, but this also requires resources and reliable information.

Changes in precipitation patterns and sea temperature, ocean acidification, and increased and/or more intense storm events were climate stressors that were identified by the group as having an impact on fish habitat, population, and diversity. Both climate and non-climate stressors have similar impacts on fisheries by reducing fish stocks and species diversity and negatively impacting livelihoods. The management approaches identified to deal with these stressors are education and awareness, monitoring, accommodating local management preferences, and voluntary compliance. The capacity needs that need to be filled to better implement these management approaches were identified as:

- Improved information about the health of fisheries through training and tools for data collection and monitoring.
- Enhanced resilience through better site-specific information and a reference guide of response techniques.
- Strengthened capacity to communicate MPA concerns and needs, and improved flow of information from MPA managers to higher tiers of government through training in communication and public relations skills.
- Improved ability of those receiving the information from MPA managers to understand and act on this information as a means to to promote political will to address the impacts of climate change on fisheries.
- Improved understanding among MPA staff of alternative livelihood options for communities living in and round MPAs, and increased ability to promote the implementation of these options.
- Improved education and awareness tools and training.
- Information sharing platform to facilitate regional sharing of good practices and lessons learned.

Mangroves

Primary non-climate stressors to mangroves were generally categorized by clearing (mangrove logging for timber, fuel, land conversion, etc.), pollution (oil spills, ship discharge), and upstream land use change (causing flooding and/or sedimentation). Existing management approaches identified were issuing logging permits, education and stakeholder engagement around the importance and preservation of mangroves, promoting alternative building materials, regulating vessel discharge, and creating buffer zones. These approaches have had little effect on the health of mangroves, and for some stressors there is not enough data to determine the effect of the management approach on mangroves.

Climate stressors affecting mangroves include prolonged droughts, sea level changes, an increase in sea and air temperature, and increased storm intensity. These stressors exacerbate the non-climate destruction by contributing to mangrove dieback, and altering these ecosystems that support fisheries, coastal health, and flood control. Creating buffer zones, enforcing regulations, and restoring mangroves are some management techniques that can mitigate climate stressors, but there remains a need for better information, communications, and enforcement to protect mangroves. The capacity needs that need to be filled to better manage this resource were identified as:

- Improved capacity to conduct vulnerability assessments with trainings and tools.
- Better understanding of livelihood options and training/resources available to ease the community's transition to alternative livelihoods.
- Restoration training and demonstration projects.
- Communication tools, information, and training to affect behavior change and improve management approaches.
- Improved resources and political will to enforce regulations that protect mangroves.
- Improved information about the health of mangroves through training and tools for data collection, modeling, and monitoring.

Seagrasses

Seagrasses are more vulnerable to the activities around them than to activities directly involving their use (a difference from the case with fisheries or mangroves, for example). Pollution (agricultural runoff, waste water discharge, oil spills), sedimentation from land erosion caused by beach development, deforestation, and destructive fishing practices (boat use, trawling, dynamite, etc.) are non-climate stressors that are degrading this important component of the coastal ecosystem. Education of fishers, community groups and boat operators; improved waste management; conservation agriculture (including reducing deforestation); and fishing/boat operator best management practices and regulations are management approaches to reduce the negative impact of non-climate stressors that were identified by the group. The group believes that education and awareness-raising have had some positive impacts on the health of seagrasses, and waste and sanitation education has shown improvements when access to wastewater facilities are made available. Impact on agriculture practices has been more difficult to achieve, as is alternative fuel sources to reduce mangrove deforestation, and it is still unclear if the permitting and gear restrictions on fishing will be followed and enforced with enough compliance to have positive results on seagrass beds.

The seagrasses group anticipates climate stressors such as changes in precipitation patterns (causing increases or pulses of nutrients and sediments that increase phytoplankton lead and less oxygen availability and decreases in light penetration), sea level rise (deeper waters decreasing light penetration), and increased/more intense storm events are likely to result in changes in the composition, distribution, growth, quality and productivity of seagrass beds. The group did not feel that there is currently enough information about how sea and air temperature changes, ocean circulation patterns, and drought will affect seagrasses. Acidification may actually benefit seagrasses through increased carbon dioxide availability. The group had much greater certainty about non-climate stressors, impacts and potential management responses, but for those related to climate impacts. Replanting of seagrass beds, controlling on-shore erosion, and restricting access through best management practices (education and awareness), zoning and permits are management approaches that may reduce the impact of climate stressors on seagrasses. The top priority capacity needs identified by the group are:

- Increased understanding of resource responses to climate change and how impacts to one resource may affect another (linkages between resources)
- Vulnerability assessments – training and tools to enhance capabilities
- Long-term water quality monitoring with capacity building to understand how to monitor and interpret the results
- The exchange of best management practices
- Understanding and development of options for alternative livelihoods
- Training in financing and fundraising techniques and how to access finance options

Capacity Building Priorities

From each of the five groups came a common thread of capacity building needs that are priorities for better management of climate stressors and protection of resources in MPAs. Below are the top five needs that were identified.

Understanding Climate Change

Although this wasn't explicitly expressed as a priority, once we moved from non-climate stressors to climate stressors, it was clear that the MPA managers as a whole were less comfortable with the discussion. There needs to be a better understanding of the relationship between human activities and climate change impacts on communities, natural resources, and natural processes as well as ways to analyze and assess these impacts and adaptive responses. This can either be approached as an Introduction to Climate Change training, or Climate Change Adaptation training.

Improved Data and Information

All five resource groups identified the need for improved data and information tools to understand the impacts of climate change on resources. This would include tools to collect baseline data and to monitor the health of ecosystems and changes in the climate. Monitoring of climate change impacts is important but some types of monitoring can be expensive, and funders are not yet committing sufficient and sustained resources. It would be helpful to have standardized monitoring methodologies within the region. MPA managers need to have a better understanding of the impacts of climate change so that they can communicate this to community members and decision makers.

Education and Awareness

A need for education, awareness, and communication programs and tools targeted at MPA managers, policy makers, and community members was identified as an important need across most of the resources groups. This includes education about the impacts of climate change on MPA resources and tools for raising awareness among policy makers and community groups. It also includes training for MPA managers on how to engage policy makers and communities in order to generate political will for the creation of new MPAs and to support the management of existing MPAs, including the enforcement of MPA protection measures and best management practices.

Communication capacity building activities should focus on both internal and external communication. For external communication, managers need communication tools and training on how to use communication materials as education tools. New materials should focus on climate change and target decision makers.

Internal communication and sharing knowledge needs to be improved across MPAs in the region. Communication within the MPA community will require a unique set of tools so that information sharing can take place more easily and with greater regularity. A discussion forum for continued dialogue with MPA managers and others working with MPAs and marine resources in the WIO can serve as a place for sharing best practices, lessons learned, and information tools and bringing concerns or problems for a collaborative discussion about solutions.

Vulnerability Assessment

There was specific mention by the groups of the need for improved capacity to conduct vulnerability assessments, including training and assessment tools.

Alternative Livelihoods

Participants also identified a need to improve the understanding of types of alternative livelihoods available to communities in and around MPAs and how to promote and/or develop them. This could include improved education opportunities, training, and incentives to reinforce the adoption of alternative livelihoods.

Possible Early Activities

The development of a capacity building plan is still underway, but participants identified three actions that could be implemented quickly to provide MPA managers with immediate tools that they can deploy in their management efforts. These actions are:

- Maintain communication and contact, share best practices and lessons learned, and discuss and post experiences and observed changes among MPA players at the workshop through an online dialogue forum. (WIOMSA has offered to provide a platform.)
- Create an inventory of experts on climate change issues affecting MPAs and engage them through the forum so that data, protocols, and tools are shared in a timely manner.

NOAA and USAID will work with regional representatives and stakeholders to identify the most appropriate follow-on activity to this workshop, with the goal of improving the ability of MPA managers to better assess and adapt to the impacts of climate change. Follow-on activities to consider (intended for discussion and based on priorities from workshop participants across all five groups and direct observations):

- An Introduction to Climate Change - training (may go as far as including adaptation management planning)
- Climate Change Communication – training and tools
- Vulnerability Assessment – training and tools for standardization across the WIO region
- Data Collection and Monitoring – training and tools for standardizing across the WIO region

A discussion on combining complementary themes led to possibly combining 1) understanding CC impacts with vulnerability assessment, and 2) communication with political will (including the need for tools for increasing advocacy).

Other Potential Capacity Building Activities

- Target an awareness campaign on climate change and MPAs to responsible political bodies in each country. This would depend on funds available, but a gathering of permanent secretaries (or equivalent level) in the relevant ministries from each country might be effective.
- Translate training materials and important documents into other languages (French, Portuguese, Kiswahili) for use by MPA managers who do not read English.
- Training and guidance on stakeholder engagement to enhance the relationship between MPA managers and their community neighbors.