Coastal and Marine Biodiversity and Protected Areas

For MPA managers

Module 12

Effective Management Planning of Coastal and Marine Protected Areas

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Disclaimer:

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Summary

This module provides an overview of the management experiences in terrestrial as well as marine environments. A description of the elements of management plan and guidelines for effective protected area management along with the key indicators form the major part of the learning from this module. Case studies help participants in applying concepts and guidelines to the real life cases.

Key Messages

- An MPA must have clearly defined objectives against which its performance is regularly checked, and a moni- toring programme to assess management effectiveness. Management should be adaptive, meaning that it is periodically reviewed and revised as dictated by the results of monitoring
- Effective management of MPAs requires continuous feedback of information to achieve objectives. The man- agement process involves planning, design, implementation, monitoring, evaluation, communication and adaptation. Evaluation consists of reviewing the results of actions taken and assessing whether these actions are producing the desired outcomes. Evaluation is a routine part of the management process and is something that most managers already do. The evaluation of management effectiveness builds on this existing routine.
- Evaluation is a routine part of the management process and is something most managers already do. The evaluation of management effectiveness builds on this existing routine
- Management Effectiveness can be measured in three distinct ways: - Biophysical indicators, social indicators and governance indicators
- Involving local communities (and other stakeholders) is essential in MPA management. It is particularly im- portant in the marine environment to collaborate with those using the neighbouring sea areas because of the inter-connected nature of the sea in which actions in one area impinge on another.

12.1 Guidelines and framework for preparing management plans for coastal and marine protected areas

A Marine Protected Area is "Any area of intertidal or subtidal terrain, together with its overlying waters and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment." IUCN (1999)

12.1.1 Lessons from Wildlife Management

One of the problems of attempting to manage the complex and diverse set of resources and resource relation- ships that are so typical of tropical wildlife protected areas and the surrounding landscape is that the parameters change. Components change in number and distribution and people change the values of components and their utilization.

Wildlife management planning officers need to consider the dynamics of resources, their relationships and the perception of public and professionals. Broadly, the planner has to contend with two types of major changes, the ecological change and the change in human opinion on nature based resource values. Ecological change is both natural and man made. Natural changes are random and unpredictable. Man made changes are generally ordered and predictable depending on their nature. Large fluctuations in rainfall e.g. Ranthambhor TR, events like cy- clones and cycles of drought e.g. Gir are unpredictable and can bring about unpredictable changes. The best that an MPO can do is to be aware of the existence of such cycles in a system and of their recorded consequences in the past. He/she should be in a position to propose contingency plans through a process of pattern recognition for which monitoring is an important tool. The ordered changes can be anticipated and appropriate strategies ac- cordingly would be needed to maintain or hold the change at a desired stage or allow it to progress. Successional changes in vegetation, whether natural or induced exemplify this. However the plans need to be clear in their objectives which must dictate, what change is acceptable and what is not. Sometimes, a better understanding of a system might require to modify or drop an objective.

The MPO needs to establish the various categories of PA values such as the tangible, the biological, those in physical attributes, in ecological processes, the conceptual, socio-economic and others.

These need to be ranked according to the scale of priorities viz. global, national, regional, state or of local significance. Examples are cited from IEP sites and others.

The MPO needs to have an open mind and sensitivity to the perceptions of various categories of stake holders. The local values might be at the lowest level in the ladder of scales but these are often critically important in the interest of conservation. Identification of stake holders, providing adequate opportunities for dialogue, analysis of outputs and integrating these within the management strategies are critically important.

Undertaking surveys, conducting inventories to accord with the objectives, collecting and analyzing data are activities that contribute to making informed decisions. This is important not only in the preparatory phase of the plan but the process must continue through the phase of implementation to update the knowledge on facts, values and resources, resources and people relationships and the dynamics of the system. The plan to that end must establish procedures of monitoring and evaluation.

12.1.2 Lessons from Marine Protected Areas Management

- Almost all MPAs contribute to the maintenance or restitution of both biological diversity and abundance, both of which are relevant to sustainable fisheries;
- It is not feasible in today's marine environment to divorce the questions of resource use and conservation, because marine natural resources and their living space are all sought now by many different users for many different purposes;
- The tendency in some areas to oppose the recognition of fishery reserves as MPAs seems to be counterpro- ductive, inhibiting cooperation between fishers and environmentalists in creating and managing MPAs;
- There has been a long history in almost all areas of the world of conflict and lack of cooperation between environmental and fisheries management agencies. This lack of joint action inhibits progress in establishing MPAs and managing them wherever it is manifest. Individual MPAs and system plans should be designed to serve both sustainable use and environmental protection objectives, and relevant agencies should work together in planning and management;

- Local people must be deeply involved from the earliest possible stage in any MPA that is to succeed. This involvement should extend to them receiving clearly identifiable benefits from the MPA;
- Socio-economic considerations usually determine the success or failure of MPAs. In addition to biophysical factors, these considerations should be addressed from the outset in identifying sites for MPAs, and in select- ing and managing them;
- It is better to have an MPA which is not ideal in the ecological sense but which meets the primary objective than to strive vainly to create the 'perfect MPA';
- It is usually a mistake to postpone action on the establishment of an MPA because biophysical information is incomplete. There will usually be sufficient information to indicate whether the MPA is justified ecologically and to set reasonable boundaries;
- Design and management of MPAs must be both top-down and bottom-up;
- An MPA must have clearly defined objectives against which its performance is regularly checked, and a moni- toring programme to assess management effectiveness. Management should be adaptive, meaning that it is periodically reviewed and revised as dictated by the results of monitoring;
- There is a global debate about the merits of small, highly protected MPAs and large, multiple use MPAs. Much of this debate arises from the misconception that it must be one or the other. In fact, nearly all large, multiple use MPAs encapsulate highly protected zones, which can function in the same way as individual highly pro- tected MPAs. Conversely, a small, highly protected MPA in a larger area subject to integrated management can be as effective as a large, multiple use MPA;
- Because of the highly connected nature of the sea, which efficiently transmits substances and forcing factors, an MPA will rarely succeed unless it is embedded in, or is so large that it constitutes, an integrated ecosystem management regime.

12.2 Contents of an MPA Management Plan[1]

[IUCN Guidelines for Marine Protected Areas/ Kelleher1999]

1. During the development of plans and associated reports, it is necessary to consider the available information and to determine how far it is appropriate to cover the following items:
2. Executive Summary: Covers the essential issues and necessary decisions. Many of the final decision-makers will not have time to read and digest supporting detail;
3. Introduction: Defines the purpose and scope of the plan and explains the legislative basis and authority for plan development;
4. Statement of the goal and objectives for the planned MPA as a whole;
5. Definition of the area: A formal statement on the boundaries of the planned MPA and a geographic description of its setting and accessibility;
6. Description of the resources of the area: A summary of information directly relevant to decisions (detail should be restricted to an annex or separate document);
7. Description of uses of the area: Concentrates on present uses but should place these in the context of past types and levels of use. This includes social and economic analyses of use;
8. Description of the existing legal and management framework, such as coastal fisheries, marine transporta- tion and other relevant legal controls on present use of the area. Where they still exist or can be recalled, traditional practices of management, ownership or rights to the use of marine resources should be described;
9. Analysis of constraints and opportunities for activities possible within the area;
10. Statement of the principal threats to the conservation, management and maintenance of the area;
11. Statement of policies, plans, actions, inter-agency agreements and responsibilities of individual agencies rel- evant to meet the objectives of the MPA and to deal with threats and conflicts. This may include a summary of consultative processes followed in plan development;
12. Statement of the boundaries, objectives and conditions of use and entry for any component zones of the planned area;

1 Kelleher, G. (1999). Guidelines for Marine Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. xxiv +107pp.

13. Provision for regulations required to achieve and implement boundaries and conditions of use and entry;
14. An assessment of the financial, human and physical resources required to establish and manage the MPA including:
    - staffing
    - equipment and facilities
    - training
    - budget
    - interpretation and education
    - monitoring and research
    - restoration
    - surveillance
    - enforcement
    - contingency/emergency planning
    - evaluation and review of effectiveness.

12.3 Detailed contents of an MPA management plan[2]

This model plan is for a comprehensive Management Plan for a large MPA. Management Plans for small, relatively simple MPAs can be correspondingly reduced in content.

In a large multiple-use MPA, a zoning plan establishes the framework from which the management plan is de- rived. This means that the zoning plan, rather than the management plan, is the primary document for a large multipurpose MPA. On the other hand, in a small MPA, the management plan is self-contained and complete.

This example of the content of an MPA Management Plan is provided to assist those involved in the preparation of plans and submissions in government agencies and NGOs.

It should be viewed as an ideal model, since it implies a planning situation where there is a high level of description and understanding of the area under investigation.

The precise format adopted will depend upon the provisions of the legislation establishing the MPA and the government processes required for putting a management plan into effect.

The example that follows is where the management plan is the primary policy-setting document and the zoning plan is subordinate to it. In many cases the items 1– 4.1 may form a preliminary document which establishes the initial case for protection of the area in question.

Title Page

This includes:

- The name of the area subject to the plan and its status;
- The words MANAGEMENT PLAN;
- The name of the agency/agencies responsible for implementing the plan;
- The date when the plan was prepared and the expected date for review.

2 Kelleher, G. (1999). Guidelines for Marine Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. xxiv +107pp.

Executive Summary Page

- On this page are summarized:
- The reasons why the plan was prepared;
- The period of time to which it applies;
- Any special conditions which controlled its preparation including the legislative basis and authority for plan development;
- The principal provisions of the plan;
- The estimated budget; and
- Acknowledgements.

Contents Page

The headings of the body of the plan are listed here against the appropriate page numbers. It may be preferable to list only the main headings, but sub-headings are usually included.

Body of the Plan

1. OBJECTIVES FOR MANAGEMENT

The goal and objectives for management are stated in this section. They will reflect the purpose(s) for which the area is protected and the use(s) which will be permitted.

2. RESOURCE DESCRIPTION

This section provides information on the following categories for the areas to be protected. Maps will be an im- portant feature of this section.

2.1 Name of Area and Location

To include the geographic location (State, district, etc.); latitudes and longitudes (preferably on amap); surface area (square kilometres, hectares or other units of area).

2.2 Geographic and Habitat Classification

The area should be categorised according to a habitat classification scheme to identify its geographic zone, sub- strate type(s) and major biological feature(s).

2.3 Conservation Status

This should indicate the area's degree of naturalness, aesthetic values, degree and nature of threats (if any), jurisdiction(s) and present ownership. The degree of habitat representativeness should also be indicated.

2.4 Access and Regional Context

The regional land and sea surroundings and access routes to the area are described, in addition to the character and use of contiguous areas, emphasising their effectiveness as buffer zones.

2.5 History and Development

This section contains a summary account of direct and peripheral human involvement in the area. This section may be divided into several sub-sections e.g.:

2.5.1 Archaeology

A summary description of the people who used the area before historical times, including any known areas of re- ligious significance, species taken and if closed seasons or closed areas were ever used as management techniques. Archaeological information could also provide clues to species that were found in the area.

2.5.2 Historical relics

This sub-section should identify submerged wrecks and any other submerged structures of historic interest.

2.5.3 Written and oral history

2.5.4 Recent developments

Give a brief history of fishing and other human use of the area and developments on the land which may have had a major influence on the area.

2.5.5 Current human use and development

In this section the current use of the area by subsistence, artisanal, commercial and recreational fishermen, tour- ists and others is discussed. It is most important to establish who the users are, where they conduct their activities, at what times of the year, and for how long, and the social and economic importance of their use.

A user survey may be helpful. This information is just as important as biophysical data.

2.6 Physical features

In this section the non-living features of the area are described. Maps in addition to descriptions should be in- cluded.

2.6.1 Coastal landforms

Nearby land forms should be described, together with islands and underwater formations.

2.6.2 Bathymetry

A map showing isobaths is needed. The depth of water can provide an important insight into the dynamics of the system. Major trenches, canyons and shallows should be described.

2.6.3 Tides

A description of the tidal regime and resultant currents and water movements associated with phases of the tidal cycle.

2.6.4 Water

Water quality, including salinity, turbidity and other important parameters Measurements of salinity, turbidity and any major pollutant levels in all seasons are desirable.

2.6.5 Geology

A description in geological terms about how the area was formed and how that process is continuing with the deposition of present day substrates and by erosion processes observable in the area.

2.6.6 Dominant currents

A description of wind-driven, tidal and residual currents, on a seasonal basis.

2.6.7 Freshwater inputs

Major river and estuarine areas.

2.7 Climate

2.7.1 Precipitation

Annual precipitation figures and a chart to indicate average precipitation on a monthly basis.

2.7.2 Temperature

Monthly charts for both air and average sea temperatures (surface and at given depth). If possible include a monthly chart of solar radiation received.

2.7.3 Winds

Monthly charts of rose diagrams plus a description of any unusual feature of the local winds.

2.8 Plant life

This section should contain at least a description of dominant marine plant life, and wherever possible a comprehensive summary of the plant community and related environmental factors, such as the depth of occurrence, together with any botanical features that may have special scientific, recreational or other interest. Phytoplankton could be included if information is available. Plant species identified in the area should be listed in an appendix.

Note: Sections 2.8 and 2.9 could be amalgamated to one section enti- tled 'Marine Wildlife'. Wildlife would be defined as: animals and plants that are indigenous to the nation, to its coastal sea, to its continental shelf or its overlying waters; migra- tory animals that periodically or occasionally visit its territory; and such other animals and plants, not being domesticated animals or cultivated plants, as are prescribed by legislation.

2.9 Marine fauna

As a minimum, a description of the dominant marine or estuarine fauna is required, with an account of their ecological relationships if known. Include sections on Mammals, Reptiles, Amphibians, Fish, Birds, Invertebrates and Zooplankton as appropriate. A separate appendix should list the species.

2.10 Miscellaneous

Note: Sections 2.8 and 2.9 could be amalgamated to one section enti- tled 'Marine Wildlife'. Wildlife would be defined as: animals and plants that are indigenous to the nation, to its coastal sea, to its continental shelf or its overlying waters; migra- tory animals that periodically or occasionally visit its territory; and such other animals and plants, not being domesticated animals or cultivated plants, as are prescribed by legislation.

This can be a varied section that includes those matters which do not fit under any of the other descriptions of the plan. Each plan will be site specific and could therefore have features or problems which are not encountered in other plans.

3. DESCRIPTION OF MANAGEMENT ISSUES

A summary of past, present and possible future threats and management conflicts should follow.

3.1 Historic and current conflicts

A brief statement of any historic or current conflicts between uses or user groups.

3.2 Pollution

Include point and non-point sources of external pollution within the area and in nearby areas, e.g. runoff, sewage inputs, fish processing, industrial pollution and pollution from tourism and shipping.

3.3 Future demand

Estimate future demand for recreational and other uses, and if applicable, future pollution loading and proposed developments.

3.4 Potential conflicts

Potential conflicts specific to the area within and close to the boundary of the MPA should be described. Any potential conflicts due to more distant regional influences should also be identified. This should include review of sectoral development plans and proposed projects which could affect the area.

4. MANAGEMENT POLICIES

In this section the management plan comes to grips with the threats and conflicts and prescribes solutions.

4.1 Objectives

The goal of protecting the area is briefly reiterated. The objectives of management are stated clearly. If the area is to be subdivided, sub-objectives should be stated for each zone or subdivision of the managed area.

4.2 Resource units

It could be useful to divide the area into resource units.

4.2.1 Natural

Each MPA will have unique characteristics and the resource units will be site specific. An area could be divided into resource units such as beaches, islands, deep water trenches, turtle or seal rookeries etc.

4.2.2 Development areas

Another category could be areas that are either developed or proposed to be developed.

4.2.3 Areas of impact

Areas showing marked impact from human activity could be identified.

4.3 Zoning

The resource units defined above may provide a basis for zoning. Zoning must be easy to understand both from the point of view of the manager and the managed.

This section should explain why a particular area has been given a zone classification and what activities are per- mitted and prohibited within each zone. The aim should be to keep the zoning arrangements as simple as possible, consistent with avoiding unnecessary restriction on human activities.

Special habitats or wildlife areas such as a seagrass bed or a turtle rookery, may require additional management provisions, such as seasonal closures or permanent restrictions over access. Unusual prescriptions may be needed in the short term and these should be described in this section.

4.4 Management policies for resource units

In the draft management plan a list of management options can be presented and a choice made between them in the final version of the plan.

5. SURVEILLANCE

This section should describe any programmes proposed to assess movement of people, vessels and aircraft within and through the area and the use made of the area.

6. MONITORING

This section should describe any biological, environmental and usage monitoring programmes proposed for the area, when these programmes will be completed and how they are to be used in reviewing the management plan. It may also identify other monitoring programmes to be initiated during the first stage of the plan and who could carry them out. Some of the results from monitoring may eventually be included in the appendices.

7. EDUCATION AND INTERPRETATION

This section should describe programmes and co-operative arrangements with educational institutions, public associations and community groups to promote protection, wise use, public understanding and enjoyment of the MPA. Co-management may be an option.

8. ENFORCEMENT

This section should outline the arrangements which will need to be made to detect apparent offences and to apprehend and prosecute offenders in order to achieve an acceptable level of adherence to MPA regulations. It is absolutely unrealistic to manage primarily on the basis of enforcement in the

face of general public hostility or to apprehend every breach of regulation. Education, community involvement and "ownership" are therefore the primary management tools.

9. MAINTENANCE AND ADMINISTRATION

A section will be required to address the subjects of budget, staffing, etc.

9.1 Budget

Anticipated costs and possible sources of funds should be identified with the aim of achieving a high level of self- financing.

9.2 Staffing

The management plan should indicate staffing needs and identify major functions. Volunteers, consultants and head office staff involved in the planning process should also be identified, as this will provide a more accurate indication of staffing levels. Staffing deficiencies can be predicted and recommendations suggested. Section 9 should be updated and released as part of an annual report.

10. INFORMATION SOURCES

Information regarding the area will come from sources outside the manager's regular information base. These should be identified and listed wherever possible, and include those other government agencies, non-government organisations, individuals, consultants, overseas sources etc. that were consulted. A bibliography should be ap- pended.

11. APPENDICES

Appendix 1: Boundary and Area Description

This should provide the legal description of the area including any outstanding legal tenure or matters of existing interest which might have become clear during the development of the management plan. In most federal systems of government, there are complex and sometimes unresolved questions of jurisdiction between levels of govern- ment especially in the intertidal

environment. These problems should be highlighted and, if appropriate, solutions suggested. One solution is to have complementary legislative, planning and management provisions on each side of that jurisdictional boundary.

Examples of this include adjacent Federal and State Marine Protected Areas at Florida Keys and the Californian Channel Islands in the USA and the Great Barrier Reef Marine Park and adjacent Queensland Marine Parks in Australia.

Appendix 2: Legislation

All legislation and regulations relating to the area, and their interactions, should be noted and explained. Where feasible, the legislation that prevails in the event of conflict between the provisions of different enactments should be identified. Implications for the protective status of the area should be identified.

Appendix 3: Plant Species

A comprehensive list of plant species should be attempted for the first management plan. As the process continues over the years, it is quite possible that new plant species will be discovered in the area. Plant names should be listed in broad taxonomic groups, with botanical and common names where possible.

Appendix 4: Animal Species

Animal species should be listed in broad taxonomic groups: e.g. Mammals, Reptiles, Amphibians, Fish, Birds and Invertebrates and common names provided where possible.

Appendix 5: Special Features

This section could describe unusual or outstanding features of the area and could range from whale strandings, waterspouts, oil slicks to spiritual revelations and cultural beliefs.

Appendix 6: Past, Present and Proposed use

This section should attempt to provide more detail on uses, identify key user groups and assess the social and economic significance of areas.

MAPS

The following are suggested as a minimum number of maps required:

Map 1 Location

Map 2 Land/water tenure and jurisdiction

Map 3 Land topography and seabed bathymetry

Map 4 Geology

Map 5/6 Dominant plant and animal communities

Map 7/8 Major uses

Map 9 Major use conflicts and threatened resources

Map 10 Zoning

Where practicable the use of overlay presentation is recommended in order to illustrate the associations between such factors as topography, biological communities and uses.

Marine and coastal resource management has evolved into a professional practice.

There is recognition of the need for marine and coastal managers to be more systematic in using MPAs to improve marine conservation learning and create a set of best management practices.

To meet this need, there is general consensus among conservation practitioners that evaluation of management effectiveness will improve MPA practice. It is particularly relevant now given the focus on implementing MPAs and increasing their number.

Effective management of MPAs requires continuous feedback of information to achieve objectives. The management process involves planning, design, implementation, monitoring, evaluation, communication and adaptation. Evaluation consists of reviewing the results of actions taken and assessing whether these actions are producing the desired outcomes.

Evaluation is a routine part of the management process and is something that most managers already do. The evaluation of management effectiveness builds on this existing routine.

12.4 Guidelines and framework for evaluating management effectiveness of coastal and marine protected areas

12.4.1 What is management effectiveness?

The degree to which management actions are achieving the goals and objectives of a marine protected area

Assessment of effectiveness needs to be tailored to the management systems in place: one system of assessment is unlikely to fit all circumstances. However, management effectiveness evaluation does have a range of common elements and processes that can form the basis of a purpose-built assessment system.

12.4.2 Why evaluate management effectiveness?

There are many reasons why people want to assess management effectiveness. These different purposes may re- quire different assessment systems and varying degrees of detail. Funding bodies, policy makers and conservation lobbyists may use the results to highlight problems and to set priorities; or to promote better management policies and practices by management agencies. Managers may wish to use evaluation results to improve their perfor- mance or to report on achievements to senior managers, the government or external stakeholders.

Broadly speaking, management effectiveness:

- facilitates and promotes adaptive management
- Improves project planning Improves project planning
- Enhances priority setting
- assists in effective resource allocation
- promotes accountability and transparency
- help involve the community, build constituency and promote protected area values.

In addition to these substantive benefits, the process of assessing management effectiveness can also deliver a number of procedural benefits. Improved communication and cooperation between managers and other stake- holders is a common outcome of evaluation processes. Managers also have an opportunity to "step back" from the day-to-day concerns of their jobs and consider the issues and challenges that they face in a new light.

Whatever purposes it may serve, evaluation should be seen primarily as a tool to assist managers in their work, not as a system for watching and punishing managers for inadequate performance. Evaluation must be used positively to support managers and be seen as a normal part of the process of management.

12.4.3 Framework for evaluating management effectiveness

The Framework is based on the principle that good protected area management should follow a cyclical process with six stages or elements.

12.4.3.1 THE MANAGEMENT CYCLE:

- begins with understanding the context of the protected area, including its values, the threats that it faces and opportunities available, its stakeholders, and the management and political environment;
- progresses through planning: establishing vision, goals, objectives and strategies to conserve values and re- duce threats;
- allocates inputs (resources) of staff, money and equipment to work towards the objectives;
- implementation of management actions according to accepted processes; and
- eventually produces outputs (goods and services, which should usually be outlined in management plans and work plans)
- that result in impacts or outcomes, hopefully achieving defined goals and objectives.

Figure 3. The Framework for assessing management effectiveness of protected areas

All six elements are important in developing an understanding of how effectively protected areas are being managed. They reflect three large "themes" of management: design (context and planning),

- appropriateness/adequacy (inputs and processes) and
- delivery (outputs and outcomes).

Evaluation that assesses each of the elements and the links between them, should provide a relatively comprehensive picture of management effectiveness.

Table 1. IUCN-WCPA Framework for assessing management effectiveness of protected areas and protected area systems

	Design		Appropriateness/Adequacy		Delivery	
Elements of management cycle	**Context**	**Planning**	**Inputs**	**Process**	**Outputs**	**Outcomes**
Focus of evaluation	Assessment of importance, threats and policy environment	Assessment of protected area design and planning	Assessment of resources needed to carry out management	Assessment of the way in which management is conducted	Assessment of the implementation of management programmes and actions; delivery of products and services	Assessment of the outcomes and the extent to which they achieved objectives
Criteria that are assessed	Significance/ values Threats Vulnerability Stakeholders National context	Protected area legislation and policy Protected area system design Protected area design Management planning	Resources available to the agency Resources available to the protected area	Suitability of management processes and the extent to which established or accepted processes are being implemented	Results of management actions Services and products	Impacts: effects of management in relation to objectives

12.4.3.2 CONTEXT: STATUS AND THREATS WHERE ARE WE NOW?

What are the values and significance of the area? What are the threats and opportunities?

What social, economic and political factors influence management? Who is involved?

Major aspects to be considered under the heading of context include:

values and significance of the protected area, from both biological and socio-cultural perspectives;

threats to the protected area such as invasive species, inappropriate resource use and extraction, and other exter- nal as well as internal threats;

external influences ranging from national factors (economic position, policy environment, political stability) to local issues (neighbour and stakeholder relationships);

stakeholders and local communities, including an understanding of who is involved in and who could be affected by management of the protected area.

Much of the information needed will often be available in a management plan, research papers, project proposals or similar documents, but for evaluation purposes the data might need to be updated, expanded or interpreted.

Table 2. Some types of values to be considered in assessing protected area context

Ecological	Socio-economic and cultural
Ecosystem services/ functions • Catchment management and water supply • Soil conservation • Climate and disaster mitigation • Clean air/pollution mitigation **Biodiversity** • Ecosystem level • Species level (rare and threatened, indicator species, popular species, economically or socially important species etc) • Local population level • Genetic level **Landscape and geological** • Evidence of formation and ongoing geological processes • Fossils • Special geological formations and landscape features • Water bodies and wetlands	**Cultural** • Spiritual – e.g. sacred sites • Indigenous heritage • Historical • Aesthetic/artistic **Social** • Recreation • Green space • Scenic **Economic** • Tourism • Adjacent land values • Sustainable resource harvesting **Research and education** • Benchmark sites • Research • Formal education • Interpretation

12.4.3.3 PLANNING WHERE DO WE WANT TO BE AND HOW WILL WE GET THERE?

Is the legal status and tenure of the site clear?

How adequate is the protected area system?

Does the design of site allow it to function effectively?

Does the site have clear management planning?

A protected area that suffers from fundamental design flaws is unlikely to be effective, however efficiently the managing body operates, and regular assessment of the quality of planning therefore underpins much of what follows.

This element of evaluation considers the design features of a protected area or a protected area system –the physi- cal, legal and institutional factors which determine whether its management will be relatively straightforward or complicated.

Foundation of planning assessment

Key criteria to be covered in this section include:

- protected area legislation and policy;
- design of protected area systems;
- design of reserves; and
- management planning.

Protected areas and systems need sound, planned management even if they have been well designed. Clear and appropriate objectives for the protected area, supported by a management plan and adequate resources, are char- acteristics of effective management. A critical element is to see whether they have been translated into annual work plans that are implemented and assessed.

How does planning evaluation affects the overall effectiveness evaluation?

_ Feedback from other phases of the evaluation cycle may recommend changes to the design of the protected area or system, and may highlight the need for better legislation, policies and planning. Improvements or adjustments to the management plan are most likely to be recommended, but long-term problems may also suggest the need to change protected area size or boundaries.

_ When evaluating other elements in the management cycle, the protected area plan, especially its objectives, tar- get and stated outputs and tasks, will be the basis for establishing expectations and benchmarks that are used in the assessment process. Indeed, a good management plan will be the major source for identifying indicators and targets to be measured in the assessment.

12.4.3.4 INPUTS WHAT DO WE NEED?

What resources are needed for effective management?

Are sufficient resources being devoted to managing the protected area system/ site?

How are resources being applied across the various areas of management?

- Input assessments investigate the adequacy of resources
- human capacity, facilities, information, operational money and equipment – for effective management.

This assessment needs to consider:

- the level of resources needed;
- the extent to which these resources are available; and
- whether resources are being used and applied in the best way.

Broad management categories to be used in assessing levels of input could include:

- natural resource management;
- cultural resource management;
- visitor management; and
- community liaison and development.

Understanding where staff time and resources are being directed can be critically important for interpreting other evaluation results – for example, a sharp increase in capital works funds without a corresponding increase in staff numbers can lead to effort being directed away from natural and cultural resource management. It also permits judgements to be made about the relative priority being afforded to different aspects of protected area manage- ment.

12.4.3.5 PROCESS HOW DO WE GO ABOUT MANAGEMENT?

Are the best systems and standards of management being followed?

Are agreed policies and procedures in place and being followed?

How can the management practices be improved?

The assessment of management processes focuses on the standard of management within a protected area system or site and requires:

- definition of what systems and standards are acceptable and which are 'best practice' (benchmarks);
- decisions about which of these will be required in particular systems and individual protected areas;
- investigation of whether systems are being implemented and standards are being met; and
- recommendations as to whether the systems and standards are appropriate or could be improved.

12.4.3.5.1 Developing standards for the MPA

Standards for MPA management are descriptions of the best management practices that can be reasonably expected. For example, a standard for visitor management might be "to ensure all visitor facilities are maintained and repaired regularly to ensure visitor safety and enjoyment". Standards should be ambitious, defining the way management should be conducted in the absence of constraints arising from lack of funding, staff numbers, and staff skills, to allow room for modification and improvement.

The steps involved in identifying standards are:

1. Managers to identify key issues relating to management processes and collect relevant data.
2. Managers' workshop to establish standards. The Worksheet can be used as a guide and adapted as required. Standards should be set in relation to management targets/ objectives as well as agency policies, regional standards, etc.

3. Site meeting to discuss worksheet and agree on final standards with a wide range of stakeholders.

Standards for management can be developed from a number of sources including:

- management agency policies;
- provisions in MPA plans;
- best practice guidelines;
- MPA staff; and
- local partners and stakeholder groups.
- Indigenous communities

It is not necessary or practical to define standards for every aspect of management and priority should be given to those aspects considered to be most important to MPA managers, staff and key partners and stakeholders.

IUCN's Ecosystem, Parks and People project has proposed a draft set of minimum standards for protected areas management in general, which may provide some guidance

12.4.3.5.2 Proposed Minimum Standards for Protected Area Management

[Adapted from Sue Wells and Sangeeta Mangubhai. 20043..

1. **Legal Certainty and Management Plan**

   Legal certainty:

   - In accordance with national legislation;
   - Geographical extent and boundaries clearly established;
   - A general zoning scheme in place;
   - Resource use and other activities clearly and authoritatively regulated;
   - Management category is clearly stated in all relevant legislation.

Management plan:

- Describes outstanding biological and other features of the area;
- Contains detailed zoning;
- Contains regulation of activities;
- Contains description of programs, actions and goals;
- Has been analyzed and discussed with primary stakeholders;
- Approved by the relevant legal authorities;
- Officially published;
- Disseminated to all relevant stakeholders.
- Provides procedures for inter-institutional coordination
- Inter-institutional mechanisms with clear regulatory framework which includes different government sectors from national and local levels; and
- Regional development plans are in place for the influence zone of the protected area

2. Ecological Parameters

- Size is adequate to fulfill stated conservation objectives related to:
- Landscapes;
- Species;
- Environmental parameters;
- Environmental services;
- Ecosystem function; and
- Unique natural features and events (e.g. endemic species, migratory congregations).
- Ecosystems are maintained in good condition (with identified indicators):
- The landscapes, ecosystems, species and/or environmental services that are targets of protected are of significant value at the country or regional level.

3. **Human Resources**

- Responsible officer (director) in charge of coordinating all activities in place;
- Necessary personnel for law enforcement;
- Personnel are sufficiently trained to undertake their assigned tasks and duties, including interface with stakeholders and conflict resolution;
- Salaries are adequate, within national standards, and scaled to responsibilities;
- Staff are sufficiently high within the government hierarchy to be able to interact effectively with other government authorities;
- A staff training programme is in place.

4. **Infrastructure and Equipment**

- Administration offices;
- Field stations;
- Visitors' Centre with easy access, low maintenance requirements and use of modern museum display techniques;
- Signage in place covering prohibitions, regulations, safety information, and general information about the protected area and its features; and
- Interpretative trails;
- Sufficient equipment for personnel to fulfil objectives (e.g. computers, land and water vehicles, safety equipment, uniforms, communication links.)

6. **Monitoring and Evaluation**

- Monitoring program in place that:
- Establishes goals;
- Sets time limits to accomplish activities;
- Functions under an established scientific protocol in accordance with standardized methodologies using robust indicators; and
- Is integrated into corrective adaptive management decision-making processes.

- Follow-up and evaluation programme that establishes goals and sets time limits to accomplish activities

7. Participatory Processes

Includes effective mechanisms for stakeholder and local institution participation, with:

- Internal by-laws
- Includes all sectors
- Representation mechanisms
- Includes a training programme for stakeholders to raise effectiveness of participation

8. Public Awareness

- Activities to ensure that neighbouring communities are aware of the existence of the protected area and associated laws governing resource use;
- Campaigns and activities to increase understanding of the values and benefits of the protected area and the rationale for actions taken to protect it; and
- Environmental education programmes for neighbouring communities that translate technical information for public use, promote dialogue, and build capacity for conservation decision-making.

9. Public Use Facilities

- Designated areas for recreational activities;
- Carrying capacity has been determined and impact of use is monitored;
- Specialised personnel dedicated to visitors;
- Accessible information for visitors;
- Waste management system;
- Adequate restroom facilities;
- Designated camping sites (if camping allowed);
- Concessions for specific services (e.g. restaurants, gift shop, transportation, guides – preferably local stakeholders).

10. Research

- Basic and applied research programmes to support protection and management, covering:
- ecosystems and species;
- socio-economic dimensions;
- Agreements with national and foreign academic institutions to carry out necessary research;
- Adequate regulation for sample collection and handling of natural resources to ensure no adverse impacts from research activities in the protected area.

12.4.3.6 OUTPUTS WHAT DID WE DO AND WHAT PRODUCTS OR SERVICES WERE PRODUCED?

Has the management plan and work programme been implemented? What are the results/outputs of management?

Assessment of outputs looks at the number or level of products and services delivered; and the extent to which stated actions, tasks and strategies were implemented.

POSSIBLE TYPES OF DESIRED OUTPUTS

Product and service delivery

Numbers of users (e.g. visitor numbers to the park, numbers of people using a service, numbers of inquiries answered, numbers of researchers)

Measures of the volume of work output (e.g. numbers of meetings held with local communities, numbers of patrols undertaken, extent of area surveyed in a research programme, numbers of prosecutions instigated)

Measures of physical outputs (e.g. length of park boundary delineated and marked, numbers of brochures produced or distributed, number and value of development projects completed)

Achievement of planned work programme

Actual work programme versus planned work programme (e.g. numbers of patrols undertaken, extent to which planned capital works programme has been completed)

Actual versus planned expenditure

Extent of implementation of management plan or other programme-planning document (usually relates to longerterm activities than an annual work programme)

Output assessment does not address the question of whether the plans are appropriate or adequate, but simply whether they are being implemented. The adequacy of planning systems and the plans themselves are better assessed by *process* and *outcome* approaches to evaluation respectively.

12.4.3.7 OUTCOMES WHAT DID WE ACHIEVE?

Has management resulted in the achievement of the objectives of, and desired out- comes for, the protected area or system?

Outcome assessment is vitally important because it measures the real effects of management actions:

whether management is maintaining the core values for which the protected area was established. Even if other aspects of management are assessed as highly effective, a protected area will fail if it loses its core values (this would suggest that problems beyond the protected area boundaries need to be addressed.) Although outcomes are almost certainly the single most important of the elements, they are also often the most difficult and most expensive to measure.

A number of specific issues usually need to be addressed:

- identification of desired outcomes;
- options for outcome evaluation and monitoring;
- the condition of values including biodiversity;
- whether socio-economic and cultural conditions remained constant or improved; and
- whether specific management objectives were achieved and threats abated.

IDENTIFICATION OF DESIRED OUTCOMES

Evaluations of outcome need to be based upon a clear understanding of what management is aiming to accom- plish41 and what specific values are to be conserved. Outcome assessment is most meaningful where concrete objectives for management have been specified in national legislation, community policies, site-specific manage- ment plans or project plans. In these cases the assessment can move quickly to data gathering and analysis.

DETAILED SCIENTIFIC DATA FROM A MONITORING PROGRAMME IS OFTEN SOUGHT TO PROVIDE A MORE RIGOROUS PICTURE OF WHAT IS HAPPENING.

However, monitoring is expensive; and the management of large systems or protected areas with multiple objec- tives and many values, usually with limited resources, means that monitoring efforts must be carefully targeted and well designed. The particular indicators chosen for monitoring should if possible provide at least some in- formation on as wide a range of values as possible – for example healthy populations of an animal with a large home-range will often say something as well about the overall health of the ecosystem.

BECAUSE THE SPECIFIC OBJECTIVES FOR MANAGEMENT WILL BE DIFFERENT FOR EACH PROTECTED AREA, THE CONTENT OF MONITORING AND EVALUATION PROGRAMMES FOR ASSESSING OUTCOMES WILL BE CORRESPONDINGLY DIVERSE

To monitor status of any value, it is usually necessary to decide:

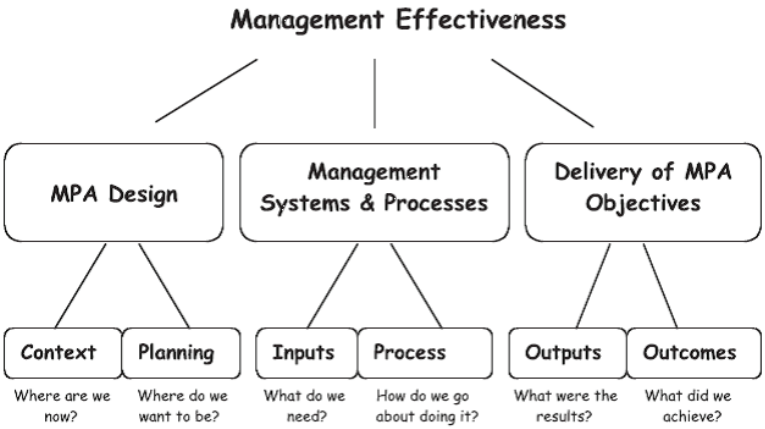
- what attributes will be considered;
- what indicators of this attribute will be measured/assessed; and
- methods to be used in measuring the indicator.

Some examples of attributes, indicators and methods of measurements for three very different values are given in Table xx. Building monitoring systems will be a key part of many long-term attempts at measuring outcomes.

Table 6. Example of monitoring attributes, indicators and methods

Value	Attributes	Indicators	Method
Population of an endangered animal	Breeding success	Number of breeding females at sites x,y,z	Counting nests
	Mortality rate	Proportion of population dying each year	Tag and recapture
Integrity of an Indigenous art site	Visibility of artwork	Vibrancy and clarity compared with previous years	Photo-monitoring and analysis
	Disturbance level of site	Evidence of graffiti, trampling and soil compaction	Photo-monitoring and soil compaction measures
Level of cooperation with local community	Proportion of community supporting the protected area	Number of incursions by local people recorded	Patrol database
		Report of positive progress at meetings	Subjective quarterly reports reviewed

Figure 2. Key components of assessing management effectiveness



12.4.3.7.1 The MPA Management Effectiveness Indicators:

Management Effectiveness can be measured in three distinct ways:

- Biophysical indicators
- Social indicators
- Governance indicators

THE BIOPHYSICAL INDICATORS

Regardless of their many social benefits and aims, MPAs are ultimately a tool for conserving the biophysical conditions of our oceans and coasts. As such, using indicators to measure these conditions is typically of primary interest to managers whose job it is to evaluate the effectiveness of an MPA.

In most cases, the link between the biological state of the marine environment and the livelihoods, income and food security of the people who use and depend upon the resource is explicit and intimate. It then follows that beyond characterizing natural systems, the measurement of biophysical indicators can also be useful when viewed in the context of the socio-economic and governance conditions that operate in and around the MPA.

For example, the biological goods (such as fish) and ecological services (such as nutrient cycling) generated from effectively managed MPAs can be thought of in financial terms, where the MPA is a 'bank account' that preserves the natural 'capital' that society depends upon for the future. If this natural capital is left alone and allowed to grow over time, the 'income' generated from this 'principal' may be able to provide ecological goods and services that are of immediate use to people while also offering them future security. Without MPAs, too much of this natural capital may be 'spent' by society, draining away the 'principal' over time. In this regard, six of the biophysical indicators (B1, B2, B3, B4, B6, and B8) can be used to measure how much 'principal' is reserved and available, while the other four (B5, B7, B9, and B10) examine the degree of 'income' that may be influenced as a result of the MPA.

Biophysical Indicator 1	Focal species abundance
Biophysical Indicator 2	Focal species population structure
Biophysical Indicator 3	Habitat distribution and complexity
Biophysical Indicator 4	Composition and structure of the community
Biophysical Indicator 5	Recruitment success within the community
Biophysical Indicator 6	Food web integrity
Biophysical Indicator 7	Type, level and return on fishing effort
Biophysical Indicator 8	Water quality
Biophysical Indicator 9	Area showing signs of recovery
Biophysical Indicator 10	Area under no or reduced human impact

THE SOCIO-ECONOMIC INDICATORS

Experience shows that social, cultural, economic and political factors, more than biological or physical factors, shape the development, management and performance of MPAs.

MPAs affect and are affected by people. For this reason, the goals and objectives of many MPAs include socio- economic considerations such as food security, livelihood opportunities, monetary and non-monetary benefits, equitable distribution of benefits, compatibility with local culture, and environmental awareness and knowledge. Understanding the socio-economic context of stakeholders involved with and/or influenced by the MPA (individ- uals, households, groups, communities, organizations) is essential for assessing, predicting and managing MPAs.

The use of socio-economic indicators allows MPA managers to:

a. incorporate and monitor stakeholder group concerns and interests into the management process;
b. determine the impacts of management decisions on the stakeholders; and
c. demonstrate the value of the MPA to the public and decision-makers.

The socio-economic indicators as mentioned below address the overall value of the MPA, in addition to being focused on the achievement of social and economic goals and objectives.

Socio-economic Indicator 1	Local marine resource use patterns
Socio-economic Indicator 2	Local values and beliefs about marine resources
Socio-economic Indicator 3	Level of understanding of human impacts on resources
Socio-economic Indicator 4	Perceptions of seafood availability
Socio-economic Indicator 5	Perceptions of local resource harvest
Socio-economic Indicator 6	Perceptions of non-market and non-use value
Socio-economic Indicator 7	Material style of life
Socio-economic Indicator 8	Quality of human health
Socio-economic Indicator 9	Household income distribution by source
Socio-economic Indicator 10	Household occupational structure
Socio-economic Indicator 11	Community infrastructure and business
Socio-economic Indicator 12	Number and nature of markets
Socio-economic Indicator 13	Stakeholder knowledge of natural history
Socio-economic Indicator 14	Distribution of formal knowledge to community
Socio-economic Indicator 15	Percentage of stakeholder group in leadership positions
Socio-economic Indicator 16	Changes in conditions of ancestral and historical sites, features, and/or monuments

Indicators S4, S5 and S6, measure people's perceptions. People's perceptions are known to have an impact on con- servation, so while the measurement of perceptions may be imprecise, their use can be of real value to the MPA manager.

Indicators S2, S3, S13, rely on interviewing household members and fishers. Interviews provide access to a wealth of valuable information relating to such issues as natural history, resource use and income.

Indicators S2, S3, S13 and S14 are concerned with aspects of understanding people's values and understanding marine resources at the broader community level.

It should be noted that there is no one indicator which captures the total economic value of the MPA. However, several of the indicators can be used to measure components of total economic value such as use and non-use values of the MPA. These include indicators S6 (perceptions of non-market and non-use value), S7 (material style of life), S8 (quality of human health), S9 (household income distribution by source), S10 (occupational struc- ture), S11 (community infrastructure and business), and S12 (number and nature of markets). While not direct measures of total economic value, used together, these indicators can provide information on benefits and costs associated with the MPA and can adaptively inform MPA managers in their planning and management decision-making.

THE GOVERNANCE INDICATORS

By definition, an MPA is a governance tool. It limits, forbids or otherwise controls use patterns and human activ- ity through a structure of rights and rules. Resource governance is the way in which users and their intentions are managed through a set of rights, rules, and shared social norms and strategies. This includes enforcement mecha- nisms, such as policing measures and punishments, as well as incentives to direct human behaviour and use.

Resource governance can include:

- formal and informal forms of resource ownership;
- use rights and the laws that support these rights; and
- the rules, rights and regulations that dictate how resources can and cannot be used.

Resource governance is defined by formal organizations and law, traditional bodies, and/or accepted practice. Resource governance takes place at four related levels: local, provincial/state, national,

and international. In this guidebook, we are particularly interested in the governance of the MPA and marine resources.

MPAs may be managed under a variety of arrangements. The three most general arrangements are:

- centralized,
- community-based (or locally managed), and
- collaborative (or co-management).

The differences between the three primarily relate to the degree of stakeholder participation in the process and the location of management authority and responsibility.

Centralized management tends to involve limited participation by stakeholders and management authority and responsibility are located in a central agency or office of government.

Community-based or locally managed tends to involve a great deal of local stakeholder participation and man- agement authority and responsibility are located at the community or local organization level.

Co-management is a sharing of authority and responsibility between government and local stakeholders, which may take many forms, and involves a high degree of stakeholder participation.

Experience has shown that the imposition of an MPA located near human settlements and without broad stake- holder participation, consensus and acceptability can lead to failure. Where local stakeholders have a high degree of participation in MPA planning and management, there is greater sense of ownership by them of the MPA and this leads to stronger and longer-term conservation success.

This is not to say that all MPAs have or should have a high degree of stakeholder participation, as many centrally managed MPAs have also been successful. It is crucial, therefore, to understand the social, economic, political and governance context of the MPA.

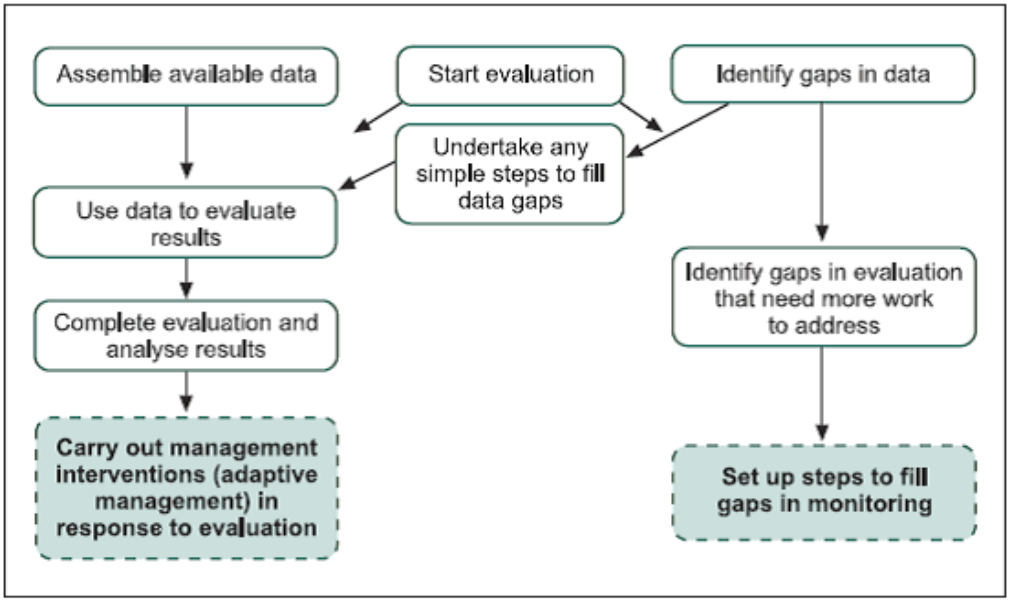
For this reason, the indicators should be analysed together so that linkages between the socio-economic and gov- ernance indictors can be identified and examined. Among the 16 governance

indicators, several measure stake- holder participation, particularly G9, G11, G12 and G13. Each indicator measures a distinct aspect of stakeholder participation in MPA management.

Governance Indicator 1	Level of resource conflict
Governance Indicator 2	Existence of a decision-making and management body
Governance Indicator 3	Existence and adoption of a management plan
Governance Indicator 4	Local understanding of MPA rules and regulations
Governance Indicator 5	Existence and adequacy of enabling legislation
Governance Indicator 6	Availability and allocation of MPA administrative resources
Governance Indicator 7	Existence and application of scientific research and input
Governance Indicator 8	Existence and activity level of community organization(s)
Governance Indicator 9	Degree of interaction between managers and stakeholders
Governance Indicator 10	Proportion of stakeholders trained in sustainable use
Governance Indicator 11	Level of training provided to stakeholders in participation
Governance Indicator 12	Level of stakeholder participation and satisfaction in management processes and activities
Governance Indicator 13	Level of stakeholder involvement in surveillance, monitoring and enforcement
Governance Indicator 14	Clearly defined enforcement procedures
Governance Indicator 15	Enforcement coverage
Governance Indicator 16	Degree of information dissemination to encourage stakeholder compliance

12.5 Implementing evaluation

Steps taken in the evaluation process



Information used in the evaluation can come from a variety of sources. Data collection involves extracting rel- evant information from key sources such as monitoring reports, research projects, management plans, biological surveys and sighting records, annual operation plans and visitor records.

If there is not an appropriate monitoring programme in place then the evaluation will inevitably be incomplete. However, it will still provide useful information for management. As monitoring systems are improved, assess- ments will be able to draw on better information.

Consultation with stakeholders will range from individual interviews through to small meetings or workshops. Usually consultations take place at the beginning of the assessment, to help to gather information and compile the draft evaluation and towards the end of the process as a forum for discussing and revising the draft evaluation. For the latter, it may be necessary to simplify or translate the preliminary evaluation results into local languages for some stakeholders to ensure their input.

Finally, it is important when undertaking the evaluation to adequately record the sources of the data, to record, if possible, data strengths and weaknesses, and to ensure that source data is archived and can be referred

Drawing conclusions and recommendations

The evaluation should conclude by drawing together some key conclusions. The conclusions in turn should lead on to a series of recommendations for the protected area manager and perhaps also for the protected area agency or managing body.

The recommendations from an evaluation will usually be more complex than a simple list of jobs to be done. They may include the need to fill gaps in knowledge, for instance by extra monitoring, research projects or through reference to experience in other protected areas. If the assessment throws up serious gaps in our understanding that need to be filled by monitoring, actions may include adapting the assessment process itself.

Particularly in the case of long established protected areas, management priorities may have changed over time or perhaps never been set very clearly. In these cases, the assessment provides an insight into the management objectives and accompanying management plans and need to adapt these.

Table 8. Examples of strategies to ensure recommendations are implemented

Identified need for change	People responsible	Possible mechanisms
National/ high-level policies, plans, legislation or activities are not assisting good management	Politicians, high-level decision-makers, advocacy groups	Political representations in appropriate manner; public awareness-raising
Size or design of the protected area or system needs improvement (e.g. through further acquisition of land)	Senior management staff, local communities, politicians, funding organisations	Representations to funding organisations, public awareness- raising and advocacy; good scientific evidence.
Overall resourcing of park or system is inadequate	Management agency, funding organisations, or government treasury (depending on level of problem)	Reporting of values, issues and recommendations. Representations through appropriate means – may include public advocacy
Allocation of resources, management standards, planning and protected area policies need to be improved	Senior staff in management agency or other management partners	Gaining support from most senior executive or relevant Minister; ensuring senior staff are well informed and understand the changes needed and the likely benefits. Writing changes into contracts or work agreements
Management objectives need to be altered to better reflect values and threats	Management staff, support staff (all levels) and community	Write changes into management plans, guidelines and work programmes
Some accepted activities and guidelines do not lead to desired outcomes and need to be altered	Management staff, support staff and community	Write changes into guidelines and work programmes. Explain and gain support from management staff and interested or affected community members

12.6 MPA governance: ways of interaction, Cooperation with NGO sector, MPA and local communities, Working with cultural and religious leaders,

Involving local communities (and other stakeholders) is essential in MPA management. It is particularly important in the marine environment to collaborate with those using the neighbouring sea areas because of the inter- connected nature of the sea in which actions in one area impinge on another. Partnership with local communities is also justified on grounds of the legitimacy of many community interests in management, such as the use of traditional fishing grounds.

The benefits of involving local communities and other stakeholders accrue both to the MPA managing agency and to the communities themselves. In particular:

- Management is more effective as it harnesses the knowledge, skills and comparative advantages of the local community;
- The costs of enforcement are reduced, because of voluntary compliance;
- Management responsibilities are shared, lessening the burden of the agency in charge;
- Alliances between the agency and local stakeholders can fend off resource exploitation from outside interests (which is often the main threat);
- Trust increases between the MPA agency and local stakeholders, resulting in a greater commitment to implement decisions taken together;
- The sense of security and stability increases, leading to increased confidence in investments, a long-term perspective in planning, and sustainability in negotiated management agreements;
- Problems and disputes are less likely, due to the increased understanding and knowledge among all concerned of the views and positions of others;
- Public awareness of conservation issues increases;
- Integration of conservation efforts with social, economic and cultural concerns for the territories near the MPA becomes easier; and
- The process contributes towards a more democratic and participatory society

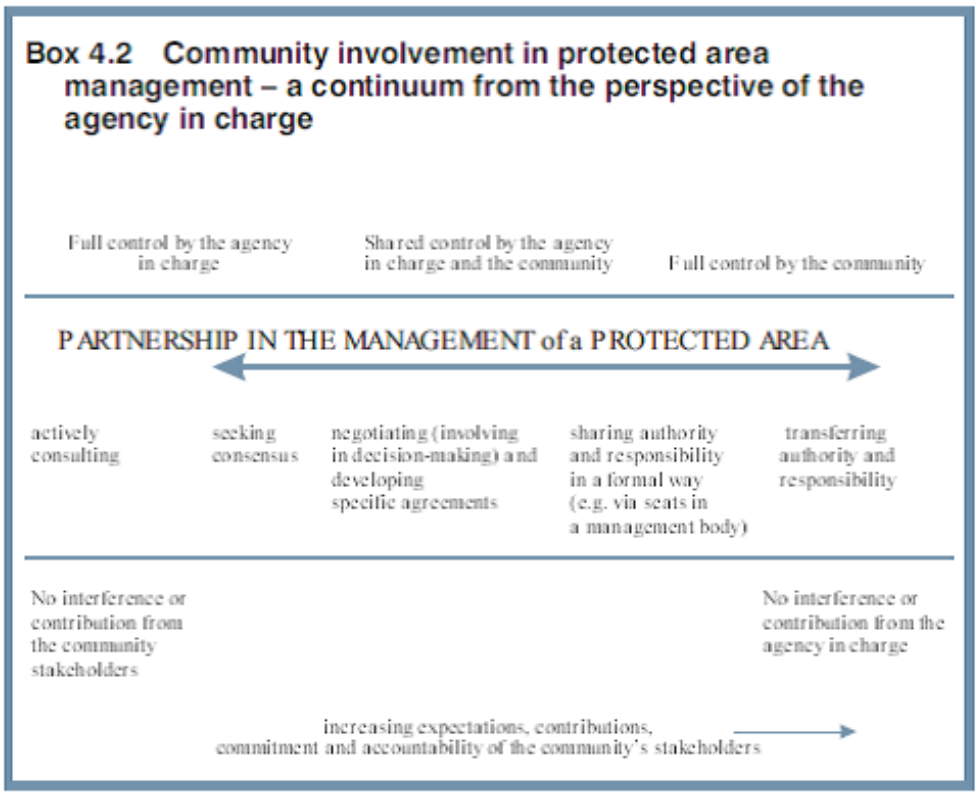
Key steps in receiving community support

Understand the local community/ies that will be affected by the MPA and identify potential partners

12.7 Choose the type of management partnership most suitable to the situation

There are numerous types of management partnership possible. Box 4.2 indicates a range of options on a scale of the least, to the most community involvement. Only in the local context is it possible to see how far along this path of management partnerships it is appropriate to go. But in general the aim should be to go as far along the path towards partnership (i.e. to the right on the diagram) as is consistent with the achievement of the conserva- tion objectives agreed for the MPA.

Box 4.2 Community involvement in protected area management – a continuum from the perspective of the agency in charge



Without the support and involvement of local people, the MPA will fail, as has often happened. But without government involvement, the MPA may lose its protection from outside forces (e.g. foreign fishing fleets, as threatened the fledgling MPA in GuineaBissau, for example). Thus the ideal is a strong management involvement of local people ("bottom-up"), but also government-driven ("top-down"). Success comes from finding the best balance of these two approaches.

12.8 Case Studies

12.8.1 Evaluation of marine protected areas in the Western Indian Ocean

Marine protected areas (MPAs) have been established throughout the world for a variety of purposes such as conservation, tourism and education. Increasingly governments and civil society want accountability and evidence that setting aside areas of land and sea for biodiversity conservation is worthwhile. Accountability is also required at the international level. The Convention on Biological Diversity requires parties to report on the status of their protected areas and has recommended that countries should carry out management effectiveness assessments of at least 30% of their protected areas by the year 2010 (IUCN 2004).

Over the last decade, countries of the Western Indian Ocean (the mainland states of eastern Africa and the island states of the Indian Ocean) have greatly increased their investment in marine protected areas –MPAs (Wells --). Most of these sites are managed under formal government mandates while some correspond to traditional or localised arrangements, and span the spectrum from fully protected "no take" areas to multiple use areas. Every country in the region now has one or more MPAs and the number is on the increase. The revitalization of the Convention for the

Case studies on policy, governance and institutional issues (FAO, 2011)

Rules and customs governing the use of marine areas exist on the Indian coast, often closely integrated with the local governance structures of traditional fishing communities. Moreover, in recent decades, spatial management measures have gained international and national attention as a means of promoting biodiversity conservation and managing fishery resources. This has ushered in new frameworks and terminology for both understanding and promoting the use of such measures. While there is no single definition for spatial management, it can be seen as a process of analysing and allocating parts of three-dimensional marine spaces for specific uses, with the goal of achieving ecological, economic and social objectives that are specified through political processes (Maes, 2008).

Protection, Management, and Development of the Marine and Coastal Environment in Eastern Africa (the Nairobi Convention, adopted in 1985) has contributed significantly to this increase and has also resulted in the establishment of the Group of Experts on Marine Protected Areas in Eastern Africa (GEMPA-EA), hosted jointly by the United Nations Environment Programme (UNEP) and the Western Indian Ocean Marine Science Association – WIOMSA (IUCN 2004).

It is worth mentioning that two of the MPAs of the region (Greater St Lucia Wetlands Park and Aldabra Atoll) are listed as World Heritage sites under the World Heritage Convention, and another three (Malindi-Watamu and Kiunga-Dodori in Kenya, and Mananara-Nord in Madagascar) are listed as Biosphere Reserves under the UNESCO Man and Biosphere Programme in recognition of their global value. Experience has shown that it is not simply enough to declare or legally gazette an area as an MPA, although this is a vitally important step. The long-term success of an MPA depends on effective management combined with demonstration of its usefulness and appropriateness as a conservation and management tool within its local and national context (IUCN 2004). IUCN's Eastern African Regional Office (IUCN-EARO) to help sites carry out assessments of management effectiveness, in order to increase understanding of where management improvements and capacity strengthening are required (Wells --).

IUCN's global programme on improving protected area management through assessment of management effectiveness now involves many partners including the World Wide Fund for Nature (WWF), The Nature Conservancy (TNC), United Nations Educational Scientific and Cultural Organisation (UNESCO), the World Heritage Convention, and the marine component of WCPA. Specific initiatives include WCPA Marine's manual aimed at helping Marine Protected Areas (MPAs) select and use appropriate indicators for assessing management effectiveness (http://effectiveMPA.noaa.gov).

The goals and objectives of an MPA must be clearly understood if management is to be successful and achievements measured. This means that they should be defined and worded in such a way that they can be monitored. The main aim of assessing management effectiveness is to improve performance of the MPA, through adaptive management – adjusting management actions on the basis of lessons learnt over time.

Management effectiveness can be assessed by looking at changes in the biophysical and socioeconomic environment as a result of the presence of the MPA, and also at the structures, activities and processes involved in management itself. Assessment should include issues within and/or beyond the control of individual managers. Once the results of an assessment are known, management can be improved by adapting processes, making new interventions, developing more strategic plans, and improving resources. Monitoring programmes, which are essential for tracking progress, can also be improved or introduced; the assessment will show that these should not be limited to the biophysical and socioeconomic environment, but should include the management process itself. There are other reasons for assessing management effectiveness. The assessment can lead to improved accountability and reporting, and can assist with planning for the future (Wells and Mangubhai, 2004).

Management of protected areas is increasingly being carried out in the style referred to as 'management by objectives'. This means that it is proactive i.e. designed to achieve a specific aim and set of results, rather than reactive, or simply responding to issues that arise. This management style requires that MPA managers and personnel look critically at the goals and objectives of the MPA (which are often very general), and develop a clear understanding of the values and importance of the site, and thus the reasons why it was protected. There are four important steps in 'management

by objectives': a) Establish clear, concise objectives; b) Develop realistic plans for achieving these; c) Monitor performance and achievement; d) Take corrective (or adaptive) management (IUCN 2004).

Assessment should be seen as a normal and essential component of the process of MPA management. MPA managers can use the results to improve their performance, report on their achievements, or highlight issues for which they require more support or additional funds. Policy makers, conservationists and funding agencies can use the results to highlight problems, set priorities, and promote better management policies and practices. It can also lead to the identification of new strategic partnerships and/or the improvement of existing partnerships (e.g. with stakeholders or other external agencies), to ensure the management needs of an MPA are met (Wells and Mangubhai, 2004).

12.8.2 Integrated Management Plan for the Gulf of Mannar Marine National Park and Biosphere Reserve (2007- 2016) – WWI & GOMBRT, 2007

This is an example of ideal management plan for a Marine National Park (MPA). MPA management is complex because of the kind of issues; it needs to look into including diverseness of marine habitats and the species they house.

This management plan shows what it takes to make such comprehensive document that will be the guiding force behind one to all activities for the conservation and management of marine habitats and ecosystem. This is a well researched and documented work covering environmental, ecological and geographical aspects, community angle, tourism perspectives, disaster preparedness, etc.

The importance of the Gulf of Mannar region dates back to the 2nd Century AD because of its highly productive pearl banks and other religious significance.. The Gulf of Mannar has drawn attention of conservationists even before the initiation of the Man and Biosphere (MAB) program by the UNESCO in 1971. With its rich biodiversity of 3600 Species of various flora and fauna part of this Gulf of Mannar has been declared as a Marine National Park in 1986 by the Government of Tamil Nadu and later as the first Marine Biosphere Reserve of India in 1989 by the Government of India.

Studies undertaken by various national institutions and government agencies have confirmed the richness of the marine biodiversity in the Gulf of Mannar region with 104 species of hard corals,

more than 450 species of fishes, 4 species of sea turtles, 38 species crabs, 2 species of lobsters, 12 species of sea grasses, 147 species of marine algae, 160 species of birds, 79 species of crustaceans, 108 species of sponges, 260 species of molluscs, 99 species of echinoderms, 4 (5) species of sea horses, 12 species of sea snakes besides the critically endangered Dugong (sea cow) and the endemic balanoglosses. The Gulf of Mannar Marine National Park also supports 12 species of mangroves.

Gulf of Mannar Marine National Park (GOMMNP) encompasses 21 off-shore islands and their surrounding coral reef system in the Bay of Bengal, along the coastal districts of Ramnathapura and Tuticorin. Advised by the Ministry of Environment & Forests, Government of India, the Tamil Nadu Government has also ratified the formation of a 10500 sq. km. of surrounding seascape and landscape around the GOMMNP as India's and that of South Asia's first Marine Biosphere Reserve – the Gulf of Mannar Biosphere Reserve (GOMBR).

Almost all ecological assessment on the current status of the coral reef system in the Gulf of Mannar region by professional agencies have opined that, unless restored, this region will not provide the ecological services and required habitat condition as a marine reef fish breeding ground. Almost 50,000 fisherfolk of the region are dependent on artisanal fisheries based livelihoods in the region and their well being is closely linked to the ecological security of the coral reef ecosystems in the Gulf of Mannar region in Tamil Nadu.

This Management plan has been developed through a consultative process. The Wildlife Institute of India has followed the IUCN-WCPA, Marine Protected Area Planning Process and Planning Guidelines as the broad general principle for developing the Marine Protected Area Management Plan. The Management Plan Development Guidelines for Protected Areas (Swarkar, 2005) developed by the Wildlife Institute of India was the general guidelines and adoption of the provision of the Wildlife (Protection) Act, 1972 were used developing the GOMMNP.

The Biosphere Reserve Management Plan Development Guidelines by the Man and Biosphere Programme of the UNESCO and the new guidelines for regulatory regimes for the Biosphere Reserve by the Ministry of Environment and Forests, Government of India has also been followed in developing the Integrated Management Plan for the Gulf of Mannar Biosphere Reserve and Marine National Park.

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