

LIVING MARINE RESOURCE GOVERNANCE FOR THE WIDER CARIBBEAN WITH
PARTICULAR EMPHASIS ON NON-EXTRACTABLE RESOURCES AND LME LEVEL
MONITORING AND REPORTING

A discussion paper for the CLME Synthesis Workshop



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February 2007

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1 Introduction

This paper has been prepared to provide stakeholders and potential partners with an overview of a possible approach to living marine resource governance for the Wider Caribbean with particular emphasis on non-extractable resources and LME level monitoring and reporting. The paper is a companion paper to one that focuses exclusively on the governance of fisheries within the Wider Caribbean.

Section 2 describes an LME governance framework that will provide the basis for the development and implementation of the CLME Project. In Section 3, a brief explanation is provided on the application of the framework within the Caribbean LME, given the level of complexity surrounding the living marine resource issues confronting the Wider Caribbean Region. Section 4 highlights existing institutions and mechanisms for governance of oceans and biodiversity while Section 5 focuses on LME-level monitoring and reporting. The paper concludes with a summary and recommendations on the LME governance framework and on the governance of non-extractable resources and biodiversity within the Caribbean LME and adjacent regions.

The CLME Project has a focus on improved governance for sustainability. Governance of living marine resources currently emphasizes ecosystem-based management (EBM) at scales that are appropriate to the biophysical processes of the oceans. Sixty-four large marine ecosystems (LMEs) have been defined on a biophysical basis and proposed as ecologically-rational units in which EBM can be applied in the marine environment.

LMEs produce about 90% of the world's total marine fish catch, but most of them have been overexploited, with declining catches and major shifts in biodiversity (Jackson et al 2001, Garibaldi and Limongelli 2003, Pauly et al 2002). They are also where most of the world's land-based and ocean-based pollution and habitat alteration take place (Miles 1999, GESAMP 2001, USCOP 2006). This places an estimated US\$10.6 trillion per year of renewable goods and services at risk (Duda and Sherman 2002, Sherman et al. 2005).

A five module approach to LMEs has been developed to facilitate LME level EBM. Three of the modules are natural science based (productivity; fish and fisheries; and pollution and ecosystem health), another is focused on assessing the socio-economic benefits to be gained from the sustainable management of the ecosystem goods and services and the fifth on assessing the governance mechanisms needed to support EBM.

1.1 Overall context – The Wider Caribbean

The Wider Caribbean Region extends from the mouth of the Amazon River, Brazil, in the south, through the insular Caribbean, Central America, the Gulf of Mexico and north along the east coast of North America to Cape Hatteras. This area also corresponds to the region covered by the FAO Western Central Atlantic Fishery Commission (WECAFC). Within this area there are three large marine ecosystems (LMEs): The Gulf of Mexico LME, the Caribbean Sea LME, and the North Brazil Current LME (Figure 1). These ecosystems are closely linked, particularly the latter two, as the oceanography of the Caribbean Sea is strongly influenced by the highly productive upstream Brazil-Guianas Shelf LME. The Gulf of Mexico LME is most influenced by inputs from the Mississippi and other North American rivers.

The region includes 26 countries and 19 dependent territories of 4 other countries (see Section 3). These countries range from among the largest (e.g. Brazil, USA) to among the smallest (e.g.

Barbados, St. Kitts and Nevis) in the world, and from the most developed to the least developed. Consequently, there is an extremely wide range in their capacities for living marine resource management. Throughout the region, the majority of the population inhabits the coastal zone, and there is a very high dependence on marine resources for livelihoods from fishing and tourism, particularly among the small island developing states (SIDS), of which there are 16. In addition 18 of the 19 dependent territories are SIDS. The region is characterized by a diversity of national and regional governance and institution arrangements, stemming primarily from the governance structures established by the countries that colonized the region.



Figure 1. The Caribbean and adjacent Large Marine Ecosystems

The EEZs of the Caribbean region form a mosaic that includes the entire region. Consequently, there is a high incidence of transboundary resource management issues, even at relatively small spatial scales.

The Caribbean Sea has been severely impacted by human uses: overexploitation of most coastal and offshore living marine resources, destruction of coastal habitats by tourism, industrial and urban development, and degradation of the marine environment by pollution from land and ship-based sources. Caribbean coastal states, especially Small-Island Developing States (SIDS), are highly dependent on the marine environment for their economic, nutritional and cultural well-being. Fisheries play a major role in Caribbean countries. Small-scale fisheries are particularly important, but are often undervalued. As near-shore resources have become depleted, and also in response to increasing demand for fish products, attention has turned to offshore resources, which are inevitably shared and already fully exploited by the major fishing nations (Mahon and McConney 2004).

The oceanography of the Caribbean region is highly variable both spatially and temporally. The North Coast of South America is dominated by the effects of two of the largest river systems in the world, the Amazon and the Orinoco, as well as numerous other large rivers (Muller-Karger 1993). Most Caribbean islands are more influenced by the nutrient-poor North Equatorial Current which enters the Caribbean Sea through the passages between the Lesser Antilles. Those islands with appreciable shelf area exhibit significant coral reef development. From Isla Margarita west to Mexico, the continental shelf is also extensively occupied by coral reefs at shallow depths. Seagrass beds and mangroves are also common coastal habitats.

The Wider Caribbean Region is a biogeographically distinct area of coral reef development within which the majority of corals and coral reef associated species are endemic. Thus, as a whole, the region is of considerable global biodiversity significance. The Meso-American Barrier Reef is the second longest barrier reef system in the world. A regional perspective on the the extent of impact of human use on reefs and related ecosystems has been developed by the Reefs at Risk Project (Burke and Maidens 2004).

1.2 Transboundary living marine resources in the Wider Caribbean Region

Transboundary living marine resources in the Wider Caribbean Region include both fisheries and non-extractable resources. In the latter category fall all of those living marine resources that are not exploitable, or at least not normally exploited in the Wider Caribbean Region, for example seabirds, reef corals and associated species and deep sea fauna. These are major components of the region's biodiversity. At the scale of the Caribbean LME, transboundary living marine resource management issues in the Caribbean may include:

- Migratory resources (mainly large pelagics, cetaceans, seabirds but also some coastal pelagics);
- Sedentary resources with transboundary distribution as adults (various demersal fishes);
- Resources with transboundary larval dispersal (lobster, conch, reef organisms);
- Dispersal of pathogens, pollutants and invasive species, i.e. negative impacts that come from another EEZ;
- Resources with transboundary trophic linkages, i.e. the existence of which depends on productivity that comes from another EEZ.

The fisheries of the Caribbean Region are based upon a diverse array of resources. The fisheries of greatest importance are for offshore pelagics, reef fishes, lobster, conch, shrimps, continental shelf demersal fishes, deep slope and bank fishes and coastal pelagics. There is a variety of less important fisheries such as for marine mammals, sea turtles, sea urchins, and seaweeds. These fishery types vary widely in state of exploitation, vessel and gear used, and approach to their development and management. However, most coastal resources are considered to be overexploited and there is increasing evidence that pelagic predator biomass has been severely depleted (FAO 1998, Mahon 2002, Myers and Worm 2003).

The fisheries use a wide variety of gear, and are primarily artisanal, or small-scale, using open, outboard powered vessels 5-12 m in length (see Table 1). The most notable exception are the shrimp and groundfish fisheries of the Brazil-Guianas shelf where trawlers in the 20-30 m size range are used, and the tuna fishery of Venezuela which uses large (>20 m) longliners and purse seiners. In many countries there has been a recent trend towards more modern mid-size vessels in the 12-15 m range, particularly for large pelagics, deep-slope fishes and lobster and conch on offshore banks.

The large pelagic species that are assessed and managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT) are the most 'high-profile' species with ocean-wide distribution sustaining the largest catches, often by distant water fleets. Few countries of the region presently participate in ICCAT's activities. The CARICOM Caribbean regional Fisheries Mechanism (CRFM) has been working towards the participation of CARICOM countries in ICCAT, most recently with assistance from FAO. A main problem is that many countries of the Caribbean, often SIDS, presently take only a small proportion of the catch of species managed by ICCAT. These countries may, by virtue of the size and productivity of their EEZs, be entitled to a larger share, but lack the technical capacity or the financial resources to participate in ICCAT where their case would be made. There is the need to develop a strategic approach through which these countries, particularly SIDS, can take part effectively individually or collectively in ICCAT (Chakalall *et al.* 1998, Singh-Renton *et al.* 2003, Mahon and McConney 2004).

Numerous other large migratory pelagic species that are not managed by ICCAT are important to the fisheries of Caribbean countries, e.g. dolphinfish, blackfin tuna, cero and king mackerels, wahoo and bullet tunas. The information base for management of these species is virtually non-existent. These are species for which a regional effort at management is urgent (Mahon 1996, Mahon and McConney 2004). This effort must include the appropriate institutional arrangement for cooperative management as required by the UN Fish Stocks Agreement.

Recreational fishing, an important but undocumented contributor to tourism economies, is an important link between shared resource management and tourism, as the preferred species are mainly predatory migratory pelagics (e.g. billfishes, wahoo, and dolphinfish). This aspect of shared resource management has received minimal attention in most Caribbean countries (Mahon and McConney 2004).

Whereas, there is the tendency to think primarily of migratory large pelagic fishes as transboundary resources, it is important to note that coastal resources such as reef organisms, lobster, conch and small pelagics may also have localized transboundary distributions or be transboundary by virtue of planktonic larval dispersal. In many species, larval dispersal lasts for many weeks (e.g., conch) or many months (e.g., lobster) and may result in transport across EEZ boundaries. These coastal resources are also the ones most likely to be impacted by transboundary movement of pollutants. Therefore, even these coastal resources have an important transboundary component to their management. They are the resources that have been most heavily exploited by Caribbean countries and are severely depleted in most areas. Their status has been discussed and documented by FAO and WECAFC for several decades (FAO 1999).

These coastal resources are particularly important for small-scale fisheries which predominate in the region. Small-scale fisheries provide a considerable proportion of the protein requirements for coastal often rural communities. In most Caribbean countries, particularly island states, the majority of the population is coastal and fisheries are a key component of food security. In CARICOM countries average per capita consumption of fish is about double the world average (FAO 2001).

The marine resources in the CLME supply a wide range of goods and services. In addition to their value for food security and fishing livelihoods, Caribbean marine resources are of vital importance wherever tourism is a significant contributor to the national economy. Reefs and related habitats play a major role in supporting tourism through beach sand production, shoreline stabilization and as a recreational resource. These resources also provide benefits indirectly via the jobs, income, and tax revenue they generate. Finally, these resources have value in terms of their historic, cultural, aesthetic, and ecological significance. Clearly these resources generate value of unique significance to the region. Yet, these resources are under considerable pressure. Anthropogenic factors such as over-fishing and coastal development (and the accompanying sedimentation and pollution) threaten to diminish all of the values listed above. Sustainable and informed management of these resources is therefore of great importance to the economies of the region.

The main objective of such management can be seen as the sustainable utilization of the multiple goods and services generated by marine resources, together with a socially equitable distribution of welfare gains and losses inherent in such uses (Ledoux and Turner, 2002). The challenge in meeting this objective is daunting, yet clear. Society must determine an acceptable level and distribution of societal welfare, and determine the level of conservation required to achieve it.

Understanding how and why people value coastal and marine resources can aid in addressing this challenge.

It is important to note that the value derived from natural amenities such as coral reefs or fish stocks, while recognized as extremely significant, may be difficult to incorporate into policy actions. Part of the explanation for this stems from the fact that people and governments most often respond to monetary price signals which often differ from economic values (Dixon, 1998). Simply put, the true value of these resources, in the Caribbean region and around the world, is largely unknown, and as a consequence may not be given due attention. It should be emphasized that unknown does not imply nonexistent; to the contrary, other studies that have estimated the value of these types of services have found that their values are quite large indeed.

Economic valuation studies of these goods and services are only now beginning to reveal their magnitude. A brief economic perspective on value, cost and benefits is provided in Appendix 1.

1.3 Governance Context: Legal, Policy and Institutional

The need for attention to the management of transboundary exploited living marine resources in the Wider Caribbean Region is well documented. From the early 1980s it has been a main subject for discussion by WECAFC (e.g. Mahon 1987) and was stressed at its Commission Meeting in 1999 (FAO 1999). These issues have been discussed and agreement reached on the need for a coordinated regional effort on shared resources at many other fora.

A number of regional and global agreements exists which seek to address the social, economic and governance issues related to transboundary marine resource management. These include UNCLOS, the UN Fish Stocks Agreement, the FAO Compliance Agreement and the FAO Code of Conduct for Responsible Fisheries (United Nations 1983, United Nations 1995, FAO 1995a, 1995b). In addition, agreements specific to the protection and conservation of the marine environment and biodiversity such as the Convention on Biological Diversity (United Nations 1992), the Global Program of Action for the Protection of the Marine Environment from Land-Based Activities (UNEP 1995) and the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean, or the “Cartegena Convention” (1983) are among the policy instruments available to guide decision-making. The national level implications of several of these are being explored by the countries of the Caribbean region. These implications include (a) the need for capacity building at the national level to take part in international and regional level management of shared resources, and (b) the need for strengthening and expanding the scope of regional institutions to undertake this function.

Institutional arrangements for the management of transboundary living marine resources in the Caribbean region have been emerging, *de facto*, from the ongoing efforts of various institutions. These reflect the fact that the Caribbean does not have any major fish stocks attracting large commercial fleets, revenues from which can be expected to support a fisheries management institution. In other parts of the world, large valuable tuna or clupeid stocks have provided the incentive to establish management regimes to protect indigenous rights and to extract rents from non-indigenous fleets. The emerging approach in the Caribbean is more suited to the large diversity of resources that are already mostly exploited by indigenous fleets so that the issues relate primarily to conservation, optimization and intra-regional equity.

In response to the above situation, the emerging arrangements are flexible and involve networking and adaptation of existing institutions. This approach has been endorsed by the countries of the region at the last two meetings of WECAFC (1999, 2001b). The arrangements

involve a number of fledgling initiatives for various types of resources. For example, in the case of conch the Caribbean Fishery Management Council has taken the lead in approaching regional management. However, some countries have difficulty taking part to the extent required for successful management. For shrimp/groundfish and flyingfish, WECAFC *ad hoc* Working Groups are the lead agencies. The newly established CARICOM Caribbean Regional Fisheries Mechanism (CRFM) has identified large pelagics as a priority topic (Haughton *et al* 2004, Mahon and McConney 2004).

The reality of Caribbean ocean governance is a diversity of networks of actors serving various purposes that seldom intersect effectively. Notably absent in most cases are interactions at the critical stage of communicating analysis and advice to shape coordinated decision-making. Thus the importance of having a framework that focuses on critical nodes for effective LME governance and on strengthening linkages across multiple levels became increasingly evident. Most countries also lack capacity, and there is seldom a clear mandate by any national, sub-regional or regional level institution for management policies that address integration among sectors.

2 An LME governance framework for LMR

In light of the diverse, complex and dynamic situation prevailing within the Caribbean LME, the LME 5-module approach was examined as a potential framework for addressing living marine resource (LMR) governance. Consideration was given to all five modules. However, it was decided to place special emphasis on the fifth module, Governance. Much has been written on theory, effectiveness and recommendations for enhancement of governance, defined as the ability to get things done without necessarily having the legal competence to command that they be done (Ostrom 1990, Czempiel 1992, Stoker 1998, Kooiman *et al* 2005, Olsen *et al* 2006). However, little guidance has been provided on how actors might practically bring about beneficial change and, as noted by Sherman *et al* (2005), development of this module has lagged behind the others. Nonetheless, the five-module indicator-based LME approach has been deemed useful for LMEs around the world (Sherman *et al* 2005, Wang 2004).

In reviewing the modular approach it was noted that though important for guiding sound decision-making, knowledge-based assessments of biophysical and socioeconomic LME components will be under-utilized, or even unusable, if there are no governance mechanisms in place to facilitate their uptake (Berkes *et al* 2001). Second, whereas the modules can provide a framework for application of indicators for assessment and monitoring, they do not provide a comprehensive framework within which interventions can be developed and implemented in a coordinated way that can be communicated to all actors so that they can see where they fit into the framework.

Rather than being one of the five modules to be undertaken in LME management, governance is seen as overarching. This perspective also provides the opportunity to separate the ‘governing system’ from the ‘system to be governed. This overarching perspective is what the proposed framework attempts to provide as it interprets effective governance to be determined by a set of nested and laterally-linked institutions and actors that are both governmental and non-governmental.

Further elaboration is provided below to give an adequate basis for interventions to enhance governance appropriate to networks of actors within the Caribbean LME. The framework may also be applicable outside the Caribbean. The following is extracted from a paper that has been

submitted to Marine Policy and is available should details and references be desired (Fanning *et al.* in press).

2.1 A policy-cycle, multi-scaled governance framework

The proposed framework provides for the processes and linkages at the multiple geographic and organizational scales that prevail in the Caribbean. In addition, the framework also accounts for the range of policy-relevant activities practiced by a diversity of stakeholders who are influenced by, and who exert influence on, decision-making at multiple levels. It provides all actors with the opportunity to see how their actions can affect the sustainable management of the shared living marine resources of the Caribbean LME. It also provides guidance on the identification of critical areas and timing for interventions and for assessing the success of such interventions.

The framework is consistent with introducing a balanced ecosystem-based approach that considers productivity, fish and fisheries, pollution and ecosystem health, socioeconomics and governance. However, our emphasis as described below is on the governance module as it applies to the Caribbean Sea LME. In this regard, Olsen *et al.* (2006) recognize the holistic nature of ecosystem management and the need to understand the dynamics of function, condition, uses and governance of a complex system.

The framework comprises two well-known components of LME governance: the process by which decisions are made in any governance regime, i.e. the policy cycle, and the multi-scale nature inherent in LMEs, be it jurisdictional, spatial, temporal or ecological. It is based on standard principles and values for governance: transparency, accountability, equity, sustainability and participation. The proposed framework is not so much an original construct as it is an identification of an existing weakly structured, self-organized framework and the provision of ideas on how to strengthen and enable it by focusing on properties that would be essential for LME level EBM.

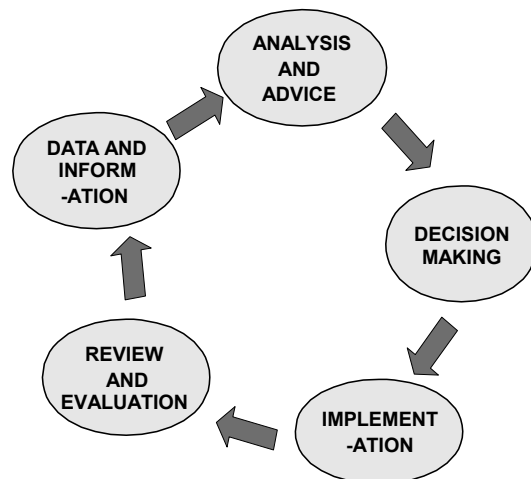


Figure 2. A generic policy cycle used for the proposed LME governance framework.

2.1.1 The policy cycle component

The foundation for the proposed framework is a generic policy cycle (Figure 2); an iterative process that should lead to incremental improvement in management (Olsen *et al.* 2006). The different stages in the cycle – data and information, synthesis and provision of advice, decision making, implementation and review and evaluation – all require different inputs and actors, although there is overlap.

The ‘data and information’ stage is where much of the science and technical input takes place. This information ought to be interdisciplinary and may range from highly technical, science-based to local/traditional knowledge provided by stakeholders either informally or formally. We consider this to be the primary area where the LME science-based modules of productivity, fish and fisheries, pollution and socioeconomics make their contribution to the governance process.

The ‘analysis and provision of advice’ stage is likely to be closely related to the ‘data and information’ stage in terms of actors involved and also draws on technical expertise. Its purpose is to provide specific policy and management options and recommendations to decision-makers in the next stage. In these stages of the cycle, the four LME science-based modules (productivity, fish and fisheries, pollution and ecosystem health, and socioeconomics) contribute to governance while the governance process itself determines the consequences of the analysis and advice being provided and the decisions reached.

The ‘implementation’ stage may be the least directly connected to the previous stages and will involve the full range of tools and activities that are familiar to natural resource managers for achieving compliance, either voluntary or enforced, as appropriate to the particular situation. These include legislation, monitoring, control and surveillance (MCS), incentives and capacity building. The ‘implementation’ stage includes collection of the data needed for monitoring of the changing states of the LME. The ‘review and evaluation’ stage completes the cycle and mainly feeds back into ‘data and information’ needs, but can also provide direct inputs across the cycle into ‘analysis and advice’ if policy changes are called for.

Clearly, this is a simplified depiction of the cycle, of which there are many variations. The various stages often overlap in function as actors play roles in more than one stage. There may also be cross links that bypass various stages for some parts of the process. We do not perceive these variations as compromising the cycle. What we consider to be important is that the cycle be complete and iterative. This leads us to our first proposition: ‘*Any interruption at any stage of the policy cycle will result in dysfunctional governance of the target resources or ecosystems*’.

2.1.2 The multi-scale multi-level component

For effective governance of LMEs, the policy cycle described above must be operational at several scales and levels, e.g. local, national, regional (LME regions) and international, in which jurisdictional and geographical scales are correlated (Figure 3). Discussions of scale in natural resource management often focus on the degree of match between institutional scale and the scale of the resource that it is to be managed. In the proposed framework, our attention is primarily on jurisdictional scale and the relationships between levels while acknowledging the importance of the fit of these to the systems to be governed as a matter to be taken up during implementation.

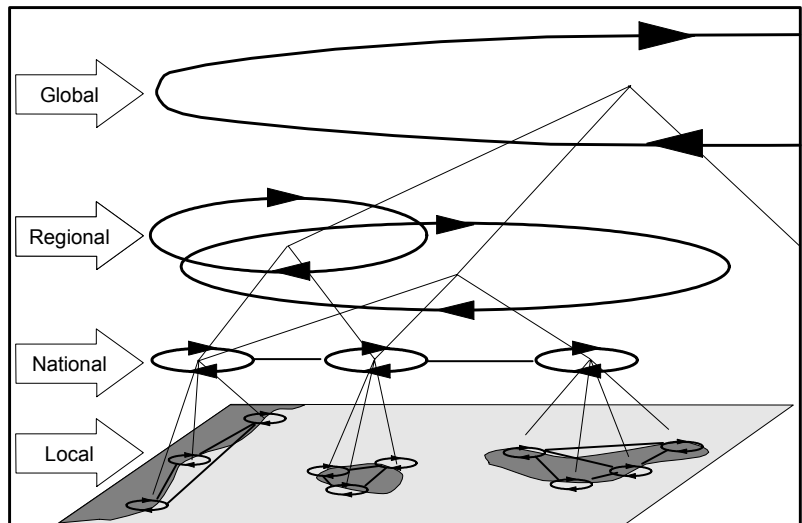


Figure 3. The multi-scale component of the proposed governance framework with vertical and horizontal linkages among the different policy cycles. The multi-level linkages do not necessarily imply a controlling function.

The multi-scale framework facilitates application of the subsidiarity principle by allowing for implementation of governance at the scale that is closest to the problem to be addressed.

The policy cycle described in the previous section may occur in a wide variety of forms determined by several factors that will be explored later. At this point we wish to emphasize that cycles at different jurisdictional levels have different roles in the proposed framework, each of which is necessary but not sufficient for LME level EBM. Consequently, linkages between jurisdictional levels are essential (Figure 3). These are bidirectional linkages that may or may not include control. When the linkages are predominantly controlling from upper to lower levels, the system is a conventional top-down hierarchy. Another situation is where the linkages are predominantly for communication and cooperation. This is essentially a network structure where the linkages facilitate self-organization. Network linkages are also typically diverse and dynamic. They may simply be for sharing of data and information which can either be offered or sought. Alternatively, they may be used to share ideas and concepts including principles and values. Even further, they can be used for joint decision-making.

Different kinds of interactions are likely in each direction. For example, there is likely to be a downward flow of information on analysis, rationale and decisions from each level to the level below. However, flows in the other direction are equally important. They can provide information on what is desired and feasible. These flows can lead to cross-scale relationships that are mutually sustaining in the long term, being neither exploitative from above nor parasitic from below. We see these upward and downward linkages in the multi-scale system are an integral component of a functioning LME governance framework. This leads us to the second proposition: ‘*Vertical linkages between functional policy cycles are necessary for effective LME governance.*’

2.1.3 Diversity in policy cycles and linkages

The proposed policy-cycle based, multi-scaled LME governance framework recognizes that there will be a diversity of policy cycle types and linkage types, and provides for this diversity to be accommodated within a single framework. The diversity of individual and organizational policy cycle actors from multiple jurisdictional levels is illustrated in Figure 4.

The nature of a policy cycle may vary according to factors that determine characteristics including: the sociocultural/political context; purpose; jurisdictional scale; capacity; and complexity.

Sociocultural and political context: The sociocultural and political context of the community, country or LME in which the policy cycle occurs will determine many of its characteristics. Whereas the establishment of common principles and values for

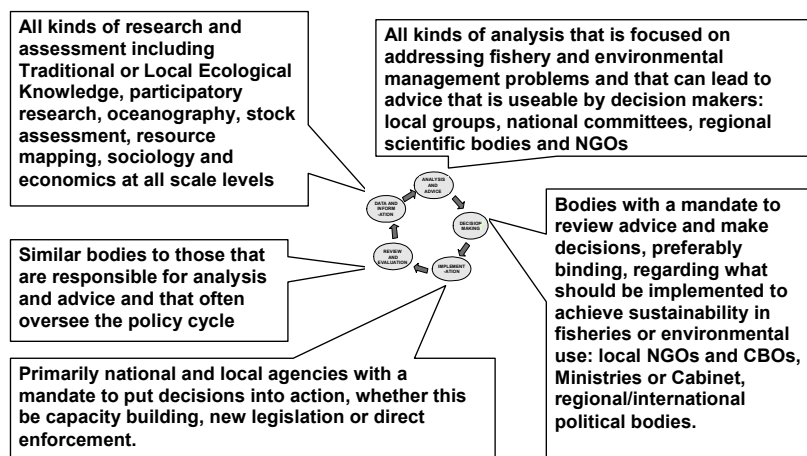


Figure 4. The diversity of stakeholders that may be involved in the policy cycle depending on cycle stage and scale level.

natural resource and environmental management can be pursued throughout an LME at upper jurisdictional levels, the way in which these are approached nationally and locally must fit cultural norms if governance is to be effective.

Purpose: Policy cycle arrangements related to living marine resource governance may be in place for a variety of purposes: to address fisheries sustainability, biodiversity conservation, marine recreational use, rural livelihoods, or any combination of these as well as other purposes. These arrangements can be species-specific, fisheries specific, area-specific, focus on protected areas, or topic-specific, such as mangrove restoration. Cycles at lower levels are most likely to be resource and location specific, whereas those at higher levels are most likely to be oriented towards harmonization of lower level cycles. An effective national level cycle is critical to ensure the effective functioning of LME-level governance since it serves as the interface between local and regional/international levels.

Jurisdictional scale: At the local level, policy cycle arrangements may be under the auspices of community-based organizations which may either already exist for other purposes such as village councils, or which may have a specific purpose, such as fisherfolk organizations or conservation groups. At the national level, a given policy cycle will be undertaken most often in the government domain and will be carried out by the government department that is responsible for implementing particular legislation. Parastatal bodies may also have responsibility for policy cycles, e.g. a National Parks Commission. At the regional and international levels, undertaking policy cycles will primarily be the responsibility of intergovernmental organizations or commissions.

Capacity: The capacity of the implementing intergovernmental organizations or commissions can determine the nature of a mature policy cycle arrangement. In situations of limited human resources, as often occurs in developing countries or small island developing states (SIDS), the arrangement that is in place to address a particular management need may differ from that which is in place to address the same need in large or developed countries. In human resource limited systems, the emphasis may be less on technical, science-based approaches and more on consensual, people-based ones.

Complexity: The implications of complexity in determining governance arrangements for natural resource management are becoming increasingly clear. Policy cycles that address highly complex systems may need to operate differently from those that address simpler ones. At the extreme of complexity, the cycle may function primarily in a learning and adaptation mode with implementation pertaining largely to enabling self-organization and building resilience.

A diversity of communication linkages can take place among the policy cycle components of the LME governance framework. Whereas in conventional hierarchical systems only vertical linkages are needed, complex systems require a richer diversity of linkages in order to be adaptive and resilient. Many valuable linkages may be horizontal, in which policy cycles at the same level learn from each other without being linked through the level above, although it may be the role of each level to promote horizontal linkages at lower levels. This leads us to our third proposition: *‘Horizontal linkages between functional policy cycles are often necessary for effective LME governance.’*

Linkages can take place at any point in a policy cycle and will differ accordingly. Technical linkages amongst scientists and technologists in the data and information stages will differ substantially from linkages amongst actors in the implementation stages – trainers and enforcers.

There may be imbalances also. Technical linkages may be strong among the actors in the data and information stages through the literature, internet and technical conferences, yet weak at other stages. It appears likely that when linkages, especially vertical ones, are absent between cycles at the ‘analysis and advice’ and ‘decision making’ stages, integration of governance at higher levels is ineffective. We therefore offer a fourth proposition that *‘Linkages between functional policy cycles specific to the ‘analysis and advice’ and ‘decision-making’ stages of the cycle are essential for effective LME governance.’*

3 Applying the LME governance framework to the Caribbean

The goal of interventions aimed at promoting effective governance of living marine resources in the Caribbean LME would be to have fully-functional policy cycles at all appropriate levels with the appropriate vertical and lateral linkages. The policy-cycle, multi-scale, multi-level approach provides an avenue for change agents at all levels to make a valuable input within the context of an overall LME governance framework. Different agents will have different focal levels. Many non-governmental organizations (NGOs) and community-based organizations (CBOs) will focus at the local level to build effective policy cycles and to enhance linkages with other similar agencies. Multi and bilateral donor agencies will usually focus at the national and regional levels through intergovernmental organizations.

Interventions can be specifically targeted at establishing policy cycles or completing them by identifying the weak stages and developing projects to strengthen them. Empirical evidence within the Caribbean LME has led us to propose that linkages between policy cycles at the analysis and decision-making stages are critical for effective LME governance and yet we have found that these stages are often the weakest in marine resource management. Efforts can focus on establishing or enhancing mechanisms for analysis and provision of advice on a regular and timely basis and on ensuring it is considered by decision-makers in appropriate fora.

Interventions can also be specifically targeted at building or enhancing linkages. The nature of interventions will vary with the nature of the links themselves. Where the links are primarily communication and cooperation based, interventions will be largely aimed at enabling self-organization and adaptation through building the capacity needed for the various interactions that should take place in developing learning systems.

While there can be emphasis on specific links, the structure of the entire system is also likely to be an important focus. The proposed framework is essentially of nested networks in which the policy cycles can be seen as nodes. However, each cycle is itself a sub-network in which the stages can be seen as nodes. Drilling deeper still, one reaches the point where individual actors functioning within the cycles can serve as nodes. It is at this level that many cross linkages may occur as these actors have roles in several cycles at various levels. Some nodes can be readily identified as network hubs. It is becoming increasingly clear that network structure, characterized by the distribution of links per node and the presence or absence of nodes with large numbers of links, can significantly affect network resilience and power relationships.

Finally, the framework also provides a context within which to assess the status of governance arrangements. At any level for any resource system, one can ask whether the conditions of the four propositions are being met. Within the Caribbean LME Project, pilot projects are being designed to test the applicability of the framework and the significance of the propositions to effectively govern shared living marine resources. Using an EBM approach to address priority

areas of concern, the pilots will examine weaknesses in existing policy cycles at multiple scale levels to identify and implement targeted and timely interventions.

4 Institutions and mechanisms for governance of oceans and biodiversity

Global management regimes have been adopted to protect the oceans, which make up two-thirds of the surface area of the planet and are increasingly the object of environmental degradation. Global regimes however, are not sufficient requiring the support of regional and subregional institutions, which can reflect the multiple uses and the layers of interests involved. Upon recognition of coastal states exclusive economic zones, the attractiveness of the oceans as a new area for economic development has been augmented. With this, responsibility of the states in terms of management and conservation is broadened (Miller 1996).

Many of the environmental stresses on the oceans come from activities landward of ocean boundaries altogether (Christie 2006). In addition, the oceans as open systems with shared marine resources used and managed by multiple stakeholders at different levels, require arrangements that go beyond national jurisdictions and have as basis the ecosystems that support productivity. Thus, the necessity of ocean governance to address problems at the ecosystem level is well accepted (Christie 2006).

Governance can be understood as the arrangements set in place to achieve an objective. Hence, ocean governance involves a framework for decision-making to address problems involving different stakeholders who have an interest on the ocean space, its uses and resources. According to Fanning *et al* (2007), governance is a key determinant for addressing impacts on productivity levels, fish and fisheries, pollution and ecosystem health as well as enhancing socio-economic conditions. Therefore, governance must be addressed at the outset of any effort to implement ecosystem-based management.

Several mechanisms on a global, regional and national level provide a basis for ocean governance. These governance frameworks range from the United Nations Convention on the Law of the Sea (UNCLOS), to regional and national efforts. While some of these mechanisms provide a comprehensive framework which governs the full spectrum of ocean uses (e.g., UNCLOS), other efforts provide a framework to achieve a specific purpose (e.g., biodiversity conservation) or are determined within a specific geographic space (e.g. Cartagena Convention). Thus, each governance framework proposes specific mechanisms which involve different stakeholders and jurisdictional levels. In addition, they determine certain interventions within the policy cycle.

The purpose of this section is to review current efforts and arrangements for the governance of non-extractable living marine resources/biodiversity, including monitoring and reporting. It will first present an overview of marine biodiversity governance, highlighting its responses, challenges and benefits. It will then review selected instruments and arrangements at three different levels: (1) global; (2) regional; and, (3) specific to the wider Caribbean with reference to the following: (1) purpose and area of application; (2) measures; (3) cooperation among members states; (4) institutional arrangements; (5) rules of procedure; (6) financial mechanisms; (7) reporting requirements; (8) assessment of success; (9) potential constraints for application; (10) relation to the governance framework; and (11) member states.

4.1 Marine Biodiversity Governance

Marine biodiversity governance is essential for its conservation, protection and sustainable use. Awareness of the need for structured governance systems has resulted in the adoption of instruments at different levels. Such instruments establish principles which seek joint action among different States and/or require the implementation of specific measures at the national and regional levels.

The measures included address issues that range from ecosystem and species protection; allocation of rights; equitable sharing of benefits; science and technology; education; capacity building; traditional knowledge; and, customary practices. All within a globalization era, where market forces place high demands on resources, and with a view of maintaining resources for future generations requiring dynamic regimes to accommodate both development and conservation. Thus, certain Conventions (e.g. Convention on Biological Diversity) offer the potential for reshaping the relationships between humans and nature, as well as the distribution of social, cultural, political and economic rights, responsibilities among and within States (Le Prestre 2002).

Certain instruments (i.e. Conventions) require the adoption of principles which make necessary a restructuring of the economic and social regimes of the nations in order to accomplish the required behavioral changes. In addition, the implementation of measures at the national levels requires on many occasions the enabling of new legislation and restructuring of existing institutions to implement new laws and regulations. Finally, given the importance of marine biodiversity for different users and uses, a committed participation from society is fundamental. Thus, it can be expected that the implementation of different instruments, which directly or indirectly address marine biodiversity, poses significant challenges.

It is highlighted that challenges encountered for implementation result from the complex nature of the instruments and their political, commercial and social implications. Challenges encountered at the level of operation of the regimes include uncertainties on the proper role and interrelationships of the bodies established for operationalization; difficulties dealing with the breath of the work programmes; absence of consensual scientific knowledge in support of the work and, insufficient or inefficient collaboration and co-operation among institutions, bilateral and multilateral agreements, particularly when dealing with earlier agreements and the harmonization of new principles with existing norms and rules of international law (Le Prestre, 2002). At the national level, proposed mechanisms for ocean governance (i.e. including marine biodiversity), which require an ecosystem-based management approach on occasion fail to provide adequate incentives. In addition, reorganization of agency structures to conform to eco-regions and the coordination between agencies within boundaries do not fully address governance. Primarily because of the complexity of the problems, their point of origin, jurisdictional responses within boundaries and a mismatch between governance structures and eco-regions (Christie, 2006). Thus, uncoordinated administrative structures, divided and competing levels of administrative authority pose a significant obstacle for implementation and the development of integrated initiatives. A further challenge encountered by public administrators is devising appropriate, credible and legitimate participatory structures called for in an ecosystem approach (Le Prestre 2002). Lack of political will or under-funded programs pose a significant challenge for implementation at the national level (Benedict 2004). In addition, as regards developing countries these may be confronted with potential or actual contradictions between international norms and local norms and priorities. Although capacity building at the

national level is a recognized priority among different Conventions, lack of capacity remains a constraint on the development and implementation of these instruments. Lack of capacity may result from a brain drain effect, when government officials are promoted without fully implementing skills learned; uneven participation in international fora by developing country experts and inadequate communication between stakeholders and governments. A further challenge faced regards financing, given that countries fund specific programs making planning more difficult and potentially skewing implementation. Finally, shortcomings in national reporting make assessment of the real degree of implementation difficult (Le Prestre, 2002). Thus, inadequate monitoring hinders improvement of the instruments and/or may result on the financing of actions which are not properly addressing the established objectives.

In spite of the challenges encountered for implementation of different instruments, the fact that these have been signed and ratified by States fosters the development and operationalization of concepts which address marine biodiversity. In addition, a concerted approach at the international, regional and national levels has benefited marine biodiversity governance on different aspects. These aspects include the establishment of institutional arrangements at the international, regional and national levels that foster international co-operation; a redefinition of biodiversity issues in socio-economic terms; the development and dissemination of new norms; strengthened non governmental agencies and networks; and, financial support. For instance, financing for biodiversity has increased significantly by the Global Environmental Facility. By 2001, the financial mechanism had provided support to over 130 developing countries to develop national biodiversity strategies (Le Prestre, 2006). Ultimately, institutional arrangements established enable a continued supervision of implementation by those States who have ratified different Conventions and therefore maintains issues of biodiversity at the forefront. In turn, a committed participation by society permits these issues to be addressed not only within the scope of the governments.

4.2 Review of selected instruments and arrangements

4.2.1 Global efforts

4.2.1.1 United Nations Convention on the Law of the Sea

Purpose and area of application

The United Nations Convention on the Law of the Sea (UNCLOS) establishes a legal order for the seas and oceans which facilitates international communication, and promotes the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.

Measures

UNCLOS represents an umbrella global instrument, which recognizes both the interests and needs of national jurisdictions and the area of the seabed and ocean floor and subsoil beyond national jurisdiction and its resources as the common heritage of mankind. Therefore, UNCLOS determines measures to be taken by national jurisdictions within their spaces of sovereignty and those shared areas (i.e. high seas). In total, UNCLOS comprises 320 articles and nine annexes, governing all aspects of ocean spaces, such as: (1) delimitation (i.e. defining territorial sea,

contiguous zone, exclusive economic zone and continental shelf as well as the rights and duties of coastal and other States within these areas); (2) environmental control; (3) marine scientific research; (4) economic and commercial activities; (5) transfer of technology; and, (6) settlement of disputes relating to ocean matters. UNCLOS sets provisions for coastal States to adopt laws and regulations within the areas of scope of the Convention.

As regards marine living resources UNCLOS determines measures to be taken by coastal States within their economic exclusive zones (e.g. determine allowable catch of the living resources, maintain and restore populations of harvested species). In addition, when a coastal State does not have the capacity to harvest the entire allowable catch it shall give other States access to the surplus. In turn these states have to comply with the laws and regulations stipulated by the coastal States. In exercising their sovereign rights to explore, exploit, conserve and manage the living resources in the exclusive economic zones, coastal States may take the necessary enforcement measures to ensure compliance with the laws and regulations adopted in conformity with UNCLOS. As UNCLOS determines that the high seas are open to all States, it sets provisions for the conservation and management of the living resources within these shared areas (i.e. applicable to fishing rights in the area, conservation measures of stocks, restoration of populations, conservation and management of marine mammals).

Cooperation among Member States

Cooperation among Members States is mandatory, both in the activities undertaken in common areas (high seas) and for the compliance of the laws and regulations of coastal States adopted in accordance to UNCLOS. As regards marine living resources, coastal States which have shared stocks within their exclusive economic zones are required to agree upon measures to ensure their conservation through subregional or regional organizations (applicable also to highly migratory species). Further cooperation is warranted for the conservation of marine mammals and cetaceans through the appropriate international organizations for their conservation, management and study. In addition, given the freedom of the high seas, States are required to cooperate for the conservation and management of living resources in these shared areas.

Institutional arrangements

The Secretary-General of the United Nations acts as depositary of UNCLOS and its amendments. Among its functions, the Secretary-General reports to all State Parties, the Authority and competent international organizations of issues related to the Convention; notifies the Authority of ratifications and accessions; circulates amendments and convenes necessary meetings of State Parties. Several institutional arrangements were established through UNCLOS, in particular for the activities and measures to be carried out in the Area. As defined by UNCLOS the Area means the seabed and ocean floor and subsoil, beyond the limits of national jurisdiction. The institutional arrangements established include: the International Seabed Authority and its bodies (Assembly, Council, Economic Planning Commission, Legal and Technical Commission, Secretariat, Enterprise). In addition, UNCLOS constituted the International Tribunal for the Law of the Sea.

Rules of procedure

No reservations or exceptions may be made to UNCLOS. Thus, provisions determined in the Convention are binding to those States who have ratified it. However, a State when signing, ratifying or acceding the Convention, can make declarations or statements in regards to the

harmonization of its laws and regulations with the provisions of UNCLOS. State Parties may propose specific amendments to UNCLOS (excluding those relating to activities in the Area) and request the convening of a conference to consider the proposed amendments. In regards to the decision-making process, the conference must make every effort to reach agreement on any amendments by consensus. Amendments can also be adopted by simplified procedure, when State Parties have presented no objection to the written proposed amendments sent to them by the Secretary-General of the United Nations within 12 months. Amendments regarding activities in the Area are subject to approval by the Assembly and Council.

When disputes arise between States in the application or interpretation of the Convention, UNCLOS determines certain provisions for their settlement. After all local remedies between the concerned Parties have been exhausted; disputes are settled by a court or tribunal (i.e. the International Tribunal for the Law of the Sea, the International Court of Justice, an arbitral tribunal). Decisions rendered by a court or tribunal are final and must be complied by all Parties to the dispute.

Financial Mechanisms

Article 82 determines provisions for payments and contributions with respect to the exploitation of the continental shelf beyond 200 nautical miles. As such, payments and contributions are made by coastal States which exploit non-living resources of the area through the Authority, which distributes them to State Parties to UNCLOS. In addition, Funds for the International Seabed Authority include contributions by members of the Authority, funds received in connection with activities in the area and funds transferred by the Enterprise.

Reporting requirements

Contracting Parties to the Convention are bound to publicize their charts and lists of geographical coordinates defining their territorial seas, charts of sea lanes, as well as the laws and regulations adopted in accordance to UNCLOS. In addition, Contracting Parties are required to publish reports concerning marine pollution, fishing resources (i.e. total allowable catch in the exclusive economic zone), information and knowledge resulting from marine scientific research.

Assessment of success

UNCLOS requires States to adopt laws and regulations within the areas of scope of the Convention. Thus, a measure of success is the legislation set in place to address ocean issues by those countries which have ratified the Convention.

Potential constraints for application

A potential constraint for application may be related to the wide scope of UNCLOS. In addition, the wide disparity among countries which have ratified the Convention in political, economic and social terms, may present a difficulty to reach agreements on measures that must be undertaken jointly. In particular, regarding marine biodiversity it is known that while some countries have stringent rules for the protection and conservation of marine mammals and cetaceans, other countries continue to exploit them. Thus, it is unclear how cooperation for conservation of marine mammals and cetaceans may be achieved.

Relation to the governance framework

Interventions are targeted both at the decision making and implementation stages of the policy cycles, as States are required to enable legislation on different issues.

Member States¹

Up to the 2nd of November, 2006, 152 countries have ratified UNCLOS. Of the countries within the Wider Caribbean the following 15 have ratified the Convention: Belize, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, Panama, Brazil, Guyana, Suriname, Trinidad and Tobago, Bahamas, Cuba, Haiti and Jamaica. Colombia and Dominican Republic have signed the declaration but not ratified it.

4.2.1.2 Convention on Biological Diversity²

Purpose and area of application

The objectives of CBD are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

CBD applies to national jurisdictions as it recognizes the sovereign right of States to exploit their own resources pursuant to their own environmental policies.

Measures

Contracting Parties are required to develop or adopt national strategies, plans and programmes that reflect the measures set out in the Convention, and integrate the conservation and sustainable use of biological diversity into relevant sectoral and cross-sectoral plans, programmes and policies.

CBD requires Contracting Parties to identify and monitor components of biological diversity, implement *in situ*³ and *ex situ* conservation measures⁴.

In order to address the objective of sustainable use of components of biological diversity, CBD requires Contracting Parties to: (1) integrate consideration of the conservation and sustainable use of biological resources within their national decision-making; (2) protect and encourage

¹ Data consulted at http://www.un.org/Depts/les/reference_files/chronological_lists-of_ratifications.htm on the 2nd of December, 2006.

² CBD was adopted on 5 June 1992

³ (1) The establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity; (2) the protection of ecosystems, natural habitats and maintenance of viable populations; (3) rehabilitation and restoration of degraded ecosystems; (4) prevention of introduction or eradication of alien species; (4) respect, preserve and maintain indigenous and local communities knowledge, innovations and practices relevant to the conservation and sustainable use of biological diversity, involvement of holders of such knowledge and equitable sharing of benefits arising from the utilization of such knowledge, innovations and practices; and, (5) development of legislation and/or regulatory provisions for the protection of threatened species.

⁴ (1) Establish and maintain facilities for *ex situ* conservation and research on plant, animals and micro-organisms; (2) adopt measures for the recovery and rehabilitation of threatened species and their reintroduction into their natural habitats; and, (3) regulate and manage collection of biological resources from natural habitats for *ex situ* conservation purposes so as not to threaten ecosystems and *in situ* populations of species.

customary use of biological resources in accordance with traditional cultural practices compatible with conservation or sustainable use requirements; (3) support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and, (4) encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources.

CBD requires Contracting Parties to adopt economically and socially sound measures which can serve as incentives for the purpose of the Convention. In addition, CBD outlines detailed provisions for research and training; public education and awareness; impact assessment and minimization of adverse impacts; access to genetic resources; access to and transfer of technology; and, handling of biotechnology and distribution of benefits. To this end, CBD requires Contracting Parties to undertake specific measures within their jurisdictions and to cooperate with other States.

Cooperation among Members States

Given the principle that States have a responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States, CBD requires cooperation among Contracting Parties through international organizations in areas beyond national jurisdictions and on other matters of mutual interest, for the conservation and sustainable use of biological diversity.

CBD recognizes the needs for cooperation, in particular for developing countries. Thus, Contracting Parties are to cooperate in providing financial and other support for in situ and ex situ conservation measures in developing countries. In addition Contracting Parties are to cooperate in the use of scientific advances in biological research in developing methods for conservation and sustainable use of biological resources; establishing joint research programmes and joint ventures for the development of technologies and cooperate amongst themselves and international organizations in developing educational and public awareness programmes. Cooperation is required also through bilateral, regional or multilateral arrangements; exchange of information; establishment of joint contingency plans; access to genetic resources; access to and transfer of technology relevant to the conservation and sustainable use of biological diversity with effective protection of intellectual property rights, among others. In promoting cooperation, special attention must be given to the development and strengthening of national capabilities, by means of human resources development and institutional building. Furthermore, CBD sets provisions for the distribution of benefits from biotechnology, especially for Contracting Parties, which provide genetic resources for research.

Institutional arrangements

The main body of CBD is the Conference of the Parties, established to keep under review the implementation of the Convention, through ordinary and extraordinary meetings. Specialized agencies, governmental and non-governmental organizations can participate as observers in the meetings.

CBD established a Secretariat (provided by the Executive Director of the United Nations Environment Programme) whose functions include: (1) arrange and service meetings; (2) prepare reports on the execution of its functions and present them to the Conference of the Parties; and, (3) coordinate with other relevant international bodies for the effective discharge of its functions. The Convention also established a subsidiary body on Scientific, Technical and Technological

Advice, to provide the Conference of the Parties with advice relating to the implementation of the Convention. It is open to participation by all Parties, comprised of government representatives.

Rules of procedure

Protocols to the Convention are adopted at meetings of the Conference of the Parties. Amendments to the Convention, Protocols and annexes are reached by consensus. When consensus is not obtained, amendments are adopted by a two-third majority vote of the Parties present and voting at the meeting, and are then submitted for ratification, acceptance or approval by all Parties. No reservations may be made to the Convention, although Contracting Parties may withdraw after two years of being a Party to it.

Financial Mechanisms

Each Contracting Party is required to provide financial support within their national activities for the purpose of the Convention. Furthermore, developed country Parties are to provide financial resources for developing countries, through bilateral, regional and other multilateral channels, in order for them to pursue the objectives of the Convention.

The Global Environmental Facility of the United Nations Development Programme, the United Nations Environment Programme and the International Bank for Reconstruction and Development, provide the institutional structure for financial support.

Reporting requirements

Contracting Parties are required to present to the Conference of the Parties reports on measures taken.

Assessment of success

As Contracting Parties are required to adopt national strategies, plans and programmes which include the measures set out in the Convention a measure of success of CBD includes those national strategies in place and functioning.

Potential constraints for application

It is highlighted in the Convention that the concept of sustainable use and conservation must be introduced at the highest national level (i.e. decision making). It is considered that this may pose significant political constraints when trying to accommodate these concepts with high demands for development at the national level.

Relation to the governance framework

Interventions are targeted at all levels of the policy cycle. In addition, the Conference of the Parties represents an important linkage to review implementation of the Convention.

Members States⁵

There are 190 Parties to CBD. Countries within the Wider Caribbean who have ratified the Convention include Antigua and Barbuda, Bahamas, Barbados, Belize, Brazil, Colombia, Costa

⁵ Data consulted at <http://www.biodiv.org/world/parties.asp>, 12 December 2006.

Rica, Cuba, Dominican Republic, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, St. Kitts and Nevis, St. Vincent and the Grenadines, Saint Lucia, Suriname, Trinidad and Tobago, and Venezuela.

4.2.1.3 Programme of Action for the Sustainable Development of Small Island Developing States⁶

Purpose and area of application

The Programme of Action implements certain principles established in Agenda 21. It presents a basis for action in 14 agreed priority areas and defines a number of actions and policies related to environmental and development planning that should be undertaken by small island developing States with the cooperation and assistance of the international community. The Programme identifies several cross-sectoral areas such as capacity-building, including human resource development; institutional development at the national, regional and international levels; cooperation in the transfer of environmentally sound technologies; trade and economic diversification; and finance.

Measures

The Programme of Action focuses on (1) climate change and sea level rise; (2) natural and environmental disasters; (3) management of wastes; (4) coastal and marine resources; (5) freshwater resources; (6) land resources; (7) energy resources; (8) tourism resources; (9) biodiversity resources; (10) national institutions and administrative capacity; (11) regional institutions and technical cooperation; (12) transport and communication; (13) science and technology; and, (14) human resource development. For each of these action areas, the Programme outlines measures at the national, regional and international level. As regards marine biodiversity, states are required to formulate and implement integrated strategies for its conservation and sustainable use, with special care of endemic species and the identification of sites with high biological significance, as well as the development of alternative economic activities such as ecotourism. In addition, states are required to ratify and implement the relevant Conventions (e.g. Convention on Biological Diversity). Special emphasis is given to the customary practices known in small island developing States, therefore measures undertaken must have a strong community-based component.

Cooperation

Given the special nature of small island developing states, the Programme requires the international community to cooperate for its implementation, including the participation of non governmental organizations. Particular emphasis is given to building endogenous capacities within the states. In regards to biodiversity, the Programme calls for regional action both for the identification of areas of high biological significance, the exchange of information and training and the building of regional capacities.

⁶ The Declaration of Barbados and the Programme of Action for the Sustainable Development of Small Island Developing States were adopted at the Global Conference on the Sustainable Development of Small Island Developing States, which met in Barbados from the 25 April to 6 May 1994.

Institutional arrangements

Governments are responsible for the implementation of the Programme of Action. However, as outlined in the Programme, international cooperation is essential to support national and regional strategies. It is highlighted that the United Nations system has a key role to play in close cooperation and coordination with other international, regional and subregional organizations. In addition, to follow-up on the implementation of the Programme of Action it is highlighted that a clearly identifiable, qualified and competent entity within the Department for Policy Coordination and Sustainable Development of the United Nations Secretariat must be put in place to provide secretariat support for intergovernmental and inter-agency coordination mechanisms.

Financial mechanisms

Financing for the implementation of the Programme of Action comes from countries' own public and private sectors. The Programme highlights the need to explore and utilize economic instruments as these are viewed as an important complementary mechanism for the financing of sustainable development at the national level. In addition, the Programme outlines the role of the international community to provide access to adequate, predictable, new and additional financial resources; optimizing the use of existing resources and mechanisms in accordance with chapter 33 of Agenda 21.

Reporting requirements

The Secretary-General is required to prepare analytical reports on the implementation of the Programme of Action, including the activities undertaken at the National level. For this purpose all States are invited to provide information on action taken to implement the Programme of Action.

Assessment of success

States are required to implement strategies which deal with the different areas of focus within the Programme of Action. A measure of success pertains to those national strategies in place. In regards to marine biodiversity, a measure of success pertains to those alternative economic activities established in the countries for conservation and sustainable use (e.g. ecotourism).

Potential constraints for application

Three main potential constraints for application are identified. First, although the Programme of Action refers to existing mechanisms for additional funding, no specific mechanism at the international level to support the implementation of the Programme of action was established. Therefore, immediate action for implementation depends entirely on the national governments as it is unclear how the existing mechanisms (i.e. those referred in chapter 33 of Agenda 21) could be utilized specifically for the Programme. Second, although the use of GEF is outlined as a possibility to finance certain projects, and that these would need to be prioritize (once proposed by governments), no specific criteria is given for prioritization. It is considered that lack of such criteria could ultimately lead to inequitable financing among the different small island developing States from international sources. Third, there is no specific structure or mechanism set up for the exchange or use of information, as States are only invited to provide information on the action taken. Thus, the lack of a specific mechanism could hinder the appropriate monitoring of the Programme of Action.

Relation to the governance framework

Interventions are targeted at the following stages of the policy cycle: data and information and implementation through formulation of integrated strategies.

Member States

States from the Wider Caribbean which were present at the Conference include: Belize, Colombia, Costa Rica, Guyana, Suriname, Trinidad and Tobago, Venezuela, Bahamas, Cuba, Dominican Republic, Haiti, Jamaica and USA.

4.2.2 Regional Efforts

4.2.2.1 United Nations Environment Programme Regional Seas Programme⁷

Purpose and area of application

The Regional Seas Programme was initiated by the United Nations Environment Programme (UNEP) in 1974; it covers 18 regions of the world, making it one of the most globally comprehensive initiatives for the protection of marine and coastal environments. At present, more than 140 countries participate in 13 Regional Seas' programmes: the Black Sea, Wider Caribbean, East Africa, south East Asia, ROPME Sea Area, Mediterranean, North-East Pacific, North-West Pacific, Red Sea and Gulf of Aden, South Asia, South-East Pacific, and West and Central Africa. In addition, five partner programmes for the Antarctic, Arctic, Baltic Sea, Caspian Sea and North-East Atlantic Regions are part of the Regional Seas effort. The Regional Seas Programme aims to address the accelerating degradation of the world's oceans and coastal areas through the sustainable management and use of the marine and coastal environment, by engaging neighboring countries in comprehensive and specific actions to protect their shared marine environment.

Measures

The Regional Seas Programme functions through an Action plan. Each regional action plan is formulated according to the needs of the region as perceived by the Governments concerned and adopted by them. The action plans promote the parallel development of regional legal agreements (i.e. Conventions and Protocols) and of action-oriented programme activities. They cover issues which range from chemical wastes and coastal development to the conservation of marine life and ecosystems.

The Action Plans are based on the region's particular environmental concerns and challenges as well as its socio-economic and political situation. The most common chapters included in the Action Plans are: (1) environmental assessment (e.g. scientific baseline studies; research and monitoring); (2) environmental management (e.g. cooperative projects on training in environmental impact assessment); (3) environmental legislation (e.g. an umbrella Convention which provides the legal framework for an Action Plan and a Protocol which puts the Convention into practice); (4) institutional arrangements (e.g. who serves as secretariat for the Action Plan); and (5) financial arrangements.

⁷ Data consulted at http://www.unep.org/regionalseas/Programmes/Action_Plans/Action_Plan_Guide/default.asp, 14 December, 2006.

Cooperation among Member States

Cooperation among Member States is mandatory as the Regional Seas programmes are coordinated and implemented by the countries that share a common body of water. The rationale behind the Regional Seas programme is to undertake cooperative action to address common issues and problems.

Institutional arrangements

The work of the Regional Seas programme is coordinated by UNEP's Regional Seas Branch, while Regional Coordination Units and Regional Activity Centers oversee the implementation of the programmes and aspects of the regional action plans (e.g. marine emergencies, information management and pollution monitoring). The Regional Coordinating Units are responsible for the follow-up and implementation of legal documents, the programme of work and of strategies and policies adopted by the member countries. Six of the Regional Seas programmes, including the Wider Caribbean, are directly administered by UNEP. A major role of UNEP is to assist the Regional Seas programmes to fulfill their responsibilities towards the priorities identified in relevant UNEP Governing Council Decisions, to reach relevant targets of Agenda 21, the World Summit on Sustainable Development Plan of Implementation and the Millennium Development Goals.

Rules of procedure

Decisions taken at Conferences of the Parties or intergovernmental meetings guide the course of action for the plans.

Financial mechanisms

The United Nations system provides seed money in the early stages of the regional programmes. Governments are expected to assume financial responsibility, providing resources to regional trust funds administered by the organization responsible for secretariat functions of the Action Plan (often initially UNEP, later the Regional Coordination Unit or new independent regional organizations). Ultimately, the Regional Seas programmes are expected to be financially self sufficient.

Reporting requirements

The Regional Coordination Units and Regional Activity Centers (if established) have a central role in information management. Thus, it may be assumed that any reporting required from the countries involved would flow directly to these units.

Assessment of success

An interesting facet of the Regional Seas Programme is that Action Plans may be accompanied by legally binding agreements. At present fourteen of the Regional Seas Programmes have adopted legally-binding Conventions (including Protocols). Such Conventions express the commitment and political will of governments to address issues on a coordinated manner and, set out what governments must do to implement the Action Plan. Thus, the Conventions represent a measure of success of the Regional Seas Programme to date.

Potential constraints for application

The Regional Seas Programme calls for cooperative actions on common issues and problems. A potential constraint for application may be related to the priority given by each country within specific regions to address the issues. Thus, if a country does not participate fully on measures agreed to, the main goal may not be achieved and would hinder efforts undertaken by other States. In addition, it is expected for the Regional Seas Programmes to be financially self sufficient. It is unclear under what rules financing is given by each participating country (i.e. what rationale or criteria underlies contributions of the countries). Finally, although the Regional Coordination Unites has a central role in information management, there is no clear feedback mechanism on monitoring and reporting.

Relation to the governance framework

Interventions are targeted at the decision making stage of the policy cycle, as it requires a commitment at the highest national level to enter agreements for regional cooperation and signing further Conventions which may result from the Regional Seas Programmes.

4.2.2.2 Convention on the Conservation of Antarctic Marine Living Resources⁸

Purpose and area of application

The purpose of the Convention is the conservation⁹ of Antarctic marine living resources¹⁰ and applies to the area south of 60° south latitude and to the Antarctic marine living resources of the area between that latitude and the Antarctic Convergence which form part of the Antarctic marine ecosystem¹¹.

Measures

The Convention sets certain principles for harvesting and associated activities in the area. In addition, conservation measures for the area include: (1) the designation of the quantity of any species which may be harvested in the area to which the Convention applies; (2) the designation of regions and sub-regions based on the distribution of populations of Antarctic marine living resources; (3) the designation of the quantity which may be harvested from the population of regions and sub-regions; (4) the designation of protected species; (5) the designation of the opening and closing of areas, regions or sub-regions for purposes of scientific study or conservation.

Cooperation among Member States

Cooperation among Member States is given through the establishment and functions of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). In addition, to ensure observance of the provisions of the Convention, the Convention requires the Contracting Parties to establish a system of observation and inspection, which includes: (a) inter

⁸ The Convention was drawn up on 20 May 1980 in Canberra, Australia, and entered into force on 7 April 1982.

⁹ The term “conservation” includes rational use (Art. II.2.).

¹⁰ Means populations of fin fish, mollusks, crustaceans and all other species of living organisms, including birds, found south of the Antarctic Convergence (Art.I.2).

¹¹ The Antarctic marine ecosystem means the complex of relationships of Antarctic marine living resources with each other and with their physical environment (Art.I.3).

alia, procedures for boarding and inspection by observers and inspectors designated by the Members of CCAMLR; procedures for flag state prosecution; and, sanctions on the basis of evidence resulting from boarding and inspection; and, (b) observation and inspection carried out on board vessels engaged in scientific research or harvesting of marine living resources in the area.

Institutional arrangements

CCAMLR is composed by each Contracting Party which participated in the meeting at which the Convention was adopted. In addition, it has provisions for State Parties and regional economic integration organizations to be Members. CCAMLR works through regular annual meetings and its function is to give effect to the objectives and principles set out by the Convention. Functions of CCAMLR include facilitating research, compiling data, analyzing, disseminating and publishing information, identifying conservation needs and formulating, adopting and revising conservation measures for the marine living resources of the area.

The Contracting Parties established the Scientific Committee for the Conservation of Antarctic Marine Living Resources to provide a forum for consultation and co-operation concerning the collection, study and exchange of information. The Scientific Committee is integrated by each Member of CCAMLR, who appoints a representative with suitable scientific qualifications. CCAMLR appoints an Executive Secretary who serves CCAMLR and the Scientific Committee. CCAMLR and the Scientific Committee cooperate as appropriate with the following: (1) Antarctic Treaty Consultative Parties; (2) The Food and Agriculture Organization of the United Nations; (3) Specialized Agencies; (4) Inter-governmental and nongovernmental organizations which could contribute to their work; (5) Scientific Committee on Antarctic Research; (6) Scientific Committee on Oceanic Research; and, (7) International Whaling Commission.

Rules of procedure

Conservation measures adopted by CCAMLR are notified to all its Members. After 180 days of notification, these measures are binding upon all Members of CCAMLR. Decisions of CCAMLR are taken by consensus on matters of substance and by simple majority of the Members present and voting on other matters.

Financial mechanisms

Each Member of CCAMLR contributes to the annual budget of CCAMLR and the Scientific Committee, prepared by the Executive Secretary and adopted by consensus. Contributions of the Members are determined with two criteria: the amount harvested and an equal sharing among all Members of CCAMLR. Specific financial regulations are adopted by CCAMLR, and financial activities are subject to annual audit by external auditors. If a Member fails to pay its contributions for two consecutive years, it does not have the right to participate in the decision making process.

Reporting requirements

Members of CCAMLR are required to provide statistical, biological information relevant to the functions of CCAMLR and the Scientific Committee. In addition, Members are required to inform on the steps taken to implement the conservation measures adopted. Contracting Parties must transmit to CCAMLR measures taken, including the imposition of sanctions for any violation.

Assessment of success

CCAMLR and its subsidiary bodies have clear objectives and functions. It is considered that a clear definition within the institutional arrangements (i.e., objectives, rules of procedure, etc.) may facilitate implementation and thus, represents a measure of success.

Potential constraints for application

It is considered that the existence of a mechanism for conservation measures not to be binding to its Members is a loophole which could become a disincentive for its own Members.

Relation to the governance framework

Establishment of CCAMLR and its subsidiary bodies represents a formal linkage among the States for purposes of the Convention. As regards, marine biodiversity, interventions are targeted at the data and information and implementation stages of the policy cycle, through provision of information and measures for monitoring, control and surveillance.

Member and State Parties

As of December of 2005, Argentina, Australia, Belgium, Brazil, Chile, European Community, France, Germany, India, Italy, Japan, Korea, Republic of Namibia, New Zealand, Norway, Poland, Russian Federation, South Africa, Spain, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America and Uruguay are Members of CCAMLR. In addition, Bulgaria, Canada, Cook Islands, Finland, Greece, Mauritius, Netherlands, Peru and Vanuata are State Parties to the Convention although not Members of CCAMLR

4.2.2.3 Arctic Council Governance¹²

Purpose and area of application

The Arctic Council is a regional forum for sustainable development, mandated to address the environmental, social and economic aspects in the Arctic. It was established to (a) provide a means for promoting cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues on sustainable development and environmental protection of the Arctic; (2) oversee and coordinate the programmes established (Arctic Monitoring and Assessment Program; Conservation of the Arctic Flora and Fauna; Protection of the Arctic Marine Environment; and Emergency Preparedness and Response); (3) adopt terms of reference for and oversee and coordinate a sustainable development program; and, (4) disseminate information, encourage education and promote interest in Arctic-related issues¹³.

Measures

A key element of the Arctic Council's agenda is environmental monitoring and assessment by Arctic governments and indigenous peoples. The approach of the Council is to encourage

¹² The Arctic Council was established on the 19 of September, 1996 in Ottawa. Data consulted at <http://www.arctic-council.org/> on the 13 of December 2006.

¹³ Information consulted from "Declaration on the establishment of the Arctic Council"

continuous dialogue among scientists, policy planners, Arctic residents and political level decision-makers. Responsibility for the implementation of regional policies lies with the States and their sub-regional administrations.

The areas of focus of the council are: (1) sustainable development to improve human conditions in the Arctic and to building capacity to help the inhabitants; (2) Arctic monitoring and assessment to identify pollution risks and their impact on Arctic ecosystems and in assessing the effectiveness of international agreements on pollution control; (3) protection of the Arctic Marine Environment through policy and non-emergency pollution prevention and control measures from land and sea-based activities; (4) conservation of Arctic Flora and Fauna through monitoring of biodiversity at the circumpolar level utilizing traditional knowledge, to detect the impacts of global change on biodiversity and to enable the Arctic communities to effectively respond and adapt to changes; and (5) emergency, prevention, preparedness and response to exchange information on best practices for preventing spills, preparing to respond to spills should they occur, and practical response measures for use in the event of a spill.

Cooperation among Member States

Cooperation within the Arctic Council establishes a common knowledge base, spreads information on best practices and lessons learned and has an important role in the development of policy recommendations for national, regional and local leaders.

Institutional arrangements

The Arctic Council is an intergovernmental forum established by the Arctic States (countries with an outreach above the Arctic Circle). It is a forum for co-operation between national governments and indigenous peoples.

Ministerial meetings are held on a biennial basis. Each Arctic State designates a focal point on matters related to the Arctic Council.

The Council works through a Chairman and a Secretariat, who rotate among member States. Operation of the Council is administered by the Committee of Senior Arctic Officials, composed of representatives of foreign ministries of the members states and representatives of indigenous peoples as Permanent Participants' of the Arctic Council.

The scientific work of the Arctic Council is carried out in five expert working groups.

The Arctic Council cooperates with international organizations, such as the United Nations Environment Programme.

Rules of procedure

The decision-making of the Council is heavily based on the scientific work and influenced by the traditional knowledge of indigenous peoples. Decisions are taken by consensus of its Members.

Financial mechanisms

The Declaration for establishment of the Arctic Council does not specify a financial mechanism, however it is determined that the Arctic Council should regularly review the priorities and financing of its programmes and associated structures.

Reporting requirements

The Declaration for establishment of the Arctic Council does not specify the reporting requirements from its Members States. Given that the Council represents and inter-governmental forum, the monitoring and advice, is provided through its different working groups.

Assessment of success

Establishment of working groups within the Arctic Council which specifically address different issues represents a measure of success.

Potential constraints for application

Unclear mechanisms for monitoring and reporting by Member States can pose a constraint.

Relation to the governance framework

The Arctic Council represents a linkage between national governments and indigenous peoples for cooperation, coordination and interaction. Interventions are targeted at all stages of the policy cycle.

Member States

Members States of the Arctic Council include: Canada, Denmark (including Greenland and the Faeroe Islands), Finland, Iceland, Norway, the Russian Federation, Sweden and the United States. In addition the Arctic Council has representation from indigenous people through the following organizations: Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, Inuit Circumpolar Conference, Russian Association of Indigenous Peoples of the North and Saami Council. These organizations are Permanent Participants of the Arctic Council.

4.2.2.4 Secretariat of the Pacific Community (formerly known as South Pacific Commission)¹⁴

Purpose and area of application

It covers all those territories in the Pacific Ocean which are administered by the participating Governments¹⁵ and which lie wholly or in part south of the Equator and east from and including Papua New Guinea. Its objective is to encourage and strengthen international cooperation in promoting the economic and social welfare of the peoples of the South Pacific region.

Measures

The focus of the Secretariat includes land, marine and social resources. In regards to marine resources it includes the coastal, oceanic fisheries and maritime programmes. The fisheries programmes aim to: (1) assist Pacific Island fishing communities to participate and benefit from regional and national fisheries development, and management activities; (2) provide technical advice, assistance and training on developing small to medium scale commercial tuna fisheries;

¹⁴ The South Pacific Commission was adopted in Canberra, Australia on the 6 of February 1947 and it entered into force on the 29 July 1948. Data consulted at <http://www.oceanlaw.net/texts/summaries/spc.htm>, December 14, 2006

¹⁵ The Agreement for establishment of the South Pacific Commission refers as the participating Governments: Australia, the French Republic, New Zealand and the United Kingdom of Great Britain and Northern Ireland, and the United States of America. Data consulted at <http://www.spc.int/mrd/asides/canberra.htm>, December 14, 2006.

and, (3) provide and disseminate information to assist in the development and management of fisheries. The maritime programme works with the maritime sector of member countries and territories to: (1) review and update maritime legislation; and, (2) facilitate training to ensure that all seafarers meet STCW95 qualifications and standards, which in turn promotes safer ships, cleaner seas, and helps to secure employment.

Cooperation among Member States

As regards fisheries, the Secretariat operates a number of projects covering all coastal living marine resources as well as tunas and billfishes. With regards to high seas fishing the Secretariat operates projects for the collection and analysis of catch statistics and other related data and scientific research on tuna and billfish.

Institutional arrangements

The Commission (i.e. Secretariat) is a consultative and advisory body to the participating Governments in matters affecting the economic and social development of the territories and the welfare and advancement of their peoples. Each participating Government appoints two Commissioners, designating one as Senior Commissioner. Each Commissioner presides over sessions of the Commission for one calendar year in rotation. It holds one regular session each year, while other sessions are held if two-thirds of all the Senior Commissioners decide are necessary. Quorum is constituted by two-thirds of all Senior Commissioners. The South Pacific Conference is a body auxiliary to the Commission with advisory powers, composed by representatives of the local inhabitants, and of official and non-official institutions directly concerned with the territories within the scope of the Commission. Sessions of the Conference are held each year immediately before the regular session of the Commission. A Research Council, presided by a Chairman, was established. It serves as a standing advisory body auxiliary to the Commission. Members of the Research Council are appointed by the Commission and are persons distinguished in the fields of research within the competence of the Commission. In addition, a full-time official is appointed by the Commission to direct research and supervise the execution of the programme of the Research Council, including the facilitation of cooperative research. The Commission established a Secretariat to serve the Commission and its auxiliary and subsidiary bodies. The Secretary-General (i.e. chief administrative officer of the Commission) and Deputy Secretary-General hold office for five years and are eligible for reappointment.

Rules of procedure

Procedural matters are decided by majority of votes. Decisions on budgetary or financial matters which involve a financial contribution by the participating governments require the concurring votes of all the Senior Commissioners. Decisions on all other matters are taken by two-thirds of all the votes. Provisions of the Agreement for establishment of the Commission can be amended by consent of all the participating governments. Participating governments may withdraw from the Agreement giving one year's notice to the Commission and after five years from the coming into force of the Agreement.

Financial mechanisms

The Commission adopts an annual budget for the administrative expenses of the Commission and its auxiliary and subsidiary bodies. In addition, the Secretariat in consultation with

Territorial Administrations and participating Governments, prepares an annual Work Programme and Budget and budget forecast, which are examined at the session of the Conference. To meet the expenses of the Commission, a fund to which each participating Government contributes was established. Contributions by Territorial Administrations and Governments to specific projects are granted on voluntary basis.

Reporting requirements

The Commission publishes an annual report of its activities, including those of its auxiliary and subsidiary bodies, and reports to the participating Governments. In regards to research, the full-time official is responsible of collecting and disseminating information concerning research.

Assessment of success

Institutional arrangements set in place, which have clearly defined objectives and functions may contribute significantly to the objectives of the Commission. As regards marine biodiversity, specific projects are set in place. Although these projects focus on fisheries, the fact that efforts are being undertaken for the collection and analysis of catch statistics and scientific research, may prove essential for the conservation of these species.

Potential constraints for application

A potential constraint for application may relate to the wide scope of the Commission, as it focuses on land, marine and social resources. It is considered that having such a wide scope could pose a challenge for deciding on priority areas and on which of those to focus financial resources. As regards financing, contributions by Territorial Administrations and Governments to specific projects are granted on voluntary basis and thus may hinder their development.

Relation to the governance framework

Interventions are targeted at the data and information; synthesis and provision of advice; and, implementation stages of the policy cycle. In addition, several linkages are present through the institutional arrangements established.

Member States

American Samoa, Cook Islands, Federated States of Micronesia, Fiji Islands, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna, Australia, France, New Zealand and the United States of America.

4.2.3 Efforts within the Wider Caribbean

4.2.3.1 Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region¹⁶

Purpose and area of application

¹⁶ Also known as the Cartagena Convention it was adopted in Cartagena de Indias on 24 March 1983 and entered into force on 11 October 1983

The Convention applies to the marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean adjacent thereto, south of 30° north latitude and within 200 nautical miles of the Atlantic coasts of the states¹⁷. Its purpose is the protection of the marine environment of the Convention area, through bilateral and multilateral agreements including regional and subregional agreements.

Measures

The Convention focuses on various aspects of marine pollution (i.e. from ships, caused by dumping, from land-based activities and airborne) and specially protected areas. Thus Contracting Parties must, individually or jointly, take measures for the prevention, reduction and control of pollution. In addition, Contracting Parties are required to take appropriate measures to protect and preserve rare or fragile ecosystems, as well as the habitat of depleted, threatened or endangered species. For this purpose, Contracting Parties are to establish protected areas and exchange information concerning the administration and management of such areas.

Cooperation among Member States

Contracting Parties are required to co-operate in the formulation and adoption of Protocols or other arrangements to facilitate effective implementation of the Convention and harmonize their policies. The Convention determines mechanisms for co-operation in cases of emergency through development and promotion of contingency plans. In addition, Contracting Parties must undertake environmental impact assessments for planning major development projects, including procedures to disseminate information and consult with other Parties which may be affected. Contracting Parties are requested to cooperate in scientific research, monitoring, and the exchange of data and other scientific information, through competent international and regional organizations.

Institutional arrangements

The United Nations Environment Programme serves secretariat functions including, the preparation of meeting, transmission of information (i.e. agreements, measures adopted), co-ordination to implement cooperative activities and co-ordination with other international bodies. In addition, each Contracting Party designates an appropriate authority to serve as channel of communication.

Contracting Parties meet once-every two years to review implementation of the Convention. Extraordinary meetings can be convened upon request of the United Nations Environment Programme or the Contracting Parties.

Rules of procedure

Further protocols, amendments to existing protocols or the Convention are adopted at conferences of plenipotentiaries. Amendments to the Convention, protocols and annexes are adopted by a three-fourths majority vote of the Contracting Parties to the Convention represented at the conference of the plenipotentiaries. If a Contracting Party is unable to accept an

¹⁷ States include 20 countries and island territories. In total, twenty-eight countries of the Wider Caribbean Region are eligible to become Parties to the Cartagena Convention and its Protocols (Turner, J. 2002. Environmental Treaties. U.S. Department of State)

amendment to annexes of the Convention or Protocols it has to notify the Depositary (Republic of Colombia), who in turn notifies all other Contracting Parties.

Financial mechanisms

Contracting Parties unanimously adopt financial rules, to determine their financial participation.

Reporting requirements

Contracting Parties must inform the United Nations Environment Programme on the measures adopted. The Convention does not specify the periodic interval or form to transmit the information, although it is stipulated that these will be determined at the meetings of Contracting Parties.

Assessment of success

The Convention calls for the adoption of Protocols for effective implementation, at present three Protocols have been adopted (Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region; Protocol Concerning Specially Protected Areas and Wildlife in the Wider Caribbean Region and Protocol Concerning Pollution from Land-Based Sources and Activities) and thus represent a measure of success of the Cartagena Convention.

Potential constraints for application

The Convention highlights the need for Contracting Parties to harmonize their policies, however given the wide disparity of the countries involved (i.e. from the largest to the smallest, the richest to the poorest and the most developed to the least developed), harmonization of policies may pose considerable constraints.

Relation to the governance framework

Interventions are targeted at all stages of the policy cycle, as the Convention calls for the adoption of Protocols to facilitate effective implementation. In addition, a linkage among Contracting Parties is established through appointment of focal points who serve a channel for communication with the United Nations Environment Programme for the purposes of the Convention.

Member States¹⁸

Antigua and Barbuda, Barbados, Belize, Colombia, Costa Rica, Cuba, Dominican Republic, France, Grenada, Guatemala, Jamaica, Mexico, Netherlands¹⁹, Nicaragua, Panama, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, United Kingdom²⁰, United States of America and Venezuela.

¹⁸ Data consulted at <http://www.cept.unep.org/law/cartstatus.html>, December 6, 2006.

¹⁹ On behalf of the Netherlands Antilles Federation

²⁰ On behalf of Cayman Islands, Turks and Caicos Island and British Virgin Islands

4.2.3.2 Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region²¹

Purpose and area of application

The SPAW Protocol applies within the Wider Caribbean Region which includes the area determined in the Cartagena Convention, plus supplementary areas such as watersheds of the Contracting Parties. The objectives are to protect, preserve and manage in a sustainable way: 1) areas that require protection to safeguard their special value; 2) threatened or endangered species of flora and fauna; and, 3) species, with the objective of preventing them from becoming endangered or threatened.

Measures

Contracting Parties are required to take necessary measures according to their laws and regulations. Thus, Contracting Parties are required to (1) establish protected areas, where they exercise sovereignty, or sovereign rights or jurisdiction; (2) buffer zones to strengthen the protection of a protected area; (3) protection measures for protected areas (i.e., regulation or prohibition of activities which cause pollution, extractive activities of endangered or threatened species and introduction of non-indigenous species, among others); and, (4) implement planning, management and enforcement measures for protected areas (i.e. development of management plans, environmental education, scientific research, financing, involvement of local communities, capacity building and appropriate infrastructure). The SPAW Protocol includes national measures for the protection of wild flora and fauna, through (1) listing of protected species; (2) regulation and prohibition of activities which have and adverse effect on protected species or their habitats and ecosystems; and, (3) management and recovery plans for protected species.

Cooperation among Member States

Co-operation programmes are to support the listing of protected areas, assist with the selection, establishment, management and conservation of protected areas, as well as the creation of a network of protected areas. In addition, Contracting Parties must adopt co-operative measures to ensure the protection and recovery of endangered and threatened species of wild flora and fauna listed in Annexes I, II and III of the Protocol, including the implementation of regional recovery programmes.

The SPAW Protocol calls for coordination in research and monitoring programmes and standardization of procedures for collecting, reporting, achieving and analyzing scientific and technical information.

Institutional arrangements

As established in the Cartagena Convention, the United Nations Environment Programme serves secretariat functions including: (1) convening and servicing the meetings of the Parties; (2)

²¹ Also known as the SPAW Protocol, it was adopted at Kingston on 18 January 1990 and came into force on 18 June 2005 (<http://www.cep.unep.org/cartagena-convention/plonearticlemultipage.2005-11-30.0771186485/plonearticle.2005-11-30.0270558997>, December 6, 2006).

assisting in raising funds; (3) assisting in co-operation with international, intergovernmental and non-governmental organizations; and, (4) preparing common formats to be used by the Parties. Each Contracting Party designates a Focal Point as liaison with the Secretariat on the technical aspects of implementation of the Protocol. In addition, a Scientific and Technical Advisory Committee, formed by scientific experts appointed by each Contracting Party, has the responsibility to advise the Parties on scientific and technical matters related to the protocol.

Meetings of the Parties are governed by the rules of procedure outlined in the Convention. The function of the meetings include: (1) to keep under review and direct the implementation of the Protocol; (2) to approve the expenditure of funds; (3) to oversee and provide policy guidance to the Secretariat; (4) to consider the efficacy of measures adopted, among others.

Rules of procedure

The SPAW Protocol determines specific procedures to amend Annexes I, II and III of the Protocol. To this end, any Contracting Party may nominate an endangered or threatened species for inclusion or deletion presenting supporting documentation to the Scientific and Technical Committee. In turn, the Scientific and Technical Committee presents its views to the meeting of the Parties. Species are listed in the annexes by consensus or by a three-quarters majority vote of Parties present and voting. In addition, Parties can present reservations to such listings.

Financial mechanisms

In addition to the funds provided by each Contracting Party, as established in the Cartagena Convention, the United Nations Environment Programme can seek additional funds.

Reporting requirements

Parties have to report periodically to the United Nations Environment Programme on the status of protected areas, buffer zones and protected species in areas of their jurisdiction. This includes changes in delimitation or legal status and management measures undertaken.

Assessment of success

A measure of success of the SPAW Protocol relates to the programmes set in place for joint action in the protection of habitats and protected species.

Potential constraints for application

One of the objectives of the SPAW Protocol is the protection, preservation and management of threatened or endangered species. Given the fact that the Protocol allows the Parties to present reservations to listings of protected species in Annexes I, II and III, it is considered that such reservations may present a hindrance for the aforementioned objective.

Relation to the governance framework

Interventions are targeted at all stages of the policy cycle. In addition, several linkages are established through the institutional arrangements. First, through focal points in the Contracting Parties that provides input on implementation of the Protocol. Second, through the United Nations Environment Programme that serves secretariat functions and subsidiary bodies. Third, through meetings of the Parties that reviews implementation of the Protocol.

Member States

Member States who have ratified and/or acceded the SPAW Protocol include Barbados, Colombia, Cuba, Dominican Republic, France, Netherlands, Panama, Saint Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, United States of America and Venezuela. States who have signed but not ratified the Protocol include Antigua and Barbuda, Guatemala, Jamaica, Mexico and the United Kingdom²².

4.2.3.3 Resolution on Promoting an integrated management approach to the Caribbean Sea area in the context of sustainable development

Purpose and area of application

The General Assembly of the United Nations adopted a resolution on the 22 of December 2004 for “Promoting an integrated management approach to the Caribbean Sea area in the context of sustainable development.” The resolution, highlights that promotion of an integrated management approach be in accordance of Agenda 21, the Programme of Action for the Sustainable Development of Small Island Developing States, the Johannesburg Declaration on Sustainable Development, the Johannesburg Plan of Implementation as well as in conformity with relevant international law, including the United Nations Convention on the Law of the Sea.

Measures

The resolution requires States to (1) prioritize action on marine pollution from land-based sources, in an integrated and inclusive manner, and advance implementation of programmes and Protocols²³; (2) become contracting parties to relevant international agreements to enhance maritime safety and promote the protection of the marine environment of the Caribbean Sea from pollution, damage and degradation from ships and ship-generated waste; (3) develop national, regional and international programmes for halting the loss of marine biodiversity in the Caribbean Sea, in particular fragile ecosystems, such as coral reefs; and, (4) improve their emergency response capabilities and the containment of environmental damage in the event of natural disasters or accidents relating to maritime navigation.

Cooperation among States

The resolution encourages the Caribbean countries to continue to develop regional cooperation in the management of their ocean affairs to address issues of land-based pollution, pollution from ships, physical impacts on coral reefs and the diversity and dynamic interaction of, and competition among, socio-economic activities for the use of the coastal areas and the marine environment and their resources.

Further cooperation is warranted from the United Nations system and the international community to assist the Caribbean countries in (1) their efforts to ensure the protection of the Caribbean Sea, in particular from pollution; (2) becoming parties to the relevant Conventions and

²² Data consulted at <http://www.cep.unep.org/cartagena-convention/plonearticlemultipage.2005-11-30.9771186485/plonearticle.2005-11-30.0270558997> on December 6 2006.

²³ Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, Montreal Declaration on the Protection of the Marine Environment from Land-based Activities, Protocol Concerning Pollution from Land-based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region.

Protocols and implementing them; and, (3) the implementation of their long-term programmes of disaster prevention, preparedness, mitigation, management, relief and recovery through the integration of relief, rehabilitation and reconstruction into a comprehensive approach to sustainable development.

Financial mechanisms

No specific financial mechanism is highlighted within the resolution; however it calls upon the international community, the United Nations system and the multilateral financial institutions, and invites the Global Environmental Facility, to support actively national and regional activities for the purposes of the resolution.

4.2.3.4 United Nations Regional Seas Programme Action Plan for the Caribbean Environment Programme²⁴

Purpose and area of application

The region covered by the Action Plan is the Wider Caribbean. It comprises the insular and coastal States and Territories of the Caribbean Sea and the Gulf of Mexico, including Bahamas, Guyana, Suriname and the French Department of Guiana, as well as the waters of the Atlantic Ocean adjacent to these States and Territories. The objectives of the Action Plan are to assist the Governments of the region in minimizing environmental problems in the Wider Caribbean through assessment of the state of the environment and development activities in environmental management.

Measures

The levels of action determined in the Action Plan include the development of long-term comprehensive strategies for environmentally sound development and specific, action-oriented cooperative projects. Major activities of the environmental programme include survey of national capabilities and means to respond to environmental problems, analysis of development trends in the region to determine areas of environmental stress, development and strengthening of the capability of the nations to prepare environmental impact analysis of development projects, promotion of increased technical and financial support for sound environmental management practices, development of regional and subregional networks of coastal, marine and terrestrial protected areas and development of cooperative activities for the protection of endangered and threatened species. In addition, the Action Plan addresses pollution; impact on coastal areas; fisheries; watersheds; natural disasters; energy; human settlements; tourism; and, environmental health. In order to address the aforementioned issues, the Action Plan, determines the need to (1) undertake assessments both of the state of the environment and capabilities of the countries to address such issues; and, (2) management, through the development of guidelines, best practices, projects and capabilities within the countries (giving high priority to strengthening institutional and human resources). In addition, the Action Plan stresses the importance of coordinating

²⁴ The Action Plan for the Caribbean Environment Programme was adopted by representatives of Governments from 22 States in Montego Bay, Jamaica, 6 -8 April 1981.

national, subregional and regional plans and enabling active participation from the population through environmental education.

Cooperation among Member States

The Action Plan establishes a framework for activities requiring regional co-operation in order to strengthen the capacity of the States and Territories of the Wider Caribbean. Possible types of regional and subregional action included are international consultations, cooperative research and joint actions by national institutions.

Institutional arrangements

The overall authority to review progress and direct the course of the Action Plan is the ministerial/plenipotentiary level meetings of Governments participating. The United Nations Environment Programme functions as coordinator to implement the Action Plan. Under authority of UNEP a Regional Coordinating Unit (located in the Wider Caribbean) has a technical function (coordination of the work) and to organize government expert and intergovernmental meetings. Both UNEP and the Regional Coordinating Unit answer to the governments of the countries involved. In addition, a Monitoring Committee comprised of experts nominated by the Governments on the region was established to monitor the progress of priority projects and ensure their implementation. A national focal point was established in each of the participating countries to coordinate the input of their national institutions into the Action Plan and maintain links with the Regional Coordinating Unit. Within the countries, the principal executants of specific activities within the Action Plan are those national institutions designated by their Governments. In addition, the Action Plan envisages the participation of subregional and regional institutions and establishment of networks of cooperating institutions, to assume the role of coordinator of a specific activity.

Rules of procedure

As established earlier the overall authority to review progress of the Action Plan is the ministerial/plenipotentiary level meetings of the Governments participating.

Financial mechanisms

The United Nations Environment Programme entrusted resources for the elaboration and initiation of the Action Plan. Financial support for the activities may come from voluntary contributions from the States and Territories participating in the Action Plan, States supporting the Action Plan but who have no participation in it, the United Nations System and from regional, subregional and international organizations which are not part of the United Nations System. The mechanisms envisaged by the Action Plan for cash contributions are a Caribbean Regional Trust Fund and contributions for specific projects. The Caribbean Trust Fund was established to cover part of the common costs of the implementation of the Action Plan.

Reporting requirements

The Regional Coordinating Unit is the focus for the collection, analysis and dissemination of information on results obtained through the Action Plan. No specific guideline as to the governments responsibilities on reporting and monitoring are provided in the Action Plan.

Assessment of success

The establishment of the Caribbean Trust Fund to cover common costs for implementation represents a measure of initial success, as it represents the commitment of the United Nations System to initiate the Action Plan.

Potential constraints for application

The initial financial support for the implementation of the Action Plan came from the United Nations system. It is clearly stated in the Action Plan that these contributions would diminish as the Governments involved assumed full financial responsibility as the Action Plan is envisaged as financially self-supporting through a Trust Fund. A possible constraint for implementation could come from inadequate flow of financial resources, once the United Nations system stops contributing.

Relation to the governance framework

Interventions are targeted at all stages of the policy cycle. In addition, several linkages are established through the institutional arrangements for implementation of the Action Plan.

4.2.3.5 Mesoamerican Barrier Reef²⁵

Purpose and area of application

The Mesoamerican Barrier Reef System (MBRS) extends from the southern half of the Yucatan Peninsula to the Bay Islands of Honduras and includes the second largest barrier reef in the world. The Project for the Conservation and Sustainable Use of the Mesoamerican Barrier Reef System is the first phase of a 15-year conceptualized program. The objective of the project is to enhance the protection of the unique and vulnerable marine ecosystems comprising the MBRS, and to assist the countries of Mexico, Belize, Guatemala and Honduras to strengthen and coordinate regional policies, regulations, and institutional arrangements for the conservation and sustainable use of the region.

Measures

The Project is comprised of four components (all linked by central project themes and strategies). The first component addresses planning, management, monitoring and institutional strengthening of Marine Protected Areas. The second component addresses regional environmental monitoring and information system through the creation and implementation of a distributed WEB based environmental information system and the establishment of a synoptic monitoring programme for the MBRS. The third component is aimed at promoting sustainable fisheries management and sustainable coastal and marine tourism. Finally, the fourth component

²⁵ The Governments of Mexico, Belize, Guatemala and Honduras convened in Tulum, Mexico in June 1997 to sign the Tulum Declaration which calls on the four littoral states of the Mesoamerican Barrier Reef System and its partners in the region to join in developing an Action Plan for its Conservation and Sustainable Use. The time frame was shifted from an initial 5 year Project to a proposed 15 year Programme. The current Project represents the first phase of a 3-phase Programme whose design is ongoing and depends on the results of the initial 5 year effort (MBRS Project, 2001). Data consulted at <http://www.mbrs.org.bz/english/projdesc.htm>, December 15, 2006.

addresses public awareness and environmental education through a campaign as well as formal and informal education.

Cooperation among Member States

Cooperation among the four countries that border the MBRS is mandatory as the project seeks to conserve the MBRS by providing support to strengthen existing and create new mechanisms to safeguard its integrity and continued productivity. These include: (1) facilitating the harmonization of relevant policies and regulations related to sustainable management of shared/transboundary resources, including reaching agreement on the establishment of environmental standards for monitoring coastal water quality and other indicators of coral reef ecosystem health; best practice and regional environmental certification programmes for sustainable tourism development, and harmonizing regulations governing harvesting and conservation of shared fish stocks; (2) strengthening the system of Marine Protected Areas within the MBRS to maintain vital ecological processes and increase representativeness in the existing system; and, (3) building capacity through training, environmental education and improved information systems to enhance public and private participation in the conservation of the MBRS and the benefits from its sustainable use. In addition, the project seeks to reduce fragmentation at the national and regional levels in the governance of the MBRS by improving regional information systems for decision-making and harmonizing policy frameworks across the four countries in line with principles of environmental and social sustainability. Such policy cohesion lays the groundwork for regional cooperation in the adoption of agreed protocols for conservation and sustainable use. Furthermore, the Project encourages cooperation between governmental authorities and the private sector in developing methods for sustainable use of biological resources, by building partnerships at the local, national and transnational levels through support of diverse stakeholders (i.e. NGOs, professional associations and cooperatives).

Institutional arrangements

The project is implemented by the World Bank and is executed by the four countries through the Central American Commission on Environment and Development (CCAD) of the System for Central American Integration. The MBRS project is executed by the Project Coordinating Unit (PCU) on behalf of CCAD, with headquarters in Belize City, Belize.

At the policy level, the project is coordinated by the MBRS Regional Steering Committee (RSC), made up of the Executive Secretary of CCAD or his delegate, and the National Coordinator for the MBRS Project in each country. The RSC liaises with other potential partners within and outside the region to attract additional co-financing for the project over the long term. It reviews and approves annual work plans and resolves coordination issues between countries. The Project Coordinating Unit is responsible for direct implementation of the project, with technical support provided by Regional Technical Working Groups made up of appropriately selected representatives from the National Barrier Reef Committees and supporting local institutions. The participating countries are responsible for implementation of existing laws and regulations related to the use of the MBRS resources. The PCU is supported by the Technical Advisory Committee, composed of internationally recognized experts in the technical areas of project assistance.

Rules of procedure

Institutional reforms supported by the Project include the creation of a mechanism for regional dialogue and coordination in the management and monitoring of the MBRS as a shared, transboundary public good; the establishment and maintenance of multi-stakeholder coral reef committees, which reflect the diversity in culture and gender in each country to promote integrated sectoral planning and management of the barrier reef; and a formal process of consultation and ownership in the design and implementation of a long-term programme to conserve the MBRS.

Financial mechanisms

The MBRS Project is funded by the Global Environment Facility and the Governments of Mexico, Belize, Guatemala and Honduras. Co-financing initially came from additional organizations such as the World Wildlife Fund, the Government of Canada, the Oak Foundation and the University of Miami. Allocation of co-financing by the aforementioned institutions to individual subcomponents of the project is determined through annual programming. Administrative support to the PCU is provided by the United Nations Development Programme in the form of international procurement, management and disbursement of project funds.

Reporting requirements

Countries are required to report, including national surveys on sector work in environmental and social policies. National agencies in charge of annual reports are SEMARNAT (Mexico), CZMA-I (Belize), CONAMA/Secretariat on the Environment (Guatemala) and SERNA (Honduras). In addition, Regional Monitoring and Environmental Information System reports, the MBRS Atlas, and targeted research reports are required. Each component of the project sets provisions for reporting and monitoring (e.g. establishment of Marine Protected Areas Data Baselines and Monitoring Programmes; establishment of a regional environmental information system to organize and manage data to support improved decision-making; establishment of a regional monitoring program for the collection of synoptic data; monitoring of spawning aggregation sites; development and dissemination of information materials for environmental education and public awareness).

Assessment of success

On July 2006 the participating countries represented by the Presidents of Mexico, Guatemala and Honduras and the Primer Minister of Belize signed an agreement for the Renewal of Commitment to the MBRS. This represents the continued support of the countries involved in national and regional efforts for the conservation and sustainable use of the MBRS. Thus, represents a measure of success as support has been committed at the highest national levels within the long-term vision of the programme.

Potential constraints for application

A key element of the project is the harmonization of policies among participating countries. Undoubtedly the institutional changes required within the countries and among the countries for the previous objective can only be achieved in a long term basis and with direct support from the participating governments. A possible constraint to achieve this can be linked to changes in the political and administrative cycles of the governments involved. As such, the project could be jeopardized if the support to the project is diminished by one of the governments involved given changes of their political and administrative priorities.

Relation to the governance framework

Interventions are targeted at all stages of the policy cycle. In addition, several linkages are established through the institutional arrangements. It is considered that national input must come from the highest level of decision making in order to harmonize policies or undertake cooperative actions.

Member States

Mexico, Belize, Guatemala and Honduras.

5 LME level monitoring and reporting

A system for monitoring and reporting at the LME level for the Caribbean and adjacent regions has been identified as one of the major outputs of the CLME Project. This system is separate and distinct from the one that will be used to monitor project implementation. It is intended that it be ongoing after the end of the CLME Project. Therefore, during the project, close attention must be paid to the sustainability and efficiency of whatever system is developed.

LME level monitoring and reporting must be developed within the context of appropriate level policy cycles, otherwise the outputs will have no client for uptake. The GEF approach recommends that the system be based on three types of indicators (Duda 2002):

- Process indicators, which show whether policy cycles are operational at all relevant levels, and if the necessary linkages among them are functional;
- Stress reduction indicators, which show whether implementation of decisions is resulting in changes of variables that are impacting ecosystems,
- Environmental state indicators which show whether ecosystems are responding to changes in stress.

The nature of the information to be inputted to policy cycles will vary depending on level. For higher level cycles, more general, summarized and policy oriented reporting will be required than for lower level and/or specialized cycles. These systems of indicators must be developed from the bottom up, as the accuracy and reliability of the aggregated information being provided to higher levels will only be as good as the information that is being provided from lower level cycles. For there to be effective monitoring and evaluation at each, there must be clear designation of responsibility for the various stages of the relevant policy cycle. If lower level cycles are to provide policy relevant information to cycles above, vertical linkages must be fully functional.

In most cases there are established systems for monitoring at national levels; although these undoubtedly will need enhancement and support. It is the LME level monitoring and reporting that will need special attention if an effective system is to be established. The first step will be to identify the appropriate policy cycles for this effort. Starting with the decision making entity, it has been suggested that the Association of Caribbean States and its newly formed Caribbean Sea Commission could with appropriate support provide the basis for an LME level cycle as depicted in Figure 5.

Through this high level governing body, an agreement to have timely and responsive information could provide the demand-driven imperative for the establishment of a region-wide LME-level monitoring and reporting program. Additionally, the development of a strategy to ensure the

collection and interpretation of the needed information could be given priority. This strategy should recognize the importance of partnering with existing monitoring, indicator, and reporting programs to build on and enhance current capacities in the region. It should also recognize the need to constantly reassess the target audience's information needs, preferred formats for receiving information, and uses of the products so that the program will prove relevant to decision-makers in the Wider Caribbean.

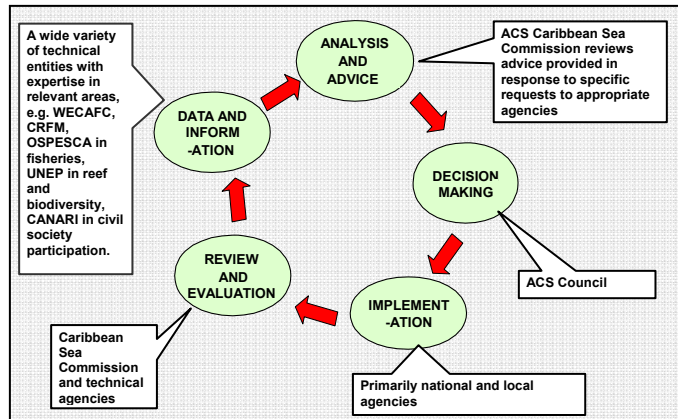


Figure 5. A possible LME level review and evaluation system involving the ACS

Recognizing that a complete and sustainable program to track ecological integrity and sustainability of marine resources in the Wider Caribbean will require years to build, it is recommended that a plan for gradual development should be examined that focuses initially on indicator reporting for critical issues deemed most important for the sustainable management of transboundary LMRs. In the case of the Wider Caribbean, these issues are most likely to include coastal development, contaminants and pathogens, fisheries, eutrophication, marine habitat, and climate change.

Developing a regional monitoring and reporting program entails 1) harmonizing and building on existing efforts, 2) creating regional indicators, 3) developing an appropriate data and information management infrastructure, 4) producing reports on the status of the Wider Caribbean on a timely basis, 5) building and sustaining partnerships, 6) conducting effective communication and outreach and 7) securing multi-partner sustained funding. A regional monitoring and reporting program requires sustained long-term commitments of partners and resources which can only be achieved if there is a demand for the information products in the policy cycles of decision makers at multiple levels.

6 Conclusions and recommendations

6.1 LME governance framework

The proposed LME governance framework comprises complete policy cycles at multiple jurisdictional levels that are networked through both vertical and lateral linkages. The framework accommodates the diversity of policy cycles arrangements and linkage types that are likely to be required for comprehensive governance and is sufficiently flexible to incorporate the diversity of EBM approaches that currently exist.

The goal of interventions would be to establish and enhance cycles and linkages that are context specific and appropriate to purpose, capacity and complexity. This long-term goal can be approached incrementally by targeted interventions that focus on specific subcomponents of the framework.

The majority of countries of the Caribbean LME are either small island developing states (SIDs) or developing countries with an overwhelming lack of capacity at the national level.

Nonetheless, countries are generally dependent on their limited natural resource endowments,

especially coastal and marine resources, for their economic well-being. As such, hierarchical authority may not be needed and is unlikely to be feasible in the Caribbean. A great deal may be accomplished by a mechanism that focuses on networking and linkages among lower level policy cycles. The inherent inclusiveness of the governance framework provides for such decentralization of authority and encourages co-management arrangements.

The full implementation of the LME governance framework in the Wider Caribbean can be expected to take several decades and to be a highly dynamic process requiring regular review and adaptation. It will require that existing organizations be willing to rationalize their current mandates and roles in the context of the framework, often expanding to take on the new responsibilities that will be essential for transboundary governance in the Wider Caribbean. For example intergovernmental organizations will need to incorporate processes for review of and decision-making on Caribbean Sea issues. This will at least require additional time in current processes and will incur additional costs to ensure fully functional policy cycles are developed and appropriately linked horizontally and vertically.

Communications and networking will be key elements of implementing the framework. Electronic means now make this easier than ever, but care must be taken to ensure that access to technology and capacity to use it does not introduce disabling inequities especially at national and lower levels.

Differences in size and capacity among the countries of the region present particular challenges in many areas. To engage effectively, smaller countries often require subregional organizations to provide technical support and collective representation. This can lead to issues of sovereignty that must be considered in strengthening policy cycles at subregional levels. At the technical level data and expertise are highly aggregated in a few of the largest countries. The capacity to access and use the data and to interact with the expertise are likely to be key challenges in building an equitable framework.

The cultural diversity in the region that enriches it also presents challenges. The development of shared principles and values, appreciation of the diversity of approaches that may be culture-based and the ability to communicate across language barriers are challenges that face all aspects of regional development and that will be present in Caribbean Sea LME governance.

The socio-economic dependence of the countries in the Wider Caribbean, particularly SIDS, on the living and non-living resources provided by the Caribbean LME presents a considerable challenge for the implementation of the framework. Sectoral decision-making at the governmental level that seek to enhance economic gain in one sector can oftentimes conflict with the achievement of economic and social goals set in other sectors. At the same time, many key stakeholders from the private sector, including resource users, and civil society whose actions can support or undermine governmental level policy decisions, are not fully engaged in the policy cycle process. The reasons for this may include lack of capacity, lack of institutional structures by some of these stakeholders, for example fisherfolk organizations, lack of resources to participate and existing governance mechanisms that ignore the contributions these stakeholders can make to the policy process.

6.2 *Non-extractable resources and biodiversity*

Several governance structures, directly or indirectly address marine biodiversity. As detailed in the present report, some of the instruments or governance structures have broad purposes offering hierarchical frameworks. For instance, UNCLOS addresses the full spectrum of ocean

uses and therefore only offers certain provisions for marine biodiversity. Addressing broad purposes is important to deal with marine biodiversity in an integrated manner. Trying to accommodate broad objectives however, could neglect certain areas while giving priority to others. Nonetheless, clearly defined mechanisms can offer the required balance to address broader objectives. As an example, the Arctic Council is mandated to address environmental, social and economic aspects in the Arctic. Although the Arctic Council's agenda is broad it has established a particular programme for the Conservation of the Arctic Flora and Fauna.

As noted, certain instruments focus on more detailed objectives and a geographic area. The Cartagena Convention for instance provides a clearer framework for marine biodiversity governance in the Wider Caribbean as it is accompanied by the SPAW Protocol. The SPAW Protocol deals specifically with the protection of habitats and species and requires cooperation on a regional basis. However, the aforementioned instruments present potential constraints when trying to harmonize policies in the Caribbean where countries have significant differences in economic and social terms. While harmonization of policies is fundamental, it can only be achieved on a long term basis. Therefore, in the short term it may be more important to establish a reliable monitoring and evaluation mechanism among Contracting Parties. Monitoring and evaluation is essential to determine the extent of implementation, required changes, new policies and interventions. In time, it could be the means for identifying the required steps for harmonization of policies on a regional basis. After all, governance structures must be dynamic regimes which accommodate to present circumstances without ignoring the objectives initially established.

Monitoring and reporting efforts are apparent, as States which have ratified the Conventions or entered into specific agreements (e.g. Mesoamerican Barrier Reef System, South Pacific Commission), are required to monitor and report. In certain instances however, no feedback mechanisms are provided for the information collected through monitoring and reporting. Thus, questions that may be interesting to answer are: Is the information provided by the States feeding back into different stages of the policy cycle? Is monitoring, reporting and evaluation resulting in the provision of new policies? If this link is not closed, the provision of information may only be perceived as a cumbersome administrative requirement, especially when States have ratified several Conventions or entered several agreements (all requiring monitoring and reporting). It is considered therefore, that clear rules of procedure (i.e. including those for monitoring, reporting and evaluation) are necessary as they may provide an incentive for participating countries to contribute with useful information.

In parallel, institutional arrangements with clearly defined objectives and functions are considered a prerequisite. CBD, for instance has a hierarchical body in the form of the Conference of the Parties, a Secretariat and subsidiary bodies. As noted, the Conference of the Parties keeps under review the implementation of the Convention and also adopts further protocols, essential for the purposes of the Convention. In addition, those governance structures which define a focal liaison at a high level of decision making (e.g. CCAMLR) may prove more useful to maintain issues (i.e. including marine biodiversity) at the forefront and encourage the required political will to advance.

An important point to highlight is the need to establish clear linkages among different instruments and governance structures. For instance, the SPAW Protocol and the Mesoamerican Barrier Reef System Project have certain common objectives (e.g. management of marine protected areas). In addition, they both call for regional cooperation and harmonization of

policies. Although the former is applicable to the entire Wider Caribbean and the latter only applies to the MBRS within the Wider Caribbean, it may be that at certain point they overlap at the operational level. Thus, linkages among the institutional arrangements related to each initiative (UNEP and CCAD) are necessary to maintain overlap at a minimum or coordinate appropriately to achieve those objectives which are common to both. At the same time adequate coordination, through Memoranda of Understanding or Agreement, may result in utilizing scarce financial resources in a more efficient manner.

Undoubtedly the responsibilities of States for the conservation, protection and sustainable use of marine biodiversity are clear and therefore must actively participate and allocate funds for specific programmes, projects and actions. Nonetheless, within the governance structures analyzed it is clear that those which have established a particular financial mechanism with clear rules of procedure (e.g. CCAMLR) may have a higher rate of success in the long term.

7 References

- ACP-EU. 1997. ACP-EU Fisheries Research Initiative. Proceedings of the Third Dialogue Meeting Caribbean, Pacific and the European Union. Belize, Belize City, 5-10 December 1996. ACP-EU Fisheries Research report No. 3.
- Benedict, S. 2004. International Marine Environmental Law: a Case Study in the Wider Caribbean Region. *Georgetown International Environmental Law Review*.
- Berkes F, Mahon R, McConney P, Pollnac R, Pomeroy R. Managing small-scale fisheries: Alternative directions and methods. Ottawa, Canada, IDRC 2001; 309 pp.
- Chakalall, B., Mahon, R., and McConney, P. 1998. Current issues in fisheries governance in the Caribbean Community (CARICOM). *Marine Policy*, 22: 29-44.
- Christie, D. (2006). Implementing an ecosystem approach to ocean management: an assessment of current regional governance models. *Duke Environmental Law and Policy Forum*, 116: 117-142.
- Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region. 1983.
- Convention on Biological Diversity. 1992.
- Convention on the Conservation of Antarctic Marine Living Resources
- Czempiel E. O. Governance and democratization. In Rosenau JM, EO. Czempiel (Eds.), *Governance without government: order and change in world politics*. Cambridge, Cambridge University Press 1992;
- Declaration on the establishment of the Arctic Council.
- Dixon, J.A. (1998) "Economic Values of Coral Reefs: What are the issues?" in *Coral Reefs: Challenges and Opportunities for Sustainable Management*, Hatziolos, M.E., Hooten, A.J. and Fodor, M. Editors. The World Bank, Washington DC.
- Duda, A. 2002. Monitoring and evaluation indicators for GEF International Waters Project. The Global Environmental Facility, Monitoring and Evaluation Working Paper 10: 11p.
- Duda A., M, Sherman K. A new imperative for improving management of large marine ecosystems. *Ocean and Coastal Management* 2002; 45: 797–833.

- Fanning, L., R. Mahon, P. McConney, J. Angulo, F. Burrows, B. Chakalall, D. Gil, M. Haughton, S. Heileman, S. Martinez, L. Ostine, Adrian Oviedo, S. Parsons, T. Phillips, C. Santizo, B. Simmons, C. Toro. 2007. A large marine ecosystem governance framework. Marine Policy (accepted)
- FAO 1995a. Code of conduct for responsible fisheries. FAO, Rome, Italy.
- FAO. 1995b. Agreement to promote compliance with international conservation and management measures by fishing vessels on the High Seas. FAO, Rome, Italy
- FAO 1998. Western Central Atlantic Fishery Commission Report of the Seventh Session of the Working Party on Marine Fishery Resources, Belize City, Belize 2-5 December 1997. FAO Fisheries Report No. 576.
- FAO 1999. Report of the ninth session of the Western Central Atlantic Fishery Commission and of the sixth session of the Committee for the Development and Management of Fisheries in the Lesser Antilles. FAO Fisheries Report No. 612.
- FAO. 2001a. Status and trends of fishery and aquaculture in the WECAFC region. Western Central Atlantic Fishery Commission Tenth Session/Lesser Antilles Fisheries Committee Seventh Session, Bridgetown, Barbados, 24-27 October 2001
- FAO. 2001b. Report of the tenth session of the Western Central Atlantic Fishery Commission and of the seventh session of the Committee for the Development and Management of Fisheries in the Lesser Antilles. FAO Fisheries Report No. ??
- Garibaldi L., Limongelli L. 2003. Trends in oceanic captures and clustering of large marine ecosystems: two studies based on the FAO capture database. Fisheries Technical Paper 435, Rome, Italy
- GESAMP. The state of the marine environment. Group of Experts on the Scientific Aspects of Marine Pollution. Regional Seas Reports and Studies. Nairobi, UNEP 2001;
- Haughton M., Mahon R., McConney P., Kong G. A, Mills A. Establishment of the Caribbean Regional Fisheries Mechanism. Marine Policy 2004; 28: 351–359.
- Jackson J, Kirby M, Berger W, Bjorndal K, Botsford L Bourque B, Bradbury R, Cooke R, Erlandson J, Estes J, Hughes T, Kidwell S, Lande CB, Lenihan H, Pandolfi J, Peterson C, Steneck R, Tegner M, Warner R. Historical overfishing and the recent collapse of coastal ecosystems. Science 2001; 293:629-638.
- Kooiman J., Bavinck M., Jentoft S., Pullin R. [eds]. 2005. Fish for life: Interactive governance for fisheries. Amsterdam, University of Amsterdam Press;
- Ledoux, L. and Turner, R.K. (2002) “Valuing Ocean and Coastal Resources: A Review of Practical Examples and Issues for Further Action”, *Ocean and Coastal Management*, 45, 583-616.
- Le Prestre, P. (2002). The Convention on Biological Diversity: Negotiating the Turn to Effective Implementation. In: Konrad von Moltke and Kirton, J. (eds). *Governing Global Biodiversity: The Evolution and Implementation of the Convention on Biological Diversity*. Ashgate Publishing Limited.
- Mahon, R 1996. Fisheries and research for tunas and tuna-like species in the Western Central Atlantic. FAO Fisheries Technical Paper No. 357.

- Mahon, R ed 1987. Report and proceedings of the expert consultation on shared fishery resources of the Lesser Antilles region. FAO Fisheries Report No. 383.
- Mahon, R. 2002. Living aquatic resource management. pp. 143-218. In: I. Goodbody and E. Thomas-Hope [ed.]. *Natural Resource Management for Sustainable Development in the Caribbean*. Canoe Press, UWI, Kingston, Jamaica.
- Miles E.L. The concept of ocean governance: evolution toward the 21st century and the principle of sustainable ocean use. *Coastal Management* 1999; 27: 1-30.
- Miller, M. (1996). "Protecting the Marine Environment of the Wider Caribbean Region: The Challenge of Institution-Building." *Green Globe Yearbook*.
- Muller-Karger, F. E. 1993. River discharge variability including satellite-observed plume-dispersal. Pages 162-192 In: G. A. Maul [ed.]. *Climatic change in the Intra American Sea*. Edward-Arnold, New York.
- Myers, R. A. and B. Worm. 2003. Rapid worldwide depletion of predatory fish communities. *Nature* 423: 280-283.
- Olsen S. B., Sutinen J. G., Juda L., Hennessey T. M., Grigalunas T.A. 2006. A handbook on governance and socioeconomics of large marine ecosystems. Coastal Resources Center, University of Rhode Island, 95 p.
- Ostrom, E. *Governing the commons: the evolution of institutions for collective action*. Cambridge, Cambridge University Press 1990;
- Pauly, D, Christensen V, Guénette S, Pitcher TP, Sumaila UR, Walters C, Watson R, Zeller D. Towards sustainability in world fisheries. *Nature* 2002; 418, 689-695.
- Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean.
- Sherman K, Duda AM. An ecosystem approach to global assessment and management of coastal waters. *Marine Ecology Progress Series* 1999; 190: 271-287.
- Sherman K, Sissenwine M, Christensen V, Duda A, Hempel G, Ibe C, Levin S, Lluch-Belda D, Matishov G, McGlade J, O'Toole M, Seitzinger S, Serra R, Skjoldall H-R, Tang Q, Thulin J, Vandeweerd V, Zwanenburg K. A global movement toward an ecosystem approach to management of marine resources. *Marine Ecology Progress Series* 2005; 300: 275-279.
- Singh-Renton, S., R. Mahon and P. McConney. 2003. Small Caribbean (CARICOM) states get involved in management of shared large pelagic species. *Marine Policy* 27 (1): 39-46.
- Stoker G. Governance as theory: five propositions. In UNESCO (Ed.), *Governance*. Oxford: Blackwell Publishers 1998; 17-26.
- Turner, J. (2002). *Environmental Treaties*. U.S. Department of State
- United Nations 1983. *The Law of the Sea*. Official text of the United Nations Convention on the Law of the Sea with annexes and tables. United Nations, New York.
- United Nations 1995. Agreement for the implementation of the provisions of the United Nations Convention of the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks. UN Conference on Straddling Fish stocks and Highly Migratory Species, Sixth session, New York, A/Conf.164/37.

- United Nations Division for Sustainable Development. 1994. Report of the Global Conference on the Sustainable Development of Small Island Developing States. Bridgetown, Barbados, 25 April-6 May 1994. United Nations General Assembly A/CONF.167/9
- United Nations Environment Program. 1983. Action Plan for the Caribbean Environment Programme. UNEP Regional Seas Reports and Studies No. 26.
- United Nations General Assembly. 2005. Resolution on Promoting an integrated management approach to the Caribbean Sea area in the context of sustainable development. A/RES/59/230
- USCOP. An ocean blueprint for the 21st century. Final report to the President and Congress. US Commission on Ocean Policy.. Washington, D.C. 2004 (available at www.oceancommission.gov, accessed November 27, 2006.)
- Wang H. An evaluation of the modular approach to the assessment and management of large marine ecosystems. 2004; *Ocean Development and International Law* 35: 267-286
- World Bank. 2001. Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS) Central American Commission on Environment and Development. Project Appraisal Document. Project ID: GE-P053349.

Web pages consulted

- <http://www.arctic-council.org/>
- <http://www.biodiv.org/world/parties.asp>
- <http://www.cep.unep.org/cartagena-convention/>
- <http://www.cep.unep.org/law/cartstatus.html>
- <http://www.oceanlaw.net/texts/summaries/spc.htm>
- <http://www.mbrs.org.bz/english/projdesc.htm>
- <http://www.spc.int/mrd/asides/canberra.htm>
- http://www.un.org/Depts/les/reference_files/chronological_lists-of_ratifications.htm
- http://www.unep.org/regionalseas/Programmes/Action_Plans/Action_Plan_Guide/default.asp

APPENDIX 1

Economic Perspective of Value, Costs and Benefits

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Economists define the value of a particular good or service as what it is *worth* to people as determined by what people are willing and able to pay for that good or service. In this regard, value is often confused with cost. Cost, or what people have to actually pay for a good or service, is considered expenditure and may differ greatly from the value of the good or service. For example, a reef renourishment project may involve \$1 million in physical and engineering costs, but may generate considerably more (or less) than that in actual economic value.

It is important to recognize that economic value extends beyond the marketplace to “*nonmarket*” goods and services such as clean water, biodiversity, and healthy reefs. That people are willing to give up time or other resources (including money) for the opportunity to consume these goods and services lends evidence to this notion. Further, the economic value of these goods need not be associated with direct use. That is, value can be comprised of both use values and “nonuse values”. The values associated with catching fish for consumption is an example of use values associated with the sea, while the value that people derive from knowing that a species or ecosystem exists for future possible use, or for future generations, are examples of non-use value. Table 1 below outlines the various components of value and provides general examples of values that may pertain to marine resources in the CLME. At the bottom of Table 1 is perhaps one of the most important identities for understanding and estimating the value of natural and environmental resources, i.e., that total value is the sum of use values plus nonuse values.

Table 1: Examples of values

Use Values	Market or non-market value	Example
Extractive Use Values	Both	Catching fish for sale or personal consumption.
Non-extractive Use Values	Both	Snorkeling, scuba diving.
Indirect Use Values	Non-market	Erosion protection, pollution assimilation, habitat.
Non-Use Values		
Existence value	Non-market	Value placed on the existence of an ecosystem or species for its cultural or ecological significance.
Option value	Non-market	Value placed on preserving an ecosystem or species for potential future research, education, or recreation.
Bequest value	Non-market	Value placed on preserving an ecosystem or species so that it is available for future generations.
Use Values + Non-Use Values = Total Economic Value		

Benefit-Cost Analysis and Economic Valuation

Economic valuation simply means estimating what something is worth to people. We can gather what the worth of a good or service is by observing what the most people are willing to give up (i.e., trade) to attain it. Economic valuation facilitates this comparison by expressing all impacts in monetary units. There are many situations where measuring and understanding the value of particular natural resources can be useful. In general, anytime there is a potential for tradeoff between market values and non-market values, economic valuation can serve as a means of facilitating this comparison. This is based on the fact that alternative uses of natural resources create a range of impacts, which are usually not in comparable units (changes in fish stocks, loss of tourists, water or air quality changes, or reef degradation). Valuation allows one to compare these often disparate factors and impacts with a common and easily understood metric - money - and hence provides a lucid and systematic accounting framework by which to enumerate the full array of benefits and costs of each alternative for policy analysis.

Continuing this line of thought, a commonly employed litmus test in judging whether a development project, conservation project or policy change should be undertaken is the benefit-cost test, i.e., are the benefits at least as great as the costs. Sometimes referred to as break-even analysis, this test is simply one way in which economic valuation may be implemented.

The economic valuation approach and benefit-cost analysis can be useful in a variety of scenarios directly applicable to the transboundary resources and habitats associated with the CLME. Beyond the obvious merits of understanding the economic tradeoffs of potential policy actions, economic valuation serves to add transparency to the decision making process so that stakeholders gain an understanding of how scarce resources, including both financial and natural capital, are being appropriated. A short list of general valuation examples is provided in Table 2.

Table 2: Valuation scenarios and examples

Scenario	Example
Complete a benefit-cost analysis of a conservation project	Determine the net economic benefit of increasing the use reef balls or mooring buoys to protect reef habitat.
Analyze the potential economic impacts of a proposed policy or regulation change	Determining the economic and environmental implications of a proposed fishery regulation.
Help to efficiently manage natural resources	Analyze alternative fishing regulations in terms of the resulting net benefits to stakeholders and sustainability of use.
Measure monetary damages from natural resource degradation	Determine the economic loss realized as beach width or reef quality diminishes.
Determine Total Economic Value (TEV) of a particular resource	Determine the contribution of coral reefs to economies of the region.

In summary, the results of economic valuation research can be used to better inform resource managers, policy makers and stakeholders on the efficiency, distribution, and economic consequences of alternative resource management decisions, including that of the no-decision option. Through properly designed

valuation studies, the economic consequences of potential policy changes can be examined *ex ante*, and can therefore inform policy formation. Hence, directed economic valuation studies coupled with education of stakeholders regarding the economic value and efficient, sustainable use of resources are a natural component of the “data and information” and “analysis and advice” stages of the CLME policy cycle. Regularly updating and revising such efforts based on new or changing information would also seem to be a necessary component of the cycle.

References

Dixon, J.A. (1998) “Economic Values of Coral Reefs: What are the issues?” in *Coral Reefs: Challenges and Opportunities for Sustainable Management*, Hatzios, M.E., Hooten, A.J. and Fodor, M. Editors. The World Bank, Washington DC.

Ledoux, L. and Turner, R.K. (2002) “Valuing Ocean and Coastal Resources: A Review of Practical Examples and Issues for Further Action”, *Ocean and Coastal Management*, 45, 583-616.