7. Priority Actions for the Strategic Action Programme

The Regional TDA is intended to highlight the transboundary issues and to identify the causes of these. In the process of developing the TDA, *potential* actions have been identified that could address the transboundary issues and are presented as indicative regional actions. Further work on assessing the cost / benefits and alternative solutions are required in formulating the SAP. Furthermore, the CLME Project is undertaking a number of pilot projects that will provide concrete experiences and new data to further guide the SAP development

The three transboundary concerns identified in the PDF-B stage have been re-evaluated and aligned with the current fishery ecosystem approach. The concerns have been assessed as still valid for the development of a Strategic Action Programme (SAP) for the CLME region following the fishery ecosystem approach.

The conclusion reached in the assessment of regional ocean governance in the WCR during the PDF-B was that complexity, diversity and dynamics are major factors affecting arrangements for transboundary living marine resources. These may be more prominent in the WCR than in many other LMEs due largely to its geopolitical complexity. This results in there being large number of stakeholders at multiple geographical and institutional scale levels. Key transboundary issues requiring governance arrangements occur at a diversity of scales and thus require matching governance arrangements. Therefore it was concluded that an approach that sought to network the stakeholders in transparent arrangements that included clear governance process and linkages among them would be the best way to approach regional governance in the WCR. This approach was seen as providing for the need to have issue specific governance arrangements at appropriate scale levels but with opportunities for harmonisation and learning among arrangements. This approach can be best described as the enabling of a network or complex of ocean governance entities within the WCR.

This section is designed to bridge the work of the TDA with the SAP development. It provides preliminary ideas for inclusion in the SAP but clearly it is the expectation that the SAP formulation will undertake detailed reviews and assessments of alternatives for further action. The expected actions will address short, medium and long-term requirements to address the causes of the transboundary problems identified in this TDA. It also should be emphasised that this Regional TDA provides a summary of the details included in the three fisheries ecosystem TDAs and these latter documents (together with the Governance Analysis report) will be the main sources of reference for formulating the SAP.

7.1. Cross-cutting governance actions

7.1.1. General issues

There is a wide array of global and regional legal instruments, agreements, arrangements and action plans that are directly relevant to the management of the living marine resources of the Caribbean Sea. These cover diverse issues such as the dumping of garbage, land-based pollution and oil spills, shipment of toxic wastes, the conservation of biodiversity, and sustainable fisheries, which are all very pertinent to the three transboundary issues identified in the CLME. Application of these instruments, nationally and sub-regionally, and implementation of their provisions, is rudimentary and they are often not reflected in national legislation (CARSEA 2007). Where these are incorporated at the national level, often they are not effectively implemented and enforced due to a number of reasons including limited capacities and financial resources of the countries. There should be greater focus on improved implementation of existing, rather than development of more policies, strategies, and action plans accompanied by strategic planning and financing strategies. While actions at the national level will also benefit transboundary living marine resources and issues, to be more effective in addressing transboundary issues requires that these be undertaken within a broader framework - sub-regional and/or regional, depending on the geographical distribution of the resources or the scale of the issue.

Where possible, consideration of transboundary issues should be incorporated within a collaborative and harmonized framework. The need for improved regional collaboration and cooperation, and appropriate institutional, legislative, and policy frameworks at the appropriate scale for shared resources has been extensively discussed.

Developing these multi-scale frameworks and their effective functioning would need to be underpinned by credible data and information at the appropriate scale. This underscores the need for an improved mechanism for collecting data in a harmonized manner and for sharing data and information throughout the region. Addressing transboundary issues will also need further strengthening of the appropriate human capacity, much of which already exists in the Caribbean. A mechanism is needed to share existing human capacity, as well as experiences and best practices at the regional level and to pool financial resources, to help make existing and planned initiatives and their outcomes more sustainable.

EBM/EAF approaches are increasingly being accepted as the most appropriate frameworks to manage living marine resources, including shared resources. The nature of the CLME and its shared resources as well as its shared and common problems makes it an ideal candidate for EBM/EAF approaches, which puts emphasis on, among other aspects, maintaining the overall health of the ecosystem in order to maintain the production of ecosystem services as well as on the role of humans as a vital part of the ecosystem. The Regional Symposium (Towards Marine Ecosystem-Based Management in the Wider Caribbean) that was held in Barbados in 2008 provided valuable information and a vast range of recommendations on implementing EBM/EAF approaches in the management of the CLME and its living resources. These recommendations, which are all endorsed in this TDA, would provide much needed guidance in developing interventions during preparation of the SAP. Similarly, the results of ecological modelling

carried out by the LAPE project, despite some uncertainties, provide an important basis for moving forward with EBM/EAF for the pelagic ecosystem (Mohammed et al 2008).

The review of the governance aspects of the PDF-B and of advances in living marine resource governance in the WCR since the completion of the PDF-B point to certain key activities as being of value in furthering understanding of regional governance and in developing options for a Regional Governance Framework for consideration in the Strategic Action Programme. These include:

- Developing linkages with the major IGOs to determine the most useful and desirable inputs for policy making (in collaboration with the relevant fishery bodies).
- Liaising with the Monitoring and Reporting component to develop those inputs and deliver to IGOs
- Using TWAP methodology to assess fishery ecosystem governance arrangements in all three ecosystems (in collaboration with the pilot projects)
- Assessing the relationships among the regional organizations that are engaged in LMR governance
- To use the above information to propose appropriate governance options for SAP

7.1.2. Advances in ocean governance to be considered

There have been advances in ocean governance concepts and practices both with the Wider Caribbean and globally in recent years (even since the PDF-B phase) that are relevant to the promotion of improved marine Ecosystem-Based Management by the CLME Project. Key among these are legal and policy-level advances at the international level, a growing awareness of ecosystem-based management, climate change impacts and specific projects focused on regional governance. There have also been a number of global ocean governance initiatives contributing to an increased understanding of factors affecting governance.

Regional and sub-regional intergovernmental organizations have been moving forward with various aspects of ocean governance. The OECS is pursuing an integrated ocean governance approach for its countries as well as a range of activities oriented towards improving ocean governance such as in a Marine Protected Areas. CARICOM's CRFM has been pursuing a Common Fisheries Policy that includes the ecosystem approach. OSPESCA/SICA has made advances in a number of sub-regional fisheries initiatives, also within an ecosystem context, for example, common lobster regulations in the Central American Caribbean. The ACS has been vigorously pursuing the Caribbean Sea Initiative and the establishment and implementation of the related Caribbean Sea Commission. This has the potential to serve as a regional oceans policy body. Each of these bodies has an important role to play in the development of an effective ocean governance framework for the Wider Caribbean Region, and sustainability of their progress will be an important factor in achieving this.

There is continuing progress also with the implementation of the Cartagena Convention and its Protocols. The LBS Protocol is now in force and augers well for progress with reduction of impacts from land-based sources on marine ecosystems.

At the global level, the establishment of the Regular Process by the UNGA in 2009 provides a point of connection for the proposed Regional Monitoring and Reporting System. Similarly, with the GEF IW Programme the development of assessment methodology, especially for IW system governance through the TWAP, provides an opportunity for the governance focus of the CLME Project to be linked with contribute to this global assessment.

There have been recent advances in thinking and practice relating to ecosystem based management. Indeed there has been a recent symposium on Principled Ocean Governance and the ecosystem approach for the Wider Caribbean that provides considerable guidance for the CLME Project in how to proceed in this area. New concepts and approaches are being actively developed in the governance arena and should be taken up in the CLME Project as appropriate. These include emerging ideas on how to promote resilience and transformation in Social Ecological Systems, as well as appropriate characteristics for international governance arrangements such as are being developed by the Earth System Governance Project. The implications of these for the CLME Project and transboundary LMR governance in the Caribbean are developed below.

7.2. Potential regional actions to protect Reef and Pelagic Fishery Ecosystem

7.2.1. Unsustainable fisheries

- Improved implementation of existing policy frameworks to address unsustainable exploitation of living marine resources;
- Reduction in fishing effort for overexploited stocks. This has complex socio-economic implications, and must be accompanied by creation of alternative employment opportunities as well as the interim provision of alternative sources of protein for the communities that depend on these resources for food;
- Establish economic measures and incentives to achieve compliance with regulations and promote sustainable practices;
- Co-operation in management among the key sectors (small-scale and commercial harvesting, processing and marketing sectors), as well as the relevant institutions in the countries, indigenous communities and regional and non-governmental organizations;
- Use of the best available scientific information, with a conservative precautionary and adaptive approach to management. Filling knowledge gaps needs a significant investment in targeted research, mainly in the context of adaptive management. This will require the development of strong collaborations among the scientific, management, and stakeholder communities, including at the sub-regional and regional levels;
- Harmonization at the regional level of the collection of data and information required for stock assessment and management (e.g. fishing effort, total landings by species, origin of catches), and identification of the stock structure of transboundary species;
- Implementation of ecosystem based approaches, at the appropriate geographical scales. The Ecosystem Approach to Fisheries management is increasingly being seen as the most effective approach to management and conservation of living marine resources;

- Establishment/strengthening and effective management of a sub-regional/regional network of marine parks and protected areas, including no-take reserves that provide tangible economic, social and environmental benefits to coastal communities, based on sound science (see below on options for habitat degradation);
- Protection of fish spawning aggregations and other vulnerable populations and species;
- Maintenance of connectivity in reef and pelagic ecosystems. The collaborative design and implementation of networks of marine reserves that include multi-species spawning aggregation sites, critical nursery habitat, and their connectivity, are likely to provide an important contribution to reversing the decline in fisheries in the Caribbean. Resource managers should identify and protect multi-species spawning aggregations and critical nursery grounds for fishes;

7.2.2. Habitat degradation

Several of the policy frameworks and options to address unsustainable exploitation (as well as pollution) are also relevant to habitat degradation and community modification. Options for addressing habitat degradation and community modification include:

- Improved implementation of existing policy frameworks to address habitat degradation;
- Restoration of degraded habitats and protection of healthy ones;
- Preservation and restoration of mangroves and seagrass beds that capture and cycle nutrients, sediments and other pollutants;
- Reduction of threats from both marine and land-based sources, including domestic and industrial wastewater and agricultural run-off;
- Adoption of integrated watershed and coastal area management;
- Promotion of sustainable fisheries, agriculture and tourism practices;
- Incorporation of the economic value of ecosystem services in development planning;
- Develop comprehensive regional strategies and policy alternatives that address current and emerging threats to island and coastal resources and communities;

7.2.3. Pollution

- Wider ratification and better implementation of the Cartagena Convention, particularly the oil spills and LBS Protocols, and MARPOL Convention, as well as the GPA and other relevant policy frameworks. Implementation could be improved by ensuring that existing policies, strategies, and action plans are realistic and accompanied by a strategic planning and financing strategy;
- Adoption and enforcement of environmental standards and better implementation and enforcement of the 'polluter pays' principle at national and regional levels;
- Improved monitoring, including of transboundary movements of pollutants, using standard indicators and methodologies; and development of collaborative efforts to address transboundary pollution at the source;

- Adoption of a cross-sectoral approach in dealing with pollution, and a move towards an integrated, ecosystem approach where feasible.

7.3. Potential regional actions to protect Continental Shelf Fishery Ecosystem

Most of the countries are already party to several international environmental agreements which shows a wide acceptance of the need for EAF. Some preliminary work towards EAF has started at the regional and national levels through the WECAFC ad hoc Working Group on Shrimp and Groundfish in the Brazil–Guianas Shelf. However, to apply this approach, the following principles and concepts need to be translated into policy, goals, and objectives that can be achieved by applying appropriate management strategies over the medium to long term:

- Fisheries should be managed to limit their impact on the ecosystem to the extent possible
- Ecological relationships between harvested, dependent, and associated species should be maintained
- Management measures should be compatible across the entire distribution of the resource
- The precautionary approach should be applied because the knowledge on ecosystems is incomplete
- Governance should ensure both human and ecosystem well-being and equity (FAO 2003).

For the Continental Shelf Fishery Ecosystem, initial steps towards EAF should include the following:

- Agreement on policy, goals, and management objectives for the services provided by the ecosystem. In support, the required legislative and institutional framework should then be put in place.
- Identification and involvement of all stakeholder groups in the application of EAF.
- Development and implementation of national and regional EAF fisheries management plans that include sustainability indicators (including reference points, targets, and limits) and the accompanying monitoring and evaluation procedures.
- Review of the fisheries administrative and management institutional arrangements at the national level in the first instance, and the implementation of the necessary changes to support the institutional requirements for the delivery of EAF.
- Decentralised regional approach to fisheries management in the Continental Shelf Fishery Ecosystem, enabling management measures to be taken that are appropriate to biologically distinct areas and jurisdictional levels. Management measures could include technical measures, spatial management, effort related controls, and systems of access rights.
- Tailoring of research and information provision to support the ecosystem approach, including the documentation and use of traditional knowledge.
- Application of adaptive management and the precautionary approach given the degree of uncertainty and dynamics of the ecosystem.
- Development of an effective monitoring, control and surveillance capability.

7.3.1. Unsustainable fisheries

Overexploitation of the shrimp and groundfish resources combined with excessive by-catch and discards and destructive fishing practices and IUU fishing due to inadequate fisheries management and enforcement could lead to further loss of income, employment, food supply and foreign exchange in the region and should be urgently addressed. Among the interventions required are:

- Identification of the stakeholders in the shrimp and groundfish fisheries, and the development of mechanisms for improved stakeholder participation in the management process.
- Determination of the level of poverty in the fishing communities and the identification of alternative livelihood programmes.
- Institutional strengthening of the fisheries administrations and research institutions at the national and regional levels.
- Harmonization of fisheries and related legislation in the NBSLME.
- Strengthening of the existing mechanisms for regional collaboration in resource assessment and management.
- Development of mechanisms for conflict resolution.
- Development of a regional database for fisheries and related data/information.
- Evaluation of the tools being used for fisheries management in the sub-region.
- Continued assessment, including bio-economic assessments, of the shrimp and groundfish resources.
- Determination of the extent of IUU fishing in the region and the development of mechanisms to combat it at the national and regional levels.
- Determination of the environmental factors that may be influencing recruitment of young shrimp to the shrimp fishery.

7.3.2. Habitat degradation

The continued degradation of "critical" zones or habitats (mangroves, corals) and the unsustainable exploitation of fisheries and other living resources could lead to a deterioration of the quality of life in coastal communities, and, as such, needs to be addressed. Among the interventions required are:

- Strengthening of the institutional framework for integrated coastal management.
- Improved land use policies.
- Improved knowledge of the role that the entire shallow, brackish-water stretch along the seashore plays in the mobilization of nutrients and energy transfer in the lower levels of trophic webs, and providing nursery grounds for many marine fish and shrimp species and the impacts on these areas by human activities.
- Creation of reserves to protect ecologically sensitive coastal ecosystems (e.g. mangroves).

7.3.3. Pollution

Heavy metal pollution from mining and agro-chemical pollution, if not effectively managed, could lead to degradation of the coastal marine ecosystems. In the case of mercury, it could affect the health of miners, as well as the health of other members of the community should it enter the food chain. Among the interventions required are:

- Strengthening of the institutional framework for integrated coastal management.
- Improved land use and mining policies.
- Determination of the level of poverty in the mining areas and the identification of alternative livelihood programmes.
- Development and implementation of adult education and public awareness programmes.
- Strengthening of the institutional mechanisms for monitoring and enforcement in the mining industry.
- Improved knowledge of the effects of agro-chemicals and heavy metals on coastal ecosystems.