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# Governance assessment for the Guianas-Brazil continental shelf fisheries ecosystem

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*Sustainable Management of the Shared Living Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Regions*

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# Governance assessment for the Guianas-Brazil continental shelf fisheries ecosystem

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## Summary

Detailed assessments of governance architecture such as the one carried out in this study for the Guianas-Brazil continental shelf fisheries ecosystem are few. Technical assessments of resources and their habitats are far more common. The purpose of the assessment carried out here is to dissect and display the suite of governance arrangements for the major governance issues identified for this ecosystem in order to facilitate discussion among stakeholders. This discussion can lead to shared perceptions of what should be in place, what principles should be prominent and how the system should be structured. The assessment is not intended to provide a prescriptive output regarding what should be in place. Nonetheless, some broad observations can be made on aspects of the system that need attention if arrangements are to be structured in way that is likely to lead to effective governance, including the promotion of intersectoral and inter-issue integration that is needed for an ecosystem approach.

The assessment was carried out at two levels:

- Level 1 examined the governance arrangements or architecture
- Level 2 made a preliminary assessment of functionality according to several basic principles.

The area for the assessment was the entire Guianas-Brazil continental shelf fisheries ecosystem. It focuses on living marine resources and the requirement for an ecosystem approach to their sustainable use.

Four key living marine resource issues were identified for governance in the fisheries ecosystem:

- Fisheries for shrimp and groundfish,
- Land-based pollution (mainly from large rivers),
- Coastal habitat destruction (wetlands/mangroves),
- Piracy.

Individual arrangements for the four issues above were examined with input from key stakeholders. The extent of interaction among these arrangements, such as would be needed for an ecosystem approach, was also examined.

At the level of the individual arrangements for the four issues the following observations can be made:

- The fisheries process lacks a decision making stage at the subregional level;
- The process for LBS is a regional one at the level of the entire Wider Caribbean Region and lacks a mechanism at the level of the fisheries ecosystem that would allow it to engage with an EAF at that level.

- Brazil is not part of the Caribbean Regional Seas (Cartagena Convention LBS Protocol), although it is part of FAO WECAFC
- There is no transboundary mechanism for either coastal habitat destruction or piracy.

Regarding integration among policy process that would be needed for an EAF it can be observed that the governance arrangements for the issues are not well integrated at the policy level or at the management level.

The Level 2 assessment is based on the extent to which stakeholders perceived certain principles as being observed in the fisheries arrangement. The overall picture is that the arrangement is known only to a few senior persons responsible for fisheries. To be fair, there has been a significant hiatus in the functioning of the WECAFC Ad Hoc WG, such that new stakeholders whether in the fishery or the fisheries department might not have been around when last it functioned.

The directions that emerge as requiring attention in order to establish an integrated governance system with fully functional policy cycles for the four issues are:

- Complete the fisheries policy cycle by identifying or establishing a body that will take up the decision-making function.
- Establish a regional policy cycle for the coastal habitat conservation issue.
- Explore the appropriate mechanism within the LBS Protocol of the Cartagena Convention that would allow for policies and action that is specific to the Guianas-Brazil continental shelf fisheries ecosystem and that would include Brazil.
- Explore the appropriate arrangement for addressing the issue of transboundary piracy affecting fisheries that includes all the countries and can engage in the EAF for the fisheries ecosystem.
- Explore and establish the appropriate arrangement for integrating the arrangements for the four key issues of the Guianas-Brazil continental shelf fisheries ecosystem so that an EAF can be achieved; giving consideration to the possibility that may be achieved under the fisheries policy process referred to above.

The assessment of principles for the fisheries arrangement indicates that as the processes are strengthened or in some cases created, there will be the need for dialogue among the stakeholders groups that is focused on the principles considered to be most important for effective governance. Further work could involve prioritizing these principles and developing actions that would make them more prominent in the respective arrangements.

To conclude, we would like to emphasise that the present assessment is a preliminary one and should be seen as the start of an ongoing process that would guide the development of an effective subregional arrangement for an ecosystem approach to the Guianas-Brazil continental shelf fisheries ecosystem.

## Acronyms and abbreviations

| | |
|---|---|
| ACS | Association of Caribbean States |
| CANARI | Caribbean Natural Resources Institute |
| CARICOM | Caribbean Community and Common Market |
| CBD | Convention on Biological Diversity |
| CCA | Causal Chain Analysis |
| CEP | Caribbean Environment Programme |
| CERMES | Centre for Resource Management and Environmental Studies |
| CFRAMP | CARICOM Fisheries Resource Assessment and Management Programme |
| CLME | Caribbean Large Marine Ecosystem |
| CRFM | CARICOM Regional Fisheries Mechanism |
| CSC | Caribbean Sea Commission |
| CSI | Caribbean Sea Initiative |
| EA | Ecosystem Approach |
| EBM | Ecosystem-based Management |
| EEZ | Exclusive Economic Zone |
| FAO | Food and Agricultural Organization |
| IFREMER | InstituteFrançaispourl'exploitation de la mer |
| IMO | International Maritime Organization |
| IOC | Intergovernmental Oceanographic Commission of UNESCO |
| IOCARIBE | Inter-governmental Oceanographic Commission – Caribbean Subcommision |
| IUU | Illegal, Unregulated and Unreported (fishing) |
| LBS | Land-Based Sources and Activities Protocol |
| LME | Large Marine Ecosystem |
| LMR | Living Marine Resources |
| LOSC | Law of the Sea Convention |
| MCS | Monitoring, Control and Surveillance |
| MEA | Multilateral Environmental Agreement |
| NBC | North Brazil Current |
| NGO | Non-Governmental Organization |
| NIC | National Inter-ministerial/Inter-sectoral Committee |
| REMP | Regional Environmental Monitoring Programme |
| SAP | Strategic Action Programme |
| TDA | Transboundary Diagnostic Analysis |
| TED | Turtle Excluder Device |
| TWAP | GEF Transboundary Waters Assessment Project |
| UN | United Nations |
| UNCLOS | United Nations Convention on the Law of the Sea |

| | |
|---|---|
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| WCR | Wider Caribbean Region |
| WECAFC | Western Central Atlantic Fishery Commission |
| Widecaste | Wider Caribbean Sea Turtle Network |
| WSSD | World Summit on Sustainable Development |

# 1 Introduction

## 1.1 The CLME Project and LME Governance Framework

The Caribbean Large Marine Ecosystem and Adjacent Areas (CLME) Project aims to improve management of shared living marine resources (LMRs) within the Wider Caribbean Region (WCR). The Transboundary Diagnostic Analyses have identified weak governance as a root cause of the problems facing these social ecological systems. Therefore, the CLME Project has a strong emphasis on assessing LMR governance systems and on proposing ways of strengthening them. The background to the way that governance is treated in the CLME Project including the development of the LME Governance Framework is discussed in the CLME Project Transboundary Diagnostic Analysis (TDA) for Governance (Mahon et al 2011a).The CLME Project is designed to begin the process of building theframework for the WCR through a series of targeted activities aimed at specific parts of the frameworkand at testing the effectiveness of the LME Governance Framework concept (Mahon et al2008, Fanning et al 2009).

The purpose of the pilot projects and case studies is to explore and understand various key parts of the framework in a 'learning-by-doing' mode. They will explore how the approach of developing functionality of policy cycles and linkages in various parts of the framework could lead to improved transboundary LMR governance in the WCR. These CLME project components have been designed to encompass the full range of transboundary LMR situations with emphasis on different levels of the framework and different geographical regions of the WCR. These pilots and case studies are being approached through a common methodology.The overall Regional Governance Framework that has been developed is described by Mahon et al (2012). It is based on these pilots and case studies combined with other analyses to provide a comprehensive perspective on ocean governance for LMR in the WCR.

This Case Study for the Shared Stocks of the Shrimp and Groundfish Fishery of the Guianas-Brazil Shelf is one of the CLME Pilot Projects and Case Studies that contributes to the overall RGF. It must be noted, however, that with the reorientation of the CLME Project to an Ecosystem Approach to Fisheries (EAF), and the identification of three major ecosystem types in the Wider Caribbean Region (reef, pelagic and continental shelf), this case study might be more properly titled Case Study for the Continental Shelf Fisheries Ecosystem.

## 1.2 LMR governance assessment

The LMR governance assessment approach for the CLME project (Mahon et al 2011d) builds on the methodology developed by Mahon et al (2011b, 2011c)for the Transboundary Waters Assessment Programme (TWAP). TWAP is a GEF project to develop indicators for monitoring all aspects of the projects in the GEF's International Waters (IW) portfolio. The discussion and methodology paper by Mahon et al (2011b) addresses the monitoring of governance. The focus

is on the Large Marine Ecosystem (LME) component of the IW Programme. The approach and methodology was developed for the entire GEF LME programme. To a large extent it was based on experience gained in developing the CLME Project and is therefore considered to be appropriate for adaptation to the CLME Pilots and Case Studies.

The TWAP approach to be adopted and adapted here is a two-Level one as described by Mahon et al (2011b, 2011c). It has been adapted to the CLME Pilots and Case Studies in a working paper (Mahon et al 2011d). Level 1 will assess governance architecture and a methodology has been developed for this. Level 2 will assess the performance of the arrangements identified in Level 1 (Figure 1).

# 2 Level 1 assessment - architecture

The steps required for the Level 1 assessment are outlined in table 1 and figure 1.

### 2.1.1 System to be governed

Governance of LMR must be place-based (Crowder et al 2006, Young et al 2007). Therefore, the geographical boundaries of the system and the countries involved in the fishery ecosystem must be clearly identified as a basis for determining issues and arrangements.

The fisheries ecosystem area covered by this assessment encompasses the area of the North Brazil Shelf LME (17) that is west of the mouth of the Amazon River and a small part of the Caribbean LME (12) that is a continuation of the continental shelf that includes the Gulf of Paria shared by Trinidad and Tobago and Venezuela (Figure 1). There are six coastal countries in this area: Brazil, French Guiana, Suriname, Guyana, Trinidad and Tobago, and Venezuela. The area is part of the GEF IW Project for

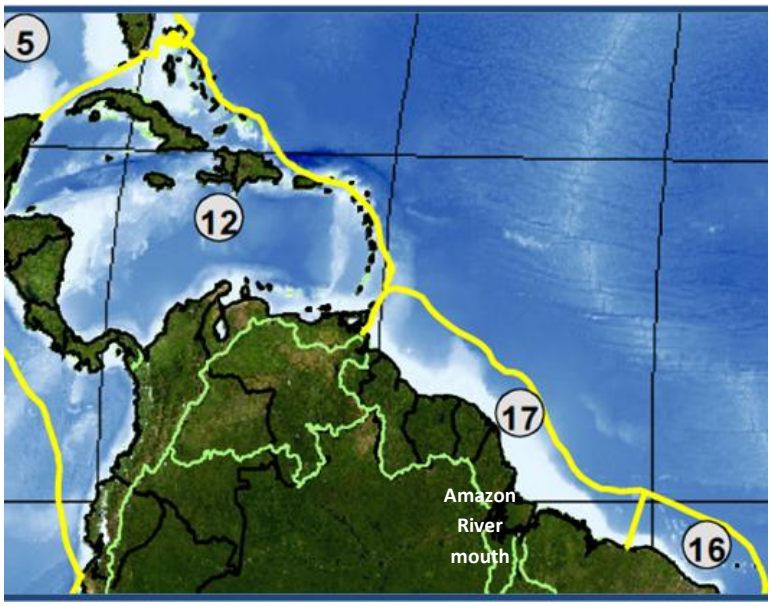


**Figure 1. The fisheries ecosystem covered by this assessment encompasses the area of the North Brazil Shelf LME (17) that is west of the mouth of the Amazon River and a small part of the Caribbean LME (12) that is a continuation of the continental shelf that includes the Gulf of Paria shared by Trinidad and Tobago and Venezuela.**

the Caribbean LME and Adjacent Areas (CLME Project)(Fanning et al. 2009). A preliminary TDA was carried out during the PDF-B phase of the CLME Project development and has been refined in the full project with a focus on the continental shelf fishery ecosystem rather than the LME per se, although they coincide to a large extent (Phillips 2011).

### 2.1.2 Issues to be governed

The desired approach to governance of the Guianas-Brazil continental shelf fisheries ecosystem is an integrated one that is consistent with ecosystem based management or the ecosystem approach to fisheries (EAF) of FAO. This requires that the full range of issues that may be relevant to sustainable use of living marine resources be considered.

The Guianas-Brazil continental shelf fishery ecosystem has a long history of efforts at assessment and management of the fisheries of the area (Heileman 2008, Phillips 2011a, 2011b). The predominant fisheries of the area are commercial trawling for shrimps. These provide a considerable amount of employment and foreign exchange for the countries, but are overcapitalised. There are also considerable demersal finfish resources in the area, including seatrouts, croakers, catfishes and snappers. These support extensive small-scale coastal fisheries as well as commercial trawling offshore. In the initial stages of development of the offshore fisheries most of the finfish caught was bycatch in the shrimp fisheries and the discards of finfish are a major concern. Subsequently, directed commercial trawling has been targeting finfish. Most of these demersal finfish resources are considered to be fully oroverexploited and there are use conflicts between small-scale and commercial fishing.

There are other fishery resources in the area. These include deep-water snappers on the edge of the shelf, for which there is a significant fishery. They also include schooling pelagics such as *Scomberomorus*, but these are not extensively fished. Sharks abound in the area and are a biodiversity concern given their life-history characteristics and tendency to be easily depleted. Sea turtles are also common and bycatch issues in the trawl fisheries have been addressed using TEDs.

The coastal zones of the area are occupied by extensive mangroves, coastal wetlands and lagoons. These are considered to be essential nursery habitat for the shrimp and finfish species taken in the coastal and offshore fisheries. Their destruction and degradation is of concern from both a biodiversity and fishery perspective. The Guianas-Brazil continental shelf area is also heavily influenced by the outflow of several major rivers. These include the Amazon River at the extreme southeastern end and the Orinoco River at the northwestern end. There are many other large rivers between these two (e.g. Suriname R., Corentine R., Essequibo R.). The nutrient inputs from these rivers are an important part of the shelf production system, but pollution from land-based sources brought into the continental shelf ecosystem by these and other smaller rivers is of increasing concern.

There has not been a great deal of effort towards implementing EAF in this fishery ecosystem, although the EAF issues are well documented in the many publications. These also include social and economic issues on land in fishing communities and in the processing and distribution subsectors.

An effort was made to elaborate what the EAF or EBM would mean for this ecosystem in 2008 at the 'Regional symposium on marine EBM in the Wider Caribbean' (Fanning et al 2011). A facilitated process was used to develop a vision for EBM for the ecosystem and to identify strategic direction to be pursued in achieving EBM (Mahon et al 2011)(Appendix 1).

The key issues to be considered for governance in the present assessment were identified through consultation with the stakeholders attending the two meetings of the CLME Shrimp and Groundfish case study in Trinidad in July 2011 and in Suriname in October 2011. The broad range of issues that have been noted above as being of concern in this fishery ecosystem have been aggregated into four overall issues for which governance arrangements are considered to be needed:

- Fisheries for shrimp and groundfish
- Land-based pollution (mainly from large rivers)
- Coastal habitat destruction (wetlands/mangroves)
- Piracy

Piracy was not mentioned in earlier reports but came out as a significant issue in the two Case Study meetings mentioned above and in the subsequent national consultations and the final workshop. As governance reform are implemented and governance processes practiced there may be the need to take up other issues. An emerging issue that was raised in the final workshop, but is not included here is the governance of oil and gas exploration and extraction on the Guianas-Brazil Shelf which has substantial implications for living marine resources.

### 2.1.3 Identify regional arrangements for each issue

The assessment of completeness of an arrangement for an issue, as summarized in Table1 is based on whether there are organizations with responsibility for the various stages of the policy cycle for that issue. The perceived completeness of policy cycle stages for the governance processes identified for each of the four issues identified is presented in Tables 2-5 and summarized in Figure 2.

## Table 1: Guianas-Brazil continental shelf fisheries ecosystem transboundary system governance architecture - System summary[1]

| IW category: LME | Total number of countries: Six (Brazil, French Guiana, Suriname, Guyana, Trinidad and Tobago, Venezuela) | System name: North Brazil Current LME | Region: Latin America and the Caribbean |
|---|---|---|---|

| *Complete these columns then assess issues using the arrangements tables* | | | *After completing the arrangements tables, complete these columns* | | |
|---|---|---|---|---|---|
| **Transboundary issue**[2] | **Number of countries involved**[3] | **Collective importance for countries involved**[4] | **Completeness of governance arrangement % (category)**[5] | **Priority for intervention to improve governance (Max = 9)**[6] | **Observations**[7] |
| Fisheries for shrimp and groundfish (commercial and small-scale) | 6 | 3 | 48% (2) | 6 | There is a strongly identifiable and longstanding subregional technical component to the arrangement, but meta-level components as well as operational decision-making are virtually absent. |
| Coastal habitat destruction (wetlands/mangroves) | 6 | 2 | 19% (3) | 6 | There is no discernable arrangement for this issue. The score that is given relates entirely to national capacity and the probability that countries interact in some regional forums |
| Land-based pollution (mainly from large rivers) | 6 | 2 | 86% (1) | 2 | The regional arrangement for this issue is well established, if new, but there is no subregional arrangement. This may mean that the subregional issues are underserved by the regional arrangement. |
| Piracy (affecting security and livelihoods of fishers) | 6 | 3 | 0%(3) | 9 | This is a new and emerging issue with far reaching consequences for which a transboundary arrangement must be developed from scratch |
| System architecture completeness index>>[8] | | | 38% (2) | 6 | << System priority for intervention index[8] |

Table notes:

[1] This page provides an overview of all the arrangements in the system and their status.

[2] There is the question of how far down in detail these should go. This can be a matter of choice, and part of the flexibility of the system, but it should ideally be to the level where the transboundary issue requires a separate arrangement for management. To use a fishery example, individual species or groups of species may each require their own assessment and measures, but may all be handled in one institutional arrangement. However, for geopolitical reasons, some species or groups of species may require separate processes and should be treated as separate issues needing separate arrangements. Ideally, these issues should be identified and quantified in a TDA. If not, experts knowledgeable about the system may have to identify them.

[3] Indicates how many of the total number of countries are involved in the particular issue.

[4] This should be based on the TDA but may have to be based on expert judgement, or other sources of regional information. It is to be scored from 0-3.

[5] The percentage given in this column is derived from the completeness scores allocated on the arrangement specific page (see Tables). This score will then be reallocated into a category where none = 3, low [1-7] = 2, medium [8-14] = 1 and high [15-21] = 0) for input into the Priority for intervention column. The reason for reversing the score is that the higher the completeness, the less the need for intervention.

[6] This priority would be calculated as the product of the 'collective importance for countries involved' for the issue and 'completeness of governance arrangement'category. It can range from 0-9.

[7] This provides the opportunity for brief comments that may help the user interpret the information provided on the summary page, but is not intended to be a substitute for annotation.

[8] Average.

**Table 2: Guianas-Brazil continental shelf fisheries ecosystem transboundary system governance architecture - Summary for shrimp and groundfish arrangement**

| **Issue:** Fisheries for shrimp and groundfish (commercial and small-scale) | | | | |
|---|---|---|---|---|
| **Policy cycle stage (governance function)** | **Responsible organisation or body** | **Scale level or levels** | **Complete-ness** | **Observations** |
| Policy analysis and advice | FAO WECAFC | Subregional | 1 | |
| Policy decision-making | None | | 0 | |
| Planning analysis and advice | WECAFC Ad Hoc WG on Guianas-Brazil Shrimp and Groundfish | Subregional | 2 | This WECAFC Working group has been in existence for many years and has been active at the technical level providing several good fishery assessment and considerable advice |
| Planning decision-making | None | | 0 | The CRFM council of Ministers can consider advice and make collective decisions for the three CARICOM countries |
| Implementation | Countries | National | 2 | Countries self-interpret outputs from WECAFC and implement as they see fit. |
| Review and evaluation | WECAFC Ad Hoc WG on Guianas-Brazil Shrimp and Groundfish | Subregional | 2 | see above |
| Data and information | Countries | National | 2 | Countries have been acquiring and managing data and information for input to the WECAFC WG |
| Total | | | 9/21 = 48% | |

| Arrangements by issue table notes (applies to Tables 2-5) |
|---|
| 1. This column lists the governance functions that are considered to be necessary at two levels: (1) the meta-level of policy preparation and setting; and (2) the policy cycle level as per Figure 3.<br>2. The organisation or organisations responsible for the function should be listed here<br>3. These are the level or levels on the jurisdictional scale at which the function is performed. There are five levels on the scale of jurisdiction: local, national, sub-regional, regional, and extra-regional.<br>4. Rate on a scale of 0 = absent, 1 = low (ad hoc, irregular, unsupported by formal documentation or little known by stakeholders), 2 = medium, 3 = high (clearly identifiable, regular, documented or supported by policy and legislation and widely known among stakeholders)<br>5. This provides the opportunity for brief comments that may help the user interpret the information provided, but is not intended to be a substitute for annotation.<br>6. Assume each step is equally important and receives equal weighting for the completeness overall. |

### Table 3: Guianas-Brazil continental shelf fisheries ecosystem transboundary system governance architecture - Summary for the coastal habitat conservation arrangement

| **Issue:**Coastal habitat destruction (wetlands/mangroves) | | | | |
|---|---|---|---|---|
| **Policy cycle stage (governance function)** | **Responsible organisation or body** | **Scale level or levels** | **Complete-ness** | **Observations** |
| Policy analysis and advice | None | | 0 | |
| Policy decision-making | None | | 0 | |
| Planning analysis and advice | None | | 0 | |
| Planning decision-making | None | | 0 | |
| Implementation | Countries | National | 2 | |
| Review and evaluation | None | | 0 | |
| Data and information | Countries | National | 2 | |
| Total | | | 4/21 = 19% | |

**Table 4: Guianas-Brazil continental shelf fisheries ecosystem transboundary system governance architecture - Summary for the LBS arrangement**

| **Issue:**Land-based pollution (mainly from large rivers) | | | | |
|---|---|---|---|---|
| **Policy cycle stage (governance function)** | **Responsible organisation or body** | **Scale level or levels** | **Complete-ness** | **Observations** |
| Policy analysis and advice | Scientific,Technical and Advisory Committee (STAC) to the LBS Protocol | Regional | 3 | This sub-region is part of an overall WCR regional process. Only three countries (French Guiana, Guyana and Trinidad and Tobago) have ratified the LBS Protocol. Only Trinidad and Tobago is preparing an NPOA. |
| Policy decision-making | COP of the Cartagena Convention | Regional | 3 | |
| Planning analysis and advice | Scientific,Technical and Advisory Committee (STAC) to the LBS Protocol | Regional | 3 | There is no subregional component to the arrangement for this issue at the scale of the LME it is directly from the regional to the national level. |
| Planning decision-making | COP of the Cartagena Convention | Regional | 3 | |
| Implementation | Countries | National | 2 | Through LBS national programmes of action |
| Review and evaluation | Scientific,Technical and Advisory Committee (STAC) to the LBS Protocol | | 2 | |
| Data and information | Countries | National | 2 | Through LBS national programmes of action |
| Total | | | 18/21 = 86% | |

**Table 5: Transboundary system governance architecture for the Guianas-Brazil continental shelf fisheries ecosystem - Summary for the piracy arrangement**

| **Issue:** Piracy | | | | |
|---|---|---|---|---|
| **Policy cycle stage (governance function)** | **Responsible organisation or body** | **Scale level or levels** | **Complete-ness** | **Observations** |
| Policy analysis and advice | None | | 0 | |
| Policy decision-making | None | | 0 | |
| Planning analysis and advice | None | | 0 | |
| Planning decision-making | None | | 0 | |
| Implementation | None | | 0 | |
| Review and evaluation | None | | 0 | |
| Data and information | None | | 0 | |
| Total | | | | |

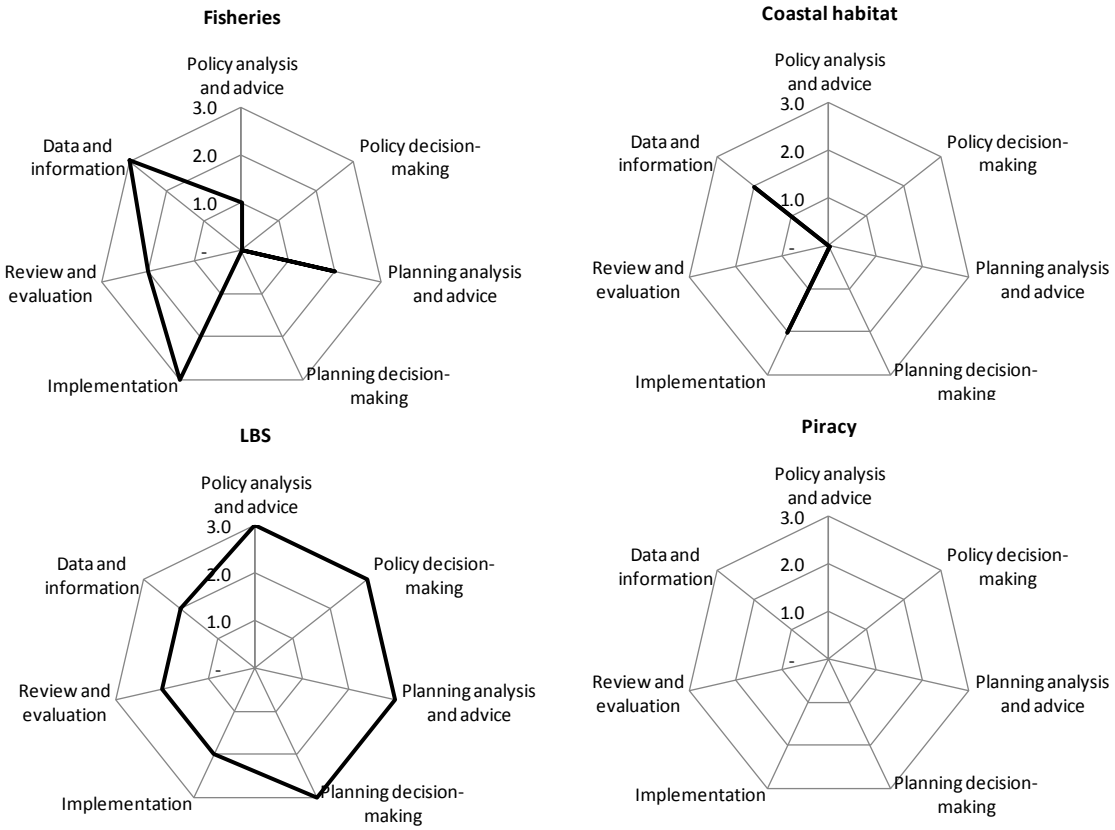


**Figure 2. Summary of completeness of policy cycle stages for the four governance arrangements for the key issues of the Guianas-Brazil continental shelf fisheries ecosystem (0 = absent, 1 = low, 2 = medium, 3 = high.**

Contemporary piracy, especially that occurring beyond the 12-nautical mile limit as defined in the United Nations Convention on Law of the Sea (UNCLOS), has not yet become a major issue in the Caribbean. However, there are increasing incidents of marine crime involving ships at anchor in harbor, fishing vessels, and yachts which would indicate a need in the region, for proactive planning and a strengthening of coordination and response mechanisms to deal with the problem should it begin to develop. Trends identified in other regions show an escalation in criminal attacks on smaller vessels prior to the first full-scale piracy attacks. Within the Caribbean region, there have been recently reported crimes against local fishing vessels, yachts, commercial shipping at anchor or in port. Small fishing boats have been attacked off the Guyana coast. Yachts were boarded at anchor in Antigua, and several larger merchant ships have been boarded by criminals while in harbor, most recently in Port-au-Prince, Haiti. Often overlooked, is the fact that international shipping, registered in the region, has been subject to pirate attacks in the Horn of Africa. While the problem of piracy has been recognized as a potential issue of regional concern, the subject has been given a low priority on regional agendas as there have been no serious incidents involving major merchant vessels, or cruise ships up to the present time.

There are several implications for regional governments, and organizations in the Caribbean. First, while there has been some coordination between security forces in the antidrug-smuggling area, there is a lack of mechanisms for dealing with piracy and other maritime crime within the territorial jurisdiction of states, or in the high seas areas. This suggests a need for regional bodies involved in fisheries, customs, tourism, marine security, and regional maritime administrations to develop integrated reporting systems, and coordinated response mechanisms to detect and report incidents, and inform other potentially involved sectors when incidents occur. Second, there is a lack of the uniform criminal code provisions among the states in the region as well as no attention paid to the identification of appropriate courts with jurisdiction to prosecute a high seas piracy incident. Third, while there is an increasing amount of global shipping registered within the region, Caribbean flag states have not introduced appropriate antipiracy legislation, or identified the operational and legal mechanisms which would be utilized to ensure the successful prosecution of suspects involved in piracy attacks on Caribbean flag vessels and other regions of the globe. These threats have recently led some in the maritime administration, legal system and maritime security to express interest in taking a proactive approach to address this potentially negative and significant activity from taking hold in the region.

Fortunately, the Caribbean region has both the regional governance frameworks, and in the absence of a current serious piracy situation, the time to be able to institute a regional needs identification and planning process, to develop effective and appropriate regional instruments to deal with emerging maritime crime, and to preempt its evolution into full-scale Marine

piracy. Since full-scale piracy in the Horn of Africa and on the West African coast was preceded by several years of attacks on local fishing vessels, it is incumbent upon Caribbean fisheries management organizations to recognize their early vulnerability which is often ignored or unreported by the international antipiracy initiatives. Furthermore, with its heavy dependence on tourism, both cruise and land-based, the region would be significantly at risk economically should marine piracy gain a foothold, regardless of whether the pirates hold passengers of cruise vessels for ransom or attack ships for their cargo.

The tables and figure 2 show the following:

- That while the fisheries process is well known, it lacks a decision-making stage for either management or policy;
- The process for LBS is a regional one at the level of the entire Wider Caribbean Region and lacks a mechanism at the level of the fisheries ecosystem that would allow it to engage with an EAF at that level.
- Brazil is not part of the Caribbean Regional Seas (Cartagena Convention LBS Protocol), although it is part of FAO WECAFC
- There is no transboundary mechanism for either coastal habitat destruction or piracy although it is clear that the implementation for the former would be at the national level.

A governance improvement target could be to have these governance arrangements clarified, formalized and made known to all stakeholders so that they can take part in the processes effectively.

Tables 2-5 identify only the bodies with formal responsibility for governance with regard to the specific issues being considered. This provides the formal arena in which the governance process may be played out. However, governance as understood in the CLME Project includes the interactions of all the actors with interests in governance outcomes. Therefore in order to understand and assess governance processes the roles of and interactions among these actors must be considered. This requires identification of the actors and their roles with reference to the policy cycle. It also provides the opportunity to identify where partnerships exist and/or can be developed. The full identification of all stakeholders is beyond the scope of this assessment of governance architecture and arrangements.

### 2.1.4 Integration and linkages of arrangements

The assessment of integration is based on the extent to which issue specific arrangements in a system share a responsible body at various policy cycle levels. The information on responsibility for various stages from Tables 2-5 is summarized in Table 6.

**Table 6. Comparison of agencies considered to have some responsibility or potential responsibility for the four LMR issues for Guianas-Brazil continental shelf fisheries ecosystem**

| Stage | Fisheries | Coastal habitats | LBS | Piracy |
|---|---|---|---|---|
| **Policy analysis and advice** | FAO WECAFC | None | Scientific, Technical and Advisory Committee (STAC), LBS Protocol | None |
| **Policy decision-making** | None | None | Intergovernmental Meeting of the Cartagena Convention | None |
| **Planning analysis and advice** | WECAFC Ad Hoc WG on Guianas-Brazil Shrimp and Groundfish | None | Scientific, Technical and Advisory Committee (STAC), LBS Protocol | None |
| **Planning decision-making** | None | None | Intergovernmental Meeting of the Cartagena Convention | None |
| **Implementation** | Countries | Countries | Countries | Countries |
| **Review and evaluation** | WECAFC Ad Hoc WG on Guianas-Brazil Shrimp and Groundfish | None | Scientific, Technical and Advisory Committee (STAC) , LBS Protocol | None |
| **Data and information** | Countries | Countries | Countries | Countries |

The integration analysis was not carried out in full because there were no organizations in common among the three arrangements, except for at the level of implementation and provision of data and information which was at the country level in all four cases. However, it is thought to be likely that the agencies in the countries that deal with the issues will be different in each country.

## 2.2 Level 2 assessment - performance of governance arrangements

The Level 2 assessment evaluates the functionality and performance of governance arrangements according to criteriathat will be agreed by stakeholders. Mahon et al (2010) provides the conceptual background to what might be involved in examining the component parts or governance arrangements within selected transboundary water systems.

### 2.2.1 Assessment of principles

The principles that should guide the establishment and the functioning of a governance arrangement, and the extent to which they are being observed in the associated governance processes, are an important part of a governance assessment. Assessing them can provide

insight into where the system may need attention. Key substantial principles are: sustainability, efficiency, rationality, inclusiveness, equity, precaution and responsiveness. Examples of key procedural principles are: transparency, accountability, comprehensiveness, inclusivity, representativeness, information and empowerment.For the CLME Project 13 principles were selected as shown in Table 7. These were used for a preliminary assessment of the fisheries arrangement in the Guianas-Brazil continental shelf fisheries ecosystem.

**Table 7. Principles assessed and the statements that were used to assess them**

| Principle | Statement |
|---|---|
| Accountability | The persons/agencies responsible for the governance processes can be held responsible for their action/inaction |
| Adaptability | The process has ways of learning from its experiences and changing what it does |
| Appropriateness | Under normal conditions, this process seems like the right one for what it is trying to achieve |
| Capability | The human and financial resources needed for the process meet its responsibility are available. |
| Effectiveness | This process should succeed in leading to sustainable use of ecosystem resources and/or control harmful practices |
| Efficiency | This process makes good use of the money, time and human resources available and does not waste them. |
| Equity | Benefits and burdens that arise from this process are shared fairly, but not necessarily equally, among stakeholders |
| Inclusiveness | All those who will be affected by this process also have a say in how it works and are not excluded for any reason. |
| Integration | This process is well connected and coordinated with other related processes. |
| Legitimacy | The majority of people affected by this process see it as correct and support it, including the authority of leaders |
| Representativeness | The people involved in this process are accepted by all as being able to speak on behalf of the groups they represent |
| Responsiveness | When circumstances change this process can respond to the changes in what most think is a reasonable period of time |
| Transparency | The way that this process works and its outcomes are clearly known to stakeholders through information sharing |

This assessment was carried out in the final workshop of the case study (Trinidad October 2012). The participants from the countries were divided into three groups: (1) representatives of fisher organisations and the fishing industry; (2) heads of fisheries departments and (3) technical officers from fisheries departments. The participants in each group were asked to discuss the statements associated with the principles in Table 7 with regard to the fisheries arrangement and to provide a group response based on the extent to which they agreed or disagreed with each of the 13 statements (disagree strongly = 1, disagree =2, agree = 3, agree strongly = 4). A zero indicates that the participants were not able to respond to the question.

The responses provided by the three groups for the fisheries arrangement are summarised in Figure 4. The fishers could only respond to three of the 13 statements because they were not familiar with the arrangement for fisheries. Consequently, they gave the arrangement a low score for inclusiveness, legitimacy and transparency. The fisheries technical group also indicated that they were not very familiar with the arrangement and could not evaluate statements regarding appropriateness, efficiency and equity. They did however agree that it was adaptive, representative and effective. In contrast, heads of fisheries departments were more familiar with the arrangement and could respond to all the statements. They agreed with those pertaining to 9 of the 13 principles. The four that they disagreed with pertained to integration, efficiency, responsiveness and legitimacy.

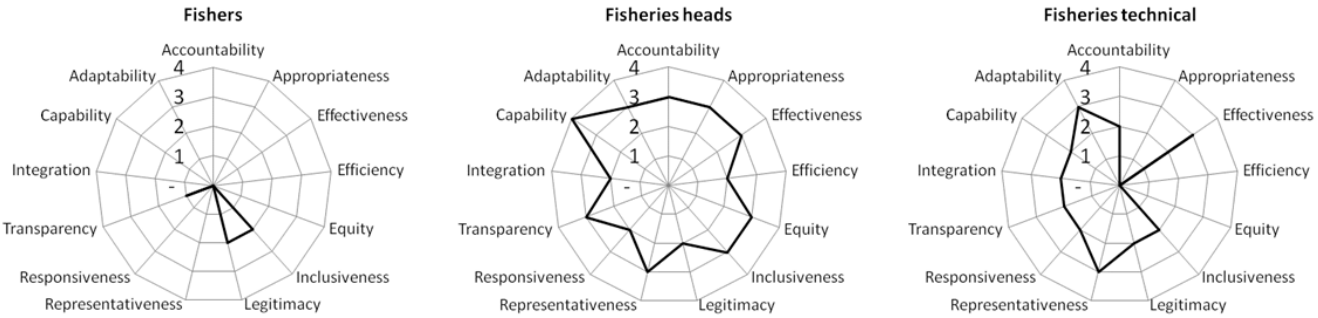


**Figure 4. Assessment of the extent to which desired principles are considered to be represented, in the governance processes for the fisheries issue identified for the Guianas-Brazil continental shelf fisheries ecosystem based on agreement with presence of principles (1 = disagree strongly, 2 = disagree, 3 = agree, 4= agree strongly).**

The overall picture suggests that the arrangement is known only to a few senior persons responsible for fisheries. To be fair, there has been a significant hiatus in the functioning of the WECAFC Ad Hoc WG, such that new stakeholders whether in the fishery or the fisheries department might not have been around when last it functioned. Nonetheless, this assessment provides the opportunity to reflect on what might be done differently in order to improve the arrangements with respect to the principles from the perspective of all the stakeholders. This would be best done in consultation with the stakeholders by asking them what they would like to see changed in order for them to feel comfortable that the principle was being observed in the process. Indeed, the evaluation of the processes with regard to the principles that they are supposed to operate by should be an ongoing activity which is built into the process itself (Garcia et al 2008). As indicated above, these conversations are not one-off conversations; they should be part of an ongoing process of governance assessment. Stakeholders should consider if the current assessment methodology provides such a framework or can be adapted to do so.

### 2.2.2 Assessment of interactions

Functional linkages and interaction within governance arrangements as well as between them are a critical component of the governance system. While the integration analysis can identify structural (governance architecture) arrangements that would make integration possible, or even likely, their existence does not mean that integration is actually taking place. This can only be determined by interviews and by examination of the documentation of the functioning of the processes. The architecture is seen as a necessary, but not sufficient condition for the integration required for an Ecosystem Approach. It should be noted that integration can take place in the absence of appropriate structure on an ad hoc basis, through individual initiative and personal contacts. While this is better than nothing and may in cases be all that is possible give the prevailing architecture, it is not considered to be a sustainable, transparent, accountable approach to addressing the problem of integration across issues.

# 3 Conclusions and recommendations

Following are the main recommendations from the assessment of governance architecture for the Guianas-Brazil continental shelf fisheries ecosystem:

- Complete the fisheries policy cycle by identifying or establishing a body that will take up the decision-making function;
- Establish a regional policy cycle for the coastal habitat conservation issue;
- Explore the appropriate mechanism within the LBS Protocol of the Cartagena Convention that would allow for policies and action that is specific to the Guianas-Brazil continental shelf fisheries ecosystem and that would include Brazil.
- Explore the appropriate arrangement for addressing the issue of transboundary piracy affecting fisheries.
- Explore and establish the appropriate arrangement for integrating the arrangements for the four key issues of the Guianas-Brazil continental shelf fisheries ecosystem so that an EAF can be achieved.

The assessment of principles for the fisheries arrangement indicates that as the processes are strengthened or in some cases created, there will be the need for dialogue among the stakeholders groups that is focused on the principles considered to be most important for effective governance. Further work could involve prioritizing these principles and developing actions that would make them more prominent in the respective arrangements.

To conclude, we would like to emphasise that the present assessment is a preliminary one and should be seen as the start of an ongoing process that would guide the development of an effective subregional arrangement for an ecosystem approach to the Guianas-Brazil continental shelf fisheries ecosystem.

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# Appendix 1: Development of an ecosystem approach to the fisheries of the Guianas-Brazil Continental Shelf fishery ecosystem.

The following is taken from Mahon et al (2011).

## The Vision Elements

Six key vision elements were considered essential by the group in order to achieve effective EBM for shelf ecosystems in the Wider Caribbean (Table A1.1)

**Table A1.1. A vision for ecosystem based management for continental shelf ecosystems in the Wider Caribbean.**

| *FOCUS QUESTION: What do you see in place in 10 years time when EBM/EAF has become a reality in the Caribbean?* | | | | | |
|---|---|---|---|---|---|
| **Improved quality of life** | **Effective inclusive governance systems** | **Restored and maintained ecosystem integrity** | **Effective institutional networks** | **Value ecosystem assets** | **An engaged public** |
| • Secured livelihoods-happy faces<br>• Improved quality of life for stakeholders<br>• Healthy use of the ecosystem that benefits all users<br>• Balanced usage of freshwater including the coastal zone<br>• Sustainable benefits from ecosystem goods and services | • Harmonized inclusive policy on EBM<br>• Harmonized governance<br>• Subsidiarity in decision making and management<br>• Well developed legal framework<br>• Adequate enforcement measures<br>• Wider Caribbean coordinating body established | • Native marine biota very close to natural numbers<br>• Ecosystem integrity being maintained<br>• Quantify habitats under extinction risk<br>• Climate change mitigation and adaptation measures | • Capacity in place to deliver EAF/EBM<br>• A well managed co-coordinated ecosystem<br>• Improved trans-boundary linkages/information sharing | • Ecosystem recognized and treated as natural and regional assets | • Informed educated citizens<br>• Public awareness of the concept |

## Strategic Directions

The final activity undertaken by the Continental Shelf Ecosystems Working Group was to further flesh out key actions that could provide guidance on the strategic direction to be followed by decision-makers within the region. These are provided for each of the vision elements below.

**Vision Element 1: Improved Quality of Life**

Key actions:

- Pursue a phased multi-sectoral approach to development, utilising existing support systems (governance);
- Focus on wastewater treatment, beginning with restoration of water quality (national policy);
- Look into alternative livelihoods;
- Limit access to fisheries;
- Provide support through technical and/or financial means the development of businesses at the community level;
- Develop and share success stories;
- Resolve user conflicts.

**Vision Element 2: Effective Inclusive Government Systems**

Key actions:

- Develop mechanisms to allow equitable access to the resources and benefits;
- Empower local organisations through tools including mentoring;
- Encourage and facilitate comprehensive stakeholder engagement;
- Foster good management at all levels, particularly at the lower levels;
- Provide fundamental education to all groups;
- Put value on ecosystem services, i.e., through environmental economics;
- Establish coordinated regional and sub-regional policy to resolve common challenges;
- Strengthen enforcement;
- Ensure that the precautionary approach is always utilised;
- Utilise inter-sectoral committees with decision-making mechanisms;
- Establish institutional arrangements with adequate funding;
- Identify and evaluate tradeoffs in management plans;
- Ratify and implement existing agreements.

**Vision Element 3: Restored and Maintained Ecosystem Integrity**

Key actions:

- Aim for 100% treatment of water discharged into the coastal and marine environment;
- Increase scientific monitoring;
- Establish baseline values and indicators;
- Improve information sharing and maintenance of information and data to acceptable standards;
- Introduce fundamental education at all levels and help develop incentives for their participation thereafter;
- Increase surveillance and enforcement, including support of self-monitoring and enforcement;
- Utilise best practices by all sectors;
- Establish protected areas (MPAs);
- Integrate coastal zone and land-use planning;
- Restore reef and mangroves.

**Vision Element 4: Effective Institutional Networks**

Key actions:

- Clarify understanding of the role of institutions;
- Rationalise the roles of different organisations for efficiency and effectiveness;
- Link institutions at various levels—CLME efforts can be used as a governance model for networking at a local, national and regional level;
- Build on existing institutional networks (e.g., CRFM);
- Base institutional arrangement at sectoral level;
- Establish credibility of institutions via transparency and accountability mechanisms;
- Expend more effort on decision-making versus science and technology at institutional level;
- Create databases for different levels of users and different territories, to facilitate dissemination of information widely across stakeholders, decision-makers, etc.;
- Use education and information to address resistance to change;
- Reallocate resources towards education and sectoral level institutions;
- Identify champions nationally and regionally to promote causes to attend to political challenges;
- Generate demand for change at the local level;

- Undertake more in-depth social and economic analyses;
- Establish benefits for the sustainability of networks.

**Vision Element 5: Value Ecosystem Assets**

Key actions:

- Utilise resource economics to put a value on ecosystem goods;
- Build on existing knowledge especially on social and economic analysis;
- Use data from resource institutions as well as traditional groups like fisher folk;
- Undertake comparative analyses (re: tradeoffs);
- Identify and quantify different goods and processing by-products of the industry (e.g., what might be considered waste presently);
- Use economic information to develop policy and legislation support for EBM;
- Promote awareness of these issues in the public.

**Vision Element 6: An Engaged Public**

Key actions:

- Incorporate EBM principles in the curriculum at all levels of the educational system;
- Utilise experts, technology to communicate with the public to engage them (e.g., Facebook EBM site);
- Provide wide access to information and knowledge;
- Build on the convergence of EBM concerns;
- Use language that is suitable to the stakeholders;
- Explore diverse communication means;
- Create conditions for engagement.