

# Management and Conservation of Reef Biodiversity and Reef Fisheries Pilot Project: Governance assessment for Pedro Bank, Jamaica

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

# Management and Conservation of Reef Biodiversity and Reef Fisheries Pilot Project: Governance assessment for Pedro Bank, Jamaica

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Cover graphic: Jamaica and Pedro Bank (based on Google Earth image)

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## Acronyms and abbreviations

ACS	Association of Caribbean States
BPoA	Barbados Programme of Action for the Sustainable Development of SIDS
CANARI	Caribbean Natural Resources Institute
CARICOM	Caribbean Community and Common Market
CARICOMP	Caribbean Coastal Marine Productivity Programme
CBD	Convention on Biological Diversity
CCA	Causal Chain Analysis
CEHI	Caribbean Environmental Health Institute
CEP	Caribbean Environment Programme
CERMES	Centre for Resource Management and Environmental Studies
CFRAMP	CARICOM Fisheries Resource Assessment and Management Programme
CITES	Convention on International Trade of Endangered Species
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
EU	European Union
FAO	Food and Agricultural Organization
GEF	Global Environmental Fund
IOC	Intergovernmental Oceanographic Commission of UNESCO
IOCARIBE	UNESCO Intergovernmental Oceanographic Commission – Caribbean Subcommission
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unregulated and Unreported (fishing)
LME	Large Marine Ecosystem
LOSC	Law of the Sea Convention
MARPOL	Convention on the Prevention of Marine Pollution from Ships
MCS	Monitoring, Control and Surveillance
MEA	Multilateral Environmental Agreement
MERF	Monitoring and Evaluation and Reporting Framework
MIS	Marine Invasive Species
MPA	Marine Protected Area
MSY	Maximum Sustainable Yield
NEPA	National Environmental Protection Agency

NGO	Non-Governmental Organization
NIC	National Inter-ministerial/Inter-sectoral Committee
PBFMC	Portland Bight Fisheries Management Council
RMGF	Regional Management and Governance Framework
SIDS	Small Island Developing States
SPAW	Protocol Concerning Specially Protected Areas and Wildlife
TDA	Transboundary Diagnostic Analysis
TNC	The Nature Conservancy
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
WIDECAS	Wider Caribbean Sea Turtle Network
WSSD	World Summit on Sustainable Development

## Summary and recommendations

Detailed assessments of governance architecture such as the one carried out in this study for the Pedro Bank 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 Pedro Bank 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 Pedro Bank with an initial focus on the Pedro Cays where most human activity and impact occur. The assessment focuses on living marine resources and the requirement for an ecosystem approach to their sustainable use.

Six key living marine resource issues were identified for governance on the Pedro Bank:

- Finfish fishing (entire bank, consider invasive lionfish)
- Conch fishing (entire bank)
- Lobster fishing (entire bank)
- Seabird and sea turtle biodiversity
- Land based pollution on marine ecosystem
- Marine-based pollution.

It should be noted that there are also social issues on the Pedro Cays relating to human health, crime and safety that are considered to be beyond the scope of this assessment. Individual arrangements for the six 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.

The first observation is that there is the need to clarify and make known the individual governance arrangements for the six issues and make them known to all stakeholders so that they can take part in the processes effectively. This requires separating the two aspects of uncertainty relating to these processes: (1) uncertainty among responsible agencies regarding

which agency is ultimately responsible for what stage of the cycle; and (2) lack of awareness amongst other stakeholders about agency responsibility, even when there is certainty among responsible agencies themselves. **It is recommended that the process of clarifying and specifying roles for lead agencies and for all other key partners involved in the policy process be pursued, and that these be made known in a format that is clear to all stakeholders.**

A second observation is that the governance arrangements for the six issues do not appear to be well integrated at either the policy level or the management level. At the policy level there is a body, the NCOCZM, which is assumed to have the mandate for policy integration and advice at the national level. It also appears to be responsible for policy integration in oceans affairs for national inputs into regional and international processes (Mahon et al 2010). The functionality of this council, especially in the context of Pedro Bank is unclear. It may not be adequately funded or staffed for the role it is expected to play. **It is recommended that the NCOCZM be provided with the resources needed to become a functional national ocean policy advisory body and be fully operationalised.**

**At the management level, it is recommended that the long-term perspective for the Pedro Bank be as a Fisheries Management Area (FMA) within the broader national context described above.** This will require the establishment of a formal integrating committee with clear responsibilities and accounting that is recognised by the Government of Jamaica as the responsible body. This can take place under the new Fisheries Act. **It is further recommended that current efforts to develop stakeholder engagement and promote protected areas in the Pedro Cays area be pursued with the view of transitioning into an FMA as soon as possible after the Fisheries Act is passed.** Until the Fisheries Act is passed, the current *ad hoc* management committee can be strengthened by including other key stakeholders and can continue to pursue management integration. **Finally, it is recommended that proposed conservation areas (e.g. at SW Cay) should be designated as Marine Parks under the NRCA Act until they can be declared as fish sanctuaries under the new Fisheries Act.**

With regard to the Level 2 assessment based on the extent to which stakeholders perceived certain principles as being observed in the arrangements, the general picture is that stakeholders did not perceive the processes as being highly functional with regard to the principles remains the same. This general conclusion provides the opportunity to reflect on what might be done differently in order to improve the arrangements with respect to the principles. **It is recommended that: (1) improvement of these perceptions and scores be a governance objective; (2) this be done in consultation with the stakeholders by engaging them in determining what they would like to see changed in order for them to feel comfortable that the principles are being observed in the policy processes; and (3) that the evaluation of principles be built into the governance process itself.**

It is recognised that the management of marine ecosystems is in a state of flux in Jamaica, as the draft Fisheries Act has not been passed. As pointed out by Otuokon (2012) this Act makes provisions for addressing several of the uncertainties regarding responsibilities for individual issues, as well as for integrating mechanisms. Its passage is expected to strengthen the national capacity for marine ecosystem based management. Once passed, however, there will remain a considerable amount of work to be done in specifying modes of implementation such as committees and comanagement arrangements, and operationalising them. It is hoped that dissecting the living marine resource governance issues as has been done in this assessment will provide insights and a framework for developing the robust governance architecture and principled processes that are envisaged for the marine ecosystem of the Pedro Bank and Pedro Cays.

# 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 (Mahon et al 2011a). 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 (Mahon et al 2011a).

The CLME Project is designed to begin the process of building the framework for the WCR through activities aimed at specific parts of the framework and at testing the effectiveness of the LME Governance Framework concept (Mahon et al., 2008, Fanning et al 2009b).

The purpose of the CLME 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 level of the framework and different geographical regions of the WCR. The governance assessment of these pilots and case studies is being approached through a common methodology. The Case Study for the Pedro Bank, Jamaica, addressed in this report is one such component.

## 1.2 LMR governance assessment

The LMR governance assessment approach for the CLME project 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 (2011) addresses the monitoring of governance. While the focus is on the Large Marine Ecosystem (LME) component of the IW Programme, the assessment approach and methodology was developed for the entire GEF IW 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 pilot projects 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 (Mahon et al

2011d). Level 1 will assess governance architecture. Level 2 will assess the performance of the arrangements identified in Level 1.

The Reef Fisheries and Biodiversity Pilot Project of the CLME comprises three sub-projects: Seaflower Marine Reserve, San Andres Islands, Colombia; Pedro Bank and Cays, Jamaica; and Montecristi, Dominican Republic. Governance assessments will be carried out as a part of the first two of these three sub-projects. This document reports on the governance assessment for the Pedro Bank subproject.

### **1.3 The Pedro Bank, Jamaica, subproject**

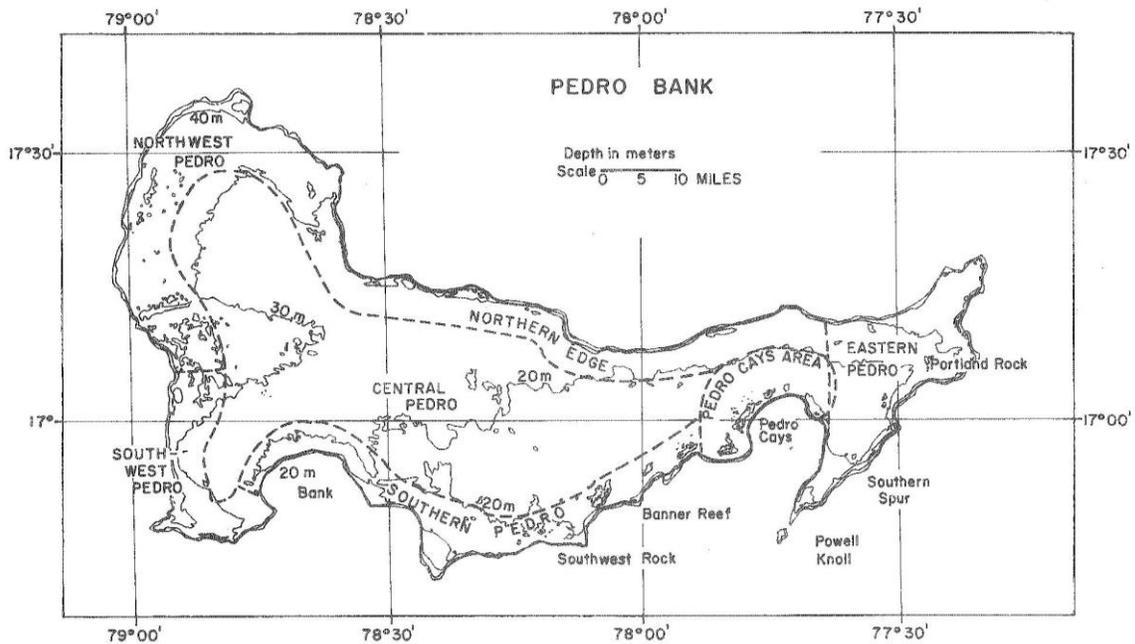
The main aim of the Pedro Bank sub-project is to develop a management plan for the Pedro Cays and adjacent waters. The plan was prepared and has been reviewed by stakeholders. This document is complementary to the plan and provides an assessment of the governance arrangements in place for the Pedro bank. These arrangements are the context in which the proposed management actions must be implemented.

Physical and biological details of the Pedro Bank and Pedro Cays can be found in the management plan document (Otuokon 2012). This plan also reviews the human uses of marine resources and the threats to them posed by exploitation and the human settlements on the cays. Following is a brief summary of the physical and biological characteristics of the bank and of trends in human use.

Pedro Bank lies about 100 km to the south of Jamaica. It is about two-thirds the size of Jamaica with an area of 8,040 km<sup>2</sup> to the 50 m depth contour (Figure 1) (Munro and Thompson 1983). The Bank extends about 200 km from east to west and ranges in width from about 105 km in the west to 21 km in the area of the Pedro Cays. Its mean depth is about 25 m deepening to the northwest. Coral reefs occur mainly around the edges. The top of the bank is generally sandy with scattered coral patches, soft corals and in shallower areas, seagrass. There are three cays on the southeast edge of the bank: Northeast (Top) Cay, Middle Cay and Southwest (Bird) Cay. The first two are inhabited by fishing communities (see Espeut 2006).

The Pedro Bank supports valuable fisheries for conch, lobster and reef fishes. These make a significant contribution to livelihoods in communities along the south coast of Jamaica from Kingston to White House, Westmoreland and in the case of conch and lobster to foreign exchange (Halcrow 1998). The sustainability of these fisheries has been of concern to the Government of Jamaica (GoJ) since fishing began on the bank in the 1950s and there have been indications of varying degrees of overfishing in all the resources mentioned.

The Pedro Bank is also an area of significant importance for marine biodiversity, especially coral reefs, seabirds and sea turtles. SouthWest (SW) Cay is of particular interest in this regard as it is a bird and turtle nesting area (Hay 2006). There is concern about the impacts of fishing and of



**Figure 2. The Pedro Bank and Pedro Cays (source: Munro and Thompson 1983)**

human habitation on the cays on the marine ecosystems, especially in the immediate area of the cays (Kramer 2006).

The unplanned, *ad hoc* nature of the fishing communities is also a matter for concern. The lack of adequate sanitation and waste management facilities may result in human health problems as well as in impacts on the marine environment (Appropriate Technologies 2007). All of the above concerns have occasioned the focusing of attention on the Pedro Bank in general and the Pedro Cays in particular in an attempt to develop a management plan to address them.

One of the challenges with developing management arrangements for the Pedro Bank is that the proposed new fisheries policy and fisheries act are yet to be passed into law. The proposed act includes provisions for Fisheries management Areas that could facilitate the integrated approach needed to achieve ecosystem based management of this marine ecosystem.

## 2 Level 1 assessment – architecture

The steps required for the Level 1 assessment are outlined in Figure 2. In this section these steps will be followed and the outputs of the assessment presented for each step.

### 2.1.1 System to be governed

Governance of living marine resources (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. In this study, the area to be managed is the entire Pedro Bank (Figure 1).

However, this will require that the linkages with communities on the south coast of Jamaica

(Halcrow 1998) be taken into consideration. Whereas, the management area is the entire bank, the current project and governance assessment does not have the resources to address the

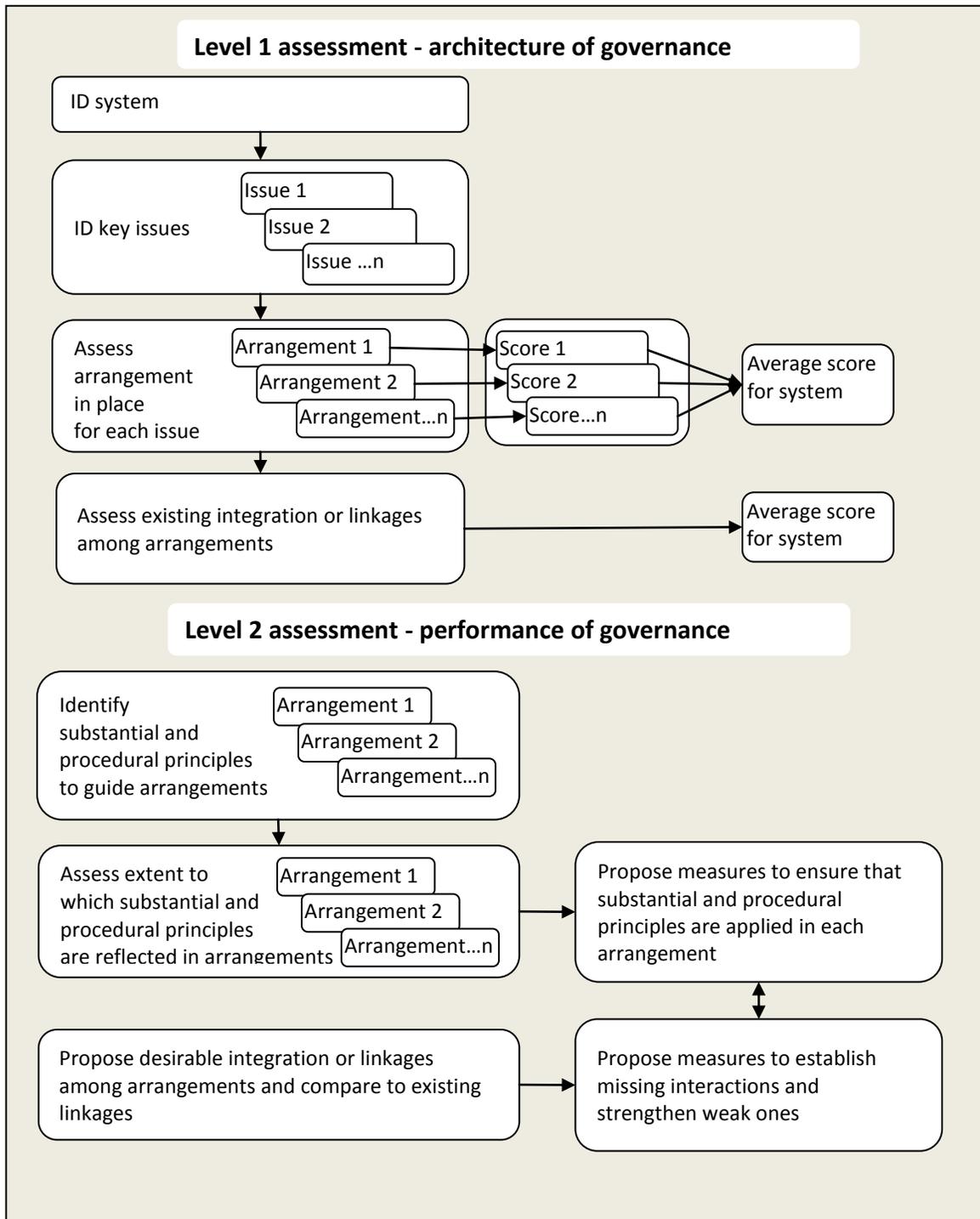


Figure 2. Level 1 and Level 2 process for assessing governance for CLME fishery ecosystems

entire bank and its linkages in full detail at this time. Therefore, the area of most intensive human use and impact, the Pedro Cays and the area around them, has been identified as a focus for this project. This focus will be pursued in this governance assessment with reference to the entire bank and to the linkages of the focal area with the rest of the bank and the south coast. A particular aspect of the focal area is the establishment of a fish sanctuary which has a defined boundary (Otuokon 2012).

### **2.1.2 Issues to be governed**

The desired approach to governance of the Pedro Bank and Cays 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 key issues for governance on the Pedro Bank ecosystem were identified through consultation with the United Nations Environment Programme Caribbean Environmental Programme Regional Coordinating Unit (UNEP CEP RCU), The Nature Conservancy (TNC), the Fisheries Division and the National Environment and Planning Agency (NEPA). The validity of these has been confirmed in subsequent interactions with the broader community of stakeholders as described below and in Appendix 1.

These key issues are;

- Finfish fishing (entire bank, consider invasive lionfish)
- Conch fishing (entire bank)
- Lobster fishing (entire bank)
- Seabird and sea turtle biodiversity
- Land based pollution on the marine ecosystem
- Marine-based pollution (including oil rigs, a future possibility, and ships)

Clearly these are linked or interacting and more detailed discussion may lead to the conclusion that some can be combined, or need further disaggregation into sub-issues for purposes of developing effective governance arrangements. It should be noted that while the social issues on the Pedro Cays relating to human health, crime and safety (Espeut 2006) would be considered to be a part of the EAF (FAO 2003) they will not be considered in this assessment which focuses on the ecosystems supporting living marine resources.

### **2.1.3 Identify arrangements for each issue**

Each of the issues identified above is considered as needing a complete governance arrangement. The assessment of completeness of an arrangement for an issue (Table 1) is based upon whether there are organizations with responsibility for the various stages of the policy cycle for that issue (Tables 2-7, one for each issue). The columns showing the responsible

agency or body in Tables 2-7, were populated in consultation with persons from the Fisheries Division, NEPA, Coast Guard, TNC and UNEP. These tables were then showed to representatives from the main stakeholders groups (Fisheries Division, NEPA, Maritime Authority, Coast Guard, a commercial fishing company, the Jamaica Fishers Cooperative Union, fishers from the Pedro Cays and The Nature Conservancy (TNC)(Appendix 1)) who were asked to provide a score for completeness of each stage of each policy process.

The perceived completeness of policy cycle stages for the governance processes identified for the six issues in Tables 3-7 above is summarized in Figure 3, which shows that for all policy cycles the perceived completeness is low to medium. Note that this is the average for the six stakeholder types and that there variation among stakeholders (Tables 2-7 and Appendix 2).

Even if the policy cycle stage is formal and well-known to some, it is important for all stakeholders in a process to be aware of it, so they can know who is responsible for the various stages of the governance processes that they are involved in. Further to this point, note also from Appendix 3 that some stakeholders declined to provide a completeness score for processes in which they were not involved. These were treated as missing values, but it could be argued that they should be zeros if all stakeholders involved in Pedro Bank LMR governance are expected to be aware of the arrangements for all of the issues, even if not directly involved.

Figure 3 shows that that the governance arrangement for the conch issue is best known among stakeholders, whereas that for the LBS is least known, being considered by them to be entirely within the absent to low area of the diagram. For conch, lobster and LBS the scores are similar for all stages of the policy cycle. For finfish the score was particularly low for the decision-making stage.

The National Committee on Ocean and Coastal Zone Management (NCOCZM) was perceived as having a role at the policy level in all arrangements but one. The NCOCZM was formally declared by Cabinet as a forum for policy level discussion, and is hosted by the Ministry of Foreign Affairs. It includes all relevant agencies (Fisheries Division, NEPA, UWI). However, stakeholders were not clear if the Council gives its fisheries (and other) policy responses to cabinet. It is reportedly not funded adequately to perform its policy function.

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. This will involve separating the two aspects of the low scores that are apparent in Figure 3: (1) uncertainty among responsible agencies regarding which agency is responsible for what stages of the cycle; and (2) lack of awareness among stakeholders, even when there is certainty among responsible agencies. **It is recommended that the process of clarifying and specifying roles for lead agencies and for all other key partners involved in the policy process be pursued, and that these be made known in a format that is clear to all stakeholders.**

**Table 1: Pedro Bank marine ecosystem, Jamaica, governance architecture - System summary<sup>1</sup>**

System name: Pedro Bank marine ecosystem, Jamaica			Region: Wider Caribbean	
Transboundary issue <sup>2</sup>	Importance for stakeholders involved <sup>3</sup> Average (range)	Completeness of governance arrangement <sup>4</sup> (score/category)	Priority for intervention to improve governance <sup>5</sup>	Observations <sup>6</sup>
Finfish fishing (entire bank)	3.0 (3)	40% 2	6.0	Includes invasive lionfish issue
Conch fishing (entire bank)	3.0 (3)	61% 2	6.0	This is the most valuable fishery
Lobster fishing (entire bank)	2.7 (2-3)	50% 2	5.4	
Seabird and sea turtle biodiversity	2.7 (1-3)	42% 2	5.4	
Land-based sources of pollution	1.9 (0-3)	27% 3	5.7	
Marine-based sources of pollution	2.3 (1-3)	40% 2	4.6	This is primarily from boats but oil exploration is planned and may be a source
System architecture incompleteness index <sup>7</sup> >>		43%	5.5	<< System priority for intervention index <sup>7</sup>

Table notes:

<sup>1</sup> This page provides an overview of all the arrangements in the system and their status.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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.

<sup>6</sup> 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.

<sup>7</sup> Average.

**Table 2: CLME fishery ecosystem governance architecture for Pedro Bank, Jamaica – Assessment summary for the finfish fishery arrangement**

Arrangement:		Issue: Finfish Fishing		
Policy cycle stage <sup>i</sup>	Responsible organisation or body <sup>ii</sup>	Scale level or levels <sup>iii</sup>	Completeness <sup>iv</sup>	Observations <sup>v</sup>
Policy analysis and advice	Fisheries Division – Fisheries Advisory Board, NCOCZM	National	1.4 (0-3)	See text re NCOCZM. Lionfish will be covered if there is ecosystem based management. There is the Invasive Species Working Group chaired by NEPA and including UWI and Fisheries Division. The FAO Code of Conduct for Responsible Fisheries applies both inside and outside sanctuaries
Policy decision-making	Cabinet	National	1.1 (0-3)	Includes Fishing Industry Act, Fish Sanctuary Policy, Draft Fisheries Policy, Draft Fisheries Act
Planning analysis and advice	Fisheries Advisory Board - Fisheries Division, NRCA	National, Sub-national (Parish?)	1.3 (0-3)	TNC to be delegated management authority – working with Advisory Committee
Planning decision-making	Minister of Agriculture and Fisheries	National	0.9 (0-3)	
Implementation	Fisheries Division, Marine Police, JDF and Coast Guard, Game/Fisheries Wardens (when appointed)	National, Sub-national (parish?)	1.4 (0-3)	Stakeholders noted that monitoring and enforcement are usually the weak part of implementation stage of the policy process
Review and evaluation	Fisheries Division	National, Sub-national (parish?)	1.4 (0-3)	
Data and information	Fisheries Division	Sub-national (parish?) National	1.1 (0-3)	
<b>Total</b>			<b>8.5/21 40%</b>	

**Table 3: CLME fishery ecosystem governance architecture for Pedro Bank, Jamaica – Assessment summary for the conch fishery arrangement**

Arrangement:		Issue: Conch		
Policy cycle stage (governance function)	Responsible organisation or body	Scale level or levels	Completeness	Observations
Policy analysis and advice	Fisheries Division, NEPA (CITES Scientific Authority), NCOCZM <sup>1</sup>	National	1.5 (0-3)	See text re NCOCZM. Unclear if bilateral discussions or international designations play a role. Unclear if the Ministry of Industry and Trade is involved.
Policy decision-making	Cabinet	National	2.1 (0-3)	
Planning analysis and advice	NRCA, Fisheries Division	National	1.9 (0-3)	NEPA (responsible for NRCA) is the CITES scientific authority and designates export quota. Fisheries Division sets allowable catch levels.
Planning decision-making	Minister of Fisheries, NRCA	National	2 (0-3)	
Implementation	Fisheries Division, NRCA, Veterinary Division	National	2.1 (0-3)	Aquaculture Act pertains to export and states where product can be harvested. Pedro bank is only area for conch harvesting. If Act is contravened Veterinary Division can close it
Review and evaluation	Ministry of Agriculture and Fisheries, NRCA	National	1.8 (0-2)	
Data and information	Fisheries Division, NRCA (CITES Committee)	Sub-national	1.6 (0-2)	Use of Data in GDP value, economic discussions (PIOJ). Ministry of Industry and Trade is also involved in data provision.
Total			12.8/21 61%	

**Table 4: CLME fishery ecosystem governance architecture for Pedro Bank, Jamaica – Assessment summary for lobster fishery arrangement**

Arrangement:		Issue: Lobster		
Policy cycle stage	Responsible organisation or body	Scale level or levels	Completeness	Observations
Policy analysis and advice	Fisheries Division (Fisheries Advisory Board) NCOZM	National	1.5 (0-3)	See text re NCOZM
Policy decision-making	Cabinet	National	1.5 (0-3)	
Planning analysis and advice	Fisheries Division	National	1.5 (0-3)	Is there a lobster licence quota or quota for exporters?
Planning decision-making	Cabinet	National	1.5 (0-3)	
Implementation	Fisheries Division	National	1.5 (0-3)	
Review and evaluation	Ministry of Agriculture and Fisheries	National	1.5 (0-3)	
Data and information	Fisheries Division	Sub national	1.5 (0-3)	Ministry of Industry is also involved in data provision.
Total			10.5/21 50%	

**Table 5: CLME fishery ecosystem governance architecture for Pedro Bank, Jamaica – Assessment summary for the biodiversity arrangement**

Arrangement:		Issue: Seabird and Sea Turtle Biodiversity		
Policy cycle stage	Responsible organisation or body	Scale level or levels	Completeness	Observations
Policy analysis and advice	NRCA Fisheries Division NCOCZM	National	1.7 (0-3)	NRCA involved based on CITES and the Wildlife Protection Act for birds and sea turtles with NEPA Act as newer legislation. Turtles are fish under Fishing Industry Act and Morant and Pedro Cays Act so are under Fisheries Division. New Fisheries Policy and Act refers to need for management plans See text re NCOCZM
Policy decision-making	Cabinet – Minister responsible for NRCA Act	National	1.1 (0-3)	
Planning analysis and advice	NRCA, Fisheries Advisory Board? Fisheries Division?	National and sub-national (parish?)	1.3 (0-3)	PBFMC working to coordinate stakeholder agencies – informal committee
Planning decision-making	NRCA – Minister of Housing Environment and Water <sup>1</sup> (for NRCA) Minister of Agriculture and Fisheries	National	1.6 (0-3)	
Implementation	NRCA , Fisheries, Marine Police, Coast Guard), Game Wardens	National and sub-national (parish?)	1.3 (0-3)	TNC – when agreement is formalised?
Review and evaluation	NEPA, Fisheries Advisory Board? Fisheries Division?	National and sub-national (Parish?)	0.9 (0-2)	
Data and information	NEPA, Fisheries Division?	sub-national (parish?)	0.9 (0-2)	(TNC – MOA for Fish Sanctuary expected)
<b>Total</b>			<b>8.8/21 42%</b>	

<sup>1</sup> Now Ministry of Water, Land, Environment and Climate Change

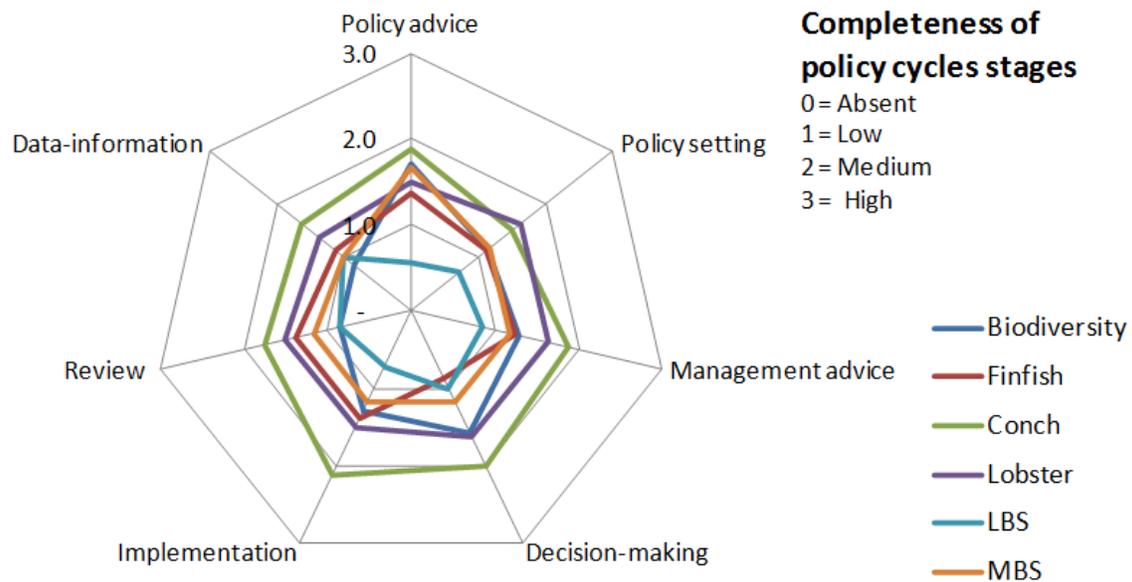
**Table 6: CLME fishery ecosystem governance architecture for Pedro Bank, Jamaica – Assessment summary for the LBS and human Impact arrangement**

Arrangement:		Issue: Land-based Pollution		
Policy cycle stage (governance function)	Responsible organisation or body	Scale level or levels	Completeness	Observations
Policy analysis and advice	NRCA, Min of Housing Environment Water, KSAC	National and Sub-national and Parish	0.6 (0-1)	LBS and NRCA Act address solid and liquid waste. KSAC responsible for planning, settlement management, infrastructure and health permits for effluent such as sewage. Potential for Fisheries Division involvement if declared a Fisheries Management Area under new Fisheries Act which will repeal the Morant and Pedro Cays Act and Parish/Planning Authority will need to be clarified. Ministry of National Security bodies JDF-CG and Marine Police thought to have a policy role.
Policy decision-making	Cabinet	National	0.7 (0-3)	Policy process long. Further regulations and legislation still required
Planning analysis and advice	NEPA (TCPA and LBS) and Ministry, KSAC	National	0.9 (0-2)	Level and method of inclusion of LBS matters and h human impact unclear
Planning decision-making	Cabinet/Ministries (Environment, Fisheries), NRCA	National	1.0 (0-3)	
Implementation	NRCA/NEPA and Ministry of Housing Environment and Water	Sub-national (parish?)	0.7 (0-2)	Fisheries has potential to lead implementation through Fisheries Management Area designation under the new Fisheries Act
Review and evaluation	NRCA and Ministry of Housing Environment and Water	Sub-national (parish?)	0.9 (0-2)	
Data and information	NEPA and Ministry of Housing Environment and Water	Sub-national (parish?)	1.0 (0-2)	
Total			5.7/21 27%	

**Table 7: CLME fishery ecosystem governance architecture for Pedro Bank, Jamaica – Assessment summary for the**

arrangement for marine based sources of pollution

Arrangement:		Marine Based Pollution		
Policy cycle stage	Responsible organisation or body	Scale level or levels	Completeness	Observations
Policy analysis and advice	Maritime Authority of Jamaica (MAJ), NEPA, NCOCZM, ODPEM	National	1.7 (0-3)	See text re NCOCZM MAJ is within Ministry of Transport and Works ODPEM via Coast Guard - Oil spill and HazMat policy and response. Fisheries Management Area would give Fisheries Division some authority. Ministry of Health, Public Health Department was considered to have a role regarding food quality. Note the previously agreed line between marine ecosystem health and human health although these are clearly closely linked.
Policy decision-making	Cabinet	National	1.2 (0-2)	
Planning analysis and advice	NRCA/NEPA, MAJ, NCOCZM	National	1.2 (0-2)	
Planning decision-making	NRCA/NEPA, MAJ	National	1.2 (0-2)	
Implementation	NRCA/NEPA, MAJ, Coast Guard, Marine Police	Sub-national (Parish?)	1.2 (0-2)	
Review and evaluation	NRCA/NEPA, MAJ	Sub-national (Parish?)	1.2 (0-2)	
Data and information	NRCA/NEPA, MAJ	Sub-national (Parish?)	1.0 (0-2)	
Total			8.5/21 40%	



**Figure 3. Summary of completeness of the stages of the policy cycles for the six arrangements for the key governance issues on Pedro Bank, Jamaica (see notes in Table 1 for an explanation of the completeness scale).**

Tables 2-7 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. This perspective on governance is also reflected in Jamaica’s National Development Plan – Vision 2030 - where partnerships among stakeholders have been identified as necessary for the successful implementation of natural resource management. Therefore in order to understand and assess governance processes the roles of these actors and the interactions among them 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. However, tables in which the stakeholders can be identified are set up in Appendix 3 for future use. The Management Plan for the Pedro Cays and Surrounding Waters provides a stakeholder analysis that can be used as a basis for developing this perspective on partnerships based on roles and responsibilities relating to the stages of the policy cycle.

### 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 2-7 is summarized in Table 8. The degree of overlap of responsibility among the six issues is assessed in Table 9 and summarized in Figure 4.

**Table 8. Comparison of agencies considered to have some responsibility or potential responsibility for the six LMR issues for Pedro bank and the Pedro Cays**

Stage	Finfish	Conch	Lobster	Biodiversity	LBS	MBS
Policy analysis and advice	Fish Div FAB NCOCZM?	Fish Div, NEPA (CITES Scientific Authority), NCOCZM, Ministry of Industry and Trade involved?	Fish Div FAB NCOCZM?	NRCA FAB? Fish Div NCOCZM?	MHEW (NRCA) KSAC	MAJ NEPA NCOCZM?, ODPEM
Policy decision-making	Cabinet	Cabinet	Cabinet	Cabinet Minister HEW	Cabinet	Cabinet
Planning analysis and advice	FAB Fish Div NRCA	NRCA Fish Div	Fish Div	NRCA FAB? Fish Div?	MEHW (NEPA, TCPA and LBS), KSAC	NRCA/NEPA MAJ NCOCZM
Planning decision-making	Minister AF	Minister AF NRCA	Minister AF	NRCA – Minister HEW Minister AF	Cabinet MHEW MAF NRCA	Minister HEW? NRCA/NEPA MAJ
Implementation	Fish Div, Marine Police, JDF, CG, Game/Fisher ies Wardens	Fish Div, NRCA, JDF, CG	Fish Div	NRCA , Fish Div, Marine Police, CG, Game Wardens	NRCA/NEPA and MHEW	NRCA/NEPA MAJ, Coast Guard, Marine Police
Review and evaluation	Fish Div	NRCA Fish Div	MAF	NEPA FAB? Fish Div?	NRCA and MHEW	NRCA/NEPA MAJ
Data and information	Fish Div	Fish Div NRCA (CITES Commitee)	Fish Div	NEPA Fish Div?	NEPA and MHEW	NRCA/NEPA MAJ

CG = Coast Guard, FAB = Fisheries Advisory Board, Fish Div = Fisheries Division, JDF = Jamaica Defence Force, MAF = Ministry of Agriculture and Fisheries, MAJ = Marine Authority of Jamaica, MEHW = Ministry of Environment Health Water, NEPA = National Environmental Planning Agency, NRCA =

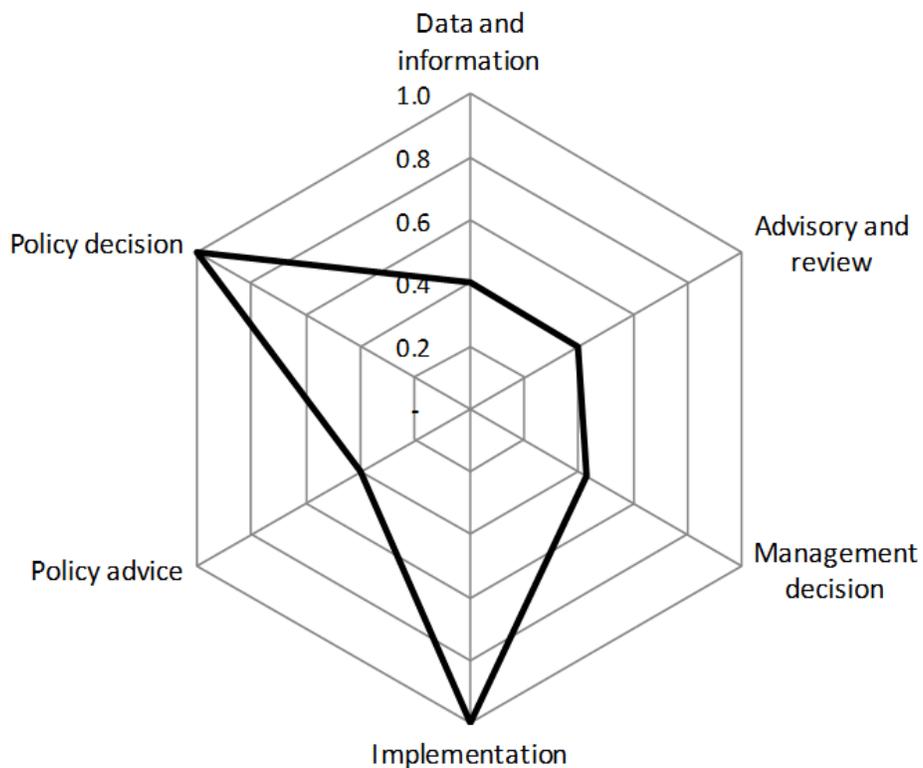
**Table 9. The integration of the six issue arrangements (I1-I6) for the Pedro Bank system. A '1' means that the two arrangements have a responsible agency in common. A '0' means they have no responsible agency in common. A 0.5 has been used where there is some uncertainty about responsibility and there appears to be some overlap..**

Common agency between arrangements	Policy analysis and advice	Policy decision-making	Planning analysis and advice	Planning decision-making	Implementation	Review and evaluation	Data and information	Overall average
1 and 2	1	1	1	1	1	1	1	1
1 and 3	1	1	1	1	1	1	1	1
1 and 4	0.5	1	0.5	0.5	1	0.5	0	
1 and 5	0	1	0	0	1	0	0	
1 and 6	0	1	0	0	1	0	0	
2 and 3	1	1	1	1	1	1	1	
2 and 4	0.5	1	0.5	0.5	1	0.5	0	
2 and 5	0	1	0	0	1	0	0	
2 and 6	0	1	0	0	1	0	0	
3 and 4	0.5	1	0.5	0.5	1	0.5	0	
3 and 5	0	1	0	0	1	0	0	
3 and 6	0	1	0	0	1	0	0	
4 and 5	0.5	1	0.5	1	1	0.5	1	
4 and 6	0.5	1	0.5	0.5	1	0.5	1	
5 and 6	0.5	1	0.5	0.5	1	0.5	1	
<b>Average</b>	0.4	1	0.4	0.4	1	0.4	0.4	

Figure 4 indicates that the degree of integration among the six issues is considered to be highest at the policy decision-making and implementation levels. In the case of policy decision-making, in the national context, Cabinet is the ultimate policy-setting body for action to be taken under laws that have already been enacted. This is well known. However, policy decisions by Cabinet will only be as good as the quality of advice provided. The score in this area was low.

The National Council on Ocean and Coastal Zone Management (NCOCZM), established under the Office of the Prime Minister, was formally declared by Cabinet as a forum for policy level discussion. It includes most relevant agencies (Fisheries, NEPA, UWI, *inter alia*). It would appear that the intention of cabinet was to have a means of receiving integrated policy advice on ocean and coastal management. However, it is not clear if this Council is funded or to what degree it is functional. In order for it to formulate policy it must have access to expert analysis and advice. These require funds. It must also be noted that the mandate of the NCOCZM is national and not Pedro Bank specific. If ocean and coastal management for living marine

resources in Jamaica is to proceed through the establishment of a series of Marine Management Areas as suggested by the Draft Fisheries Policy and Draft Fisheries Act a key role of the NCOCZM will be to harmonise and integrate policy among those areas. The NCOCZM is clearly appropriately established and structured for the important role of developing and integrated ocean governance advice for Jamaica and providing it to Cabinet for decision-making. If it is properly resourced to take up this role the need for policy integration for the Pedro bank marine ecosystem will be adequately covered. **It is recommended that the NCOCZM be provided with the resources needed to become a functional national ocean policy advisory body and be fully operationalised.**



**Figure 4. The extent of integration of the six governance arrangements for the Pedro Bank and Pedro Cays broken out by policy cycle stage (1 = full integration of responsibility for all issues).**

Institutional integration appears to be low at the level of management advice and decisions making as well as in providing the data and information needed to support these processes. Closer inspection of tables 8 and 9 shows that the three fishery processes are likely to be well integrated as the Fisheries Division has primary responsibility for all three. However, they are

largely separated from the seabird/sea turtle biodiversity issue and entirely separate from the two pollution issues.

Even if policy integration is achieved through the NCOCZM, it would appear that there is still the need for an integrating mechanism at the functional, management level for the Pedro Bank and Pedro Cays management area. The ad hoc arrangement that is in place for Pedro Bank and Pedro Cays at present provides a start on integrating at the management level and might serve to get the integrating process underway. However, in the long run it would be desirable that an integrating mechanism with clear responsibilities and accounting be established. The exact nature of this mechanism remains to be determined, but it must be known to all stakeholders, capable of adapting to evolving needs, and be recognised by the Government of Jamaica as the responsible body. It would also be most rational and probably efficient to have a consistent approach to the management mechanisms for the management areas that will be established throughout the country.

Several options for the integration of management of the Pedro bank were considered:

- Formalisation of the Pedro Cays Management Committee with expanded membership, as a subcommittee of the NCOCZM;
- Declaration as an Marine Park under the NRCA Act;
- Designation as a Fisheries Management Area (FMA) under the new Fisheries Act.

As noted above a major challenge with planning for integrated governance is that the draft Fisheries Act has not been passed. This Act includes several provisions that will facilitate designing integrated ocean governance. It considering appropriate arrangements it is important to bear in mind that the arrangement for the Pedro Bank be seen as part of a broader national approach to ocean management. It is therefore important that the arrangement proposed by replicable for other areas around Jamaica. Indeed this broader approach is a policy level development that should be considered by the NCOCZM and put to Cabinet as the national approach to structured ocean governance for the country.

As regards the first option formalisation of the Pedro Cays Management Committee with expanded membership, as a subcommittee of the NCOCZM; this approach could be replicated for other management areas around the country. However, given that the NCOCZM is an advisory body there is the question of the extent to which a subcommittee would have the jurisdiction needed to implement management measures. Therefore it was thought that it may be best to locate management within the context of the legal instruments upon which it would be most directly based – namely the new Fisheries Act and the NRCA Act.

The second option, declaration as a Marine Park under the NRCA Act would mean that NRCA/NEPA would lead the process probably through a co-management arrangement with another entity. While NRCA Act does not specify how a Marine Park should be operated, it is assumed that the intent is for there to be a conservation focus such that this designation may

not be appropriate for the entire Pedro Bank. However, it may be an appropriate designation for any area on the bank which is deemed to be in need of protection from fishing or other human impacts. It has the advantage that designation can take place under the NRCA Act which is in place.

The third option, designation of the entire Pedro Bank as a Fisheries Management Area (FMA) under the new Fisheries Act would recognize the prominence of fisheries as the main activity on the Bank and would also facilitate the full application of the Ecosystem Approach to Fisheries (EAF) as per the FAO Code of Conduct for Responsible Fisheries<sup>2</sup>. As an FMA the Bank could be zoned with certain areas desired as fish sanctuaries being so designated. This would address the objective of having a fish sanctuary in the area of the Pedro Cays. In this option the Fisheries Authority would be the lead agency. However, a specific body with membership of all relevant agencies such as the expanded Pedro Cays Management Committee would still be required in this arrangement. A co-management arrangement or arrangements could be envisaged within the overall FMA with NGOs playing taking up various responsibilities, such as for biodiversity conservation, fish sanctuary management or fisherfolk health and well-being on the Cays. The new Act does not speak directly to such arrangement but empowers the Authority to ‘...enter into agreements or establish other arrangements on such terms and conditions as it thinks fit...’. The Fisheries Policy also indicates that partnerships are desirable and that NGOs should be engaged in management and given responsibility<sup>3</sup>. It is therefore assumed that such arrangements will be possible.

The replicability of the FMA approach is seen as important, as the Fisheries Policy indicates that all fisheries will be management as part of FMAs. The proposal here for the Pedro bank, envisages that each FMA will have a Management Committee in which all stakeholders will be represented. This committee will be responsible for developing the FMP for the FMA. This FMP will then be reviewed by the Fisheries Advisory Council for consistency with the Act and with plans for other FMAs in the area. The Council will then seek the review and endorsement by the NCOCZM which will take a broad perspective on consistency with national ocean policy and integrated ocean governance. Finally the FMP for the FMA will be approved by Cabinet. No

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<sup>2</sup> Note that the FAO EAF includes fishing communities and well-being of fisher folk, not just the marine ecosystem.

<sup>3</sup> The draft Fisheries Policy says that “In agreement with the stakeholders, the Fisheries Division shall establish Fishery Management Areas within the Zones, and stakeholders will be encouraged to participate in managing these Fishery Management Areas along co-management lines.”

doubt as soon as the Fisheries Act is passed the Authority will begin to consider a scheme for the assignation of FMAs nationally<sup>4</sup>.

**It is recommended that:**

**The long term perspective for management of the Pedro Bank be as an FMA within the broader national context described above;**

**Current efforts to develop stakeholder engagement and promote protected areas in the Pedro Cays area be pursued with the view of transitioning into an FMA as soon as possible after the Fisheries Act is passed; and that**

**The proposed conservation areas (e.g. that at SW Cay) be designated as Marine Parks under the NRCA Act until they can be declared fish sanctuaries under the new Fisheries Act.**

## **2.2 Level 2 assessment - performance of governance arrangements**

The Level 2 assessment evaluates the functionality and performance of governance arrangements according to criteria that will be agreed by stakeholders. Mahon et al (2010) provide the conceptual background to what might be involved in examining governance arrangements in 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 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 Pedro Bank assessment 13 principles were selected as shown in Table 10.

Representatives of the key stakeholder groups were asked to provide a score for the governance arrangement for each issue for each of the 13 principles based on the extent to which they agreed or disagreed with the statement associated with the principle in Table 10 (disagree strongly = 1, disagree =2, agree = 3, agree strongly = 4). The stakeholders groups were: Fisheries Division, NEPA, Maritime Authority, Coast Guard, a commercial fishing company, the Jamaica Fishers Cooperative Union, fishers from the Pedro Cays and The Nature Conservancy (TNC). They were also asked to indicate the importance of the principle for the particular issue.

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<sup>4</sup> Halcrow 1998 envisaged such a scheme and proposed FMA for the south west coast of Jamaica from Kingston to Negril

The responses provided by stakeholders for the six arrangements are summarised in Figure 4. The detailed responses showing differences in response among stakeholder groups are shown in Appendix 3. On average all principles received high scores for importance from all stakeholders (Figure 4a). At the same time, most stakeholders indicated that they did not think these principles were well reflected in the governance arrangement for the six issues. The average scores tended to lie in the band between disagree (score = 2) and agree (score = 3). Again there was considerable variability among stakeholders (Appendix 3). Detailed inspection of the diagrams in Appendix 3 does provide some additional insight as to the extent to which principles were observed in the various arrangements.

**Table 10. Principles assessed and the statements that were used to assess them**

<b>Principle</b>	<b>Statement</b>
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

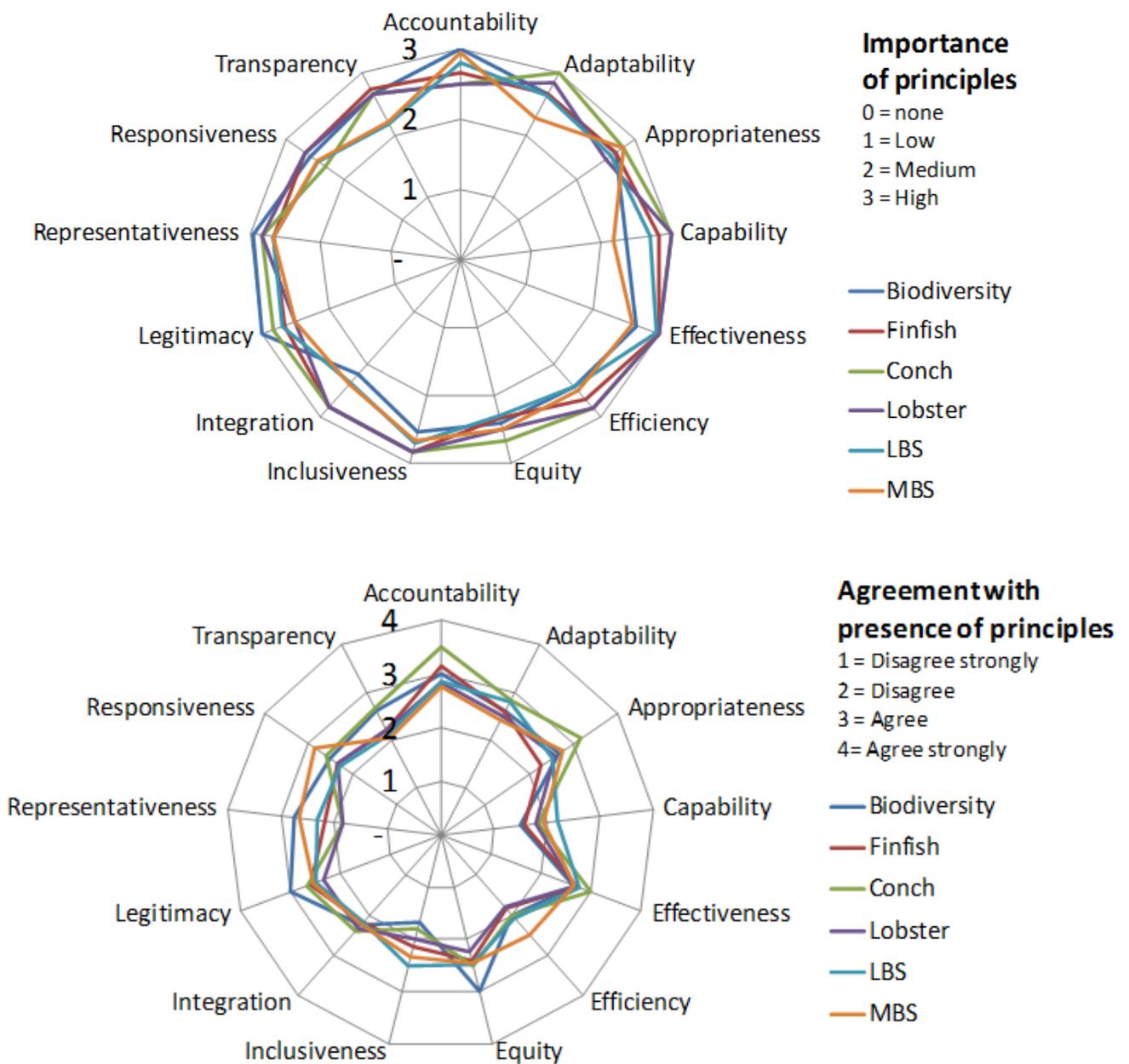


Figure 4. Assessment of the extent to which desired principles are considered to be (a) important and (b) represented, in the governance processes for the five issues identified for the Pedro Bank.

Overall, capability, efficiency and transparency were perceived to be low in most cases. No principle appeared to be generally high or low, with the possible exception of effectiveness which tended around the 'agree' mark for most arrangements. The conch arrangement was

perceived as being highest in accountability and appropriateness; again possibly because it is the most well-known one and appears to be working.

The general picture is that stakeholders did not perceive the processes as being highly functional with regard to the principles remains the same. This general conclusion provides the opportunity to reflect on what might be done differently in order to improve the arrangements with respect to the principles. **It is recommended that: (1) improvement of these perceptions and scores be a governance objective; (2) this be done in consultation with the stakeholders by engaging them in determining what they would like to see changed in order for them to feel comfortable that the principles are being observed in the policy processes; and (3) that the evaluation of principles be built into the governance process itself** (Garcia et al 2008). This recommendation is supported by Article 3.5 of the Fisheries Policy, 'Fisheries Governance and Institutional Development', which says that institutional strengthening is needed and that it will 'promote the goals of transparency, accountability and efficiency and involvement of all stakeholders in the management of the sector'.

In pursuing the question of how to improve the processes, one could ask, what is it about the biodiversity process that resulted in such a low score on inclusiveness, yet a high one on equity and legitimacy, and what needs to be done to make the process more inclusive? One could also ask, what is it about the conch and finfish processes that result in the difference in appropriateness, and what needs to be done with the finfish process to make it more appropriate. Differences in stakeholder perception can also be explored. In Figure A.3.2b for example, one might wish to explore why NEPA thought the process was high in equity but the fishers thought it was low, and how the fisher's perception of low equity could be addressed. As indicated above, these conversations are not one-off conversations; they should be part of an ongoing process of governance assessment that will be pursued in the context of a framework. 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

Detailed assessments of governance architecture such as the one carried out in this study for the Pedro Bank 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 six major issues identified for Pedro Bank 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 lead to 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 first observation is that there is the need to clarify and formalize the individual governance arrangements for each of the six issues and make them known to all stakeholders so that they can take part in the processes effectively. This requires separating the two aspects of uncertainty relating to these processes: (1) uncertainty among responsible agencies regarding which agency is responsible for what stages of the cycle; and (2) lack of awareness among stakeholders, even when there is certainty among responsible agencies. **It is recommended that the process of clarifying and specifying roles for lead agencies and for all other key partners involved in the policy process be pursued, and that these be made known in a format that is clear to all stakeholders.**

A second observation is that the governance arrangements for the six issues do not appear to be well integrated at either the policy level or the management level. At the policy level there is a body, the NCOCZM, which is assumed to have the mandate for policy integration and advice at the national level. It also appears to be responsible for policy integration in oceans affairs for national inputs into regional and international processes (Mahon et al 2010). The functionality of this council, especially in the context of Pedro Bank is unclear. It may not be adequately funded or staffed for the role it is expected to play. **It is recommended that the NCOCZM be provided with the resources needed to become a functional national ocean policy advisory body and be fully operationalised.**

**At the management level, it is recommended that the long-term perspective for the Pedro Bank be as an FMA within the broader national context described above.** This will require the establishment of a formal integrating committee with clear responsibilities and accounting that

is recognised by the Government of Jamaica as the responsible body. This can take place under the new Fisheries Act. **It is further recommended that current efforts to develop stakeholder engagement and promote protected areas in the Pedro Cays area be pursued with the view of transitioning into an FMA as soon as possible after the Fisheries Act is passed.** Until the Fisheries Act is passed, the current *ad hoc* management committee can be strengthened by including other key stakeholders and can continue to pursue management integration. **Finally, it is recommended that proposed conservation areas (e.g. at SW Cay) should be designated as Marine Parks under the NRCA Act until they can be declared as fish sanctuaries under the new Fisheries Act.**

With regard to the Level 2 assessment based on the extent to which stakeholders perceived certain principles as being observed in the arrangements, the general picture is that stakeholders did not perceive the processes as being highly functional with regard to the principles remains the same. This general conclusion provides the opportunity to reflect on what might be done differently in order to improve the arrangements with respect to the principles. **It is recommended that: (1) improvement of these perceptions and scores be a governance objective; (2) this be done in consultation with the stakeholders by engaging them in determining what they would like to see changed in order for them to feel comfortable that the principles are being observed in the policy processes; and (3) that the evaluation of principles be built into the governance process itself.**

It is recognised that the management of marine ecosystems is in a state of flux in Jamaica, as the draft Fisheries Act has not been passed. As pointed out by Otuokon (2012) this Act makes provisions for addressing several of the uncertainties regarding responsibilities for individual issues, as well as for integrating mechanisms. Its passage is expected to strengthen the national capacity for marine ecosystem based management. Once passed, however, there will remain a considerable amount of work to be done in specifying modes of implementation such as committees and comanagement arrangements, and operationalising them. It is hoped that dissecting the living marine resource governance issues as has been done in this assessment will provide insights and a framework for developing the robust governance architecture and principled processes that are envisaged for the marine ecosystem of the Pedro Bank and Pedro Cays.

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## Appendix 1. Persons involved in various aspects of the assessment

### Persons who contributed to the completion of the tables on policy cycle completeness and the assessment of principles

Agency/Organisation	Who Involved/Positions	Notes
Fisheries Division	Mr. Stephen Smikle, Deputy Director, Fisheries Division	Document sent by email to Messrs. Kong and Smikle as top management. Hard copy provided to Mr. Smikle in meeting with himself and a team of fishery officers.
NEPA	Ms. Yvette Srong, Head of Department  Ms. Andrea Donaldson  Mr. Sean Green	Document sent to Ms. Donaldson, Mr. Green and Mr. Henry (as the persons on the Pedro Management Committee) response came from Ms. Donaldson who consulted Mr. Green and Ms. Strong as head of the Dept.
Coast Guard	Lt. Aceion Prescott  Lt. Alvin Gayle	Document sent to Lt. Prescott and Lt. Alvin Gayle as they were the ones initially attending the Pedro Management Committee meetings
Maritime Authority	Mr. Bertrand Smith, Director, Legal Affairs	Document sent to Rear Admiral Peter Brady, Head of the Maritime Authority. He informed that Mr. Bertrand Smith was to be liaison for the Maritime Authority in regard to Pedro Cays generally
Small-scale fishers	Mr. Winston Kerr	Mr. Kerr is one of the long-time fishers that TNC is planning to involve as Community Enforcement Officer due to his interest and knowledge
NGO (TNC)	Ms. Donna Blake, head, TNC Jamaica	
Commercial Fishers	Mr. Ricky Francis, B and D Trawling Co. Ltd.	Mr Francis is CEO of the company and the only commercial fisher who responded to calls and messages left
Jamaica Fisherman Cooperative Union	Mr. Anthony Drysdale	Mr. Drysdale indicated that the Board went through the form and answered it together, at one of their meetings.

## **Participants at Pedro Bank and Cays Governance Assessment Meeting (5 September 2012, TNC, Kingsway, Kingston)**

Mr. David Barrett, Finder Caribbean Ltd

Ms. Maureen Milbourn, NEPA;

Dr. Karl Aiken, Dept. of Life Sciences, UWI, Mona

Ms Karen McDonald-Gayle, UNEP CEP RCU

Lt. Cdr. Judy-Ann Neil, Jamaica Coast Guard

Dr. Gavin Bellamy, Veterinary Services Division

Dr. Winthorp Marsden, Veterinary Services Division

Mr. Anthony Drysdale, Jamaica Fishermen's Cooperative Union

Mr. Paul Ximinies, Kingston and St. Andrew Corporation (KSAC), Public Health Dept.

Ms Marcia Creary, Centre for Marine Sciences, UWI, Mona

Mr. Andre Kong, Director, Fisheries Division

Ms Donna Blake, TNC

Mr. Llewelyn Meggs, TNC

Prof. Robin Mahon, CERMES, UWI, Cave Hill (CLME Consultant)

## Appendix 2: Scores provided by key stakeholder agencies for completeness of policy cycle stages for the six governance issues for Pedro bank and Pedro Cays

Policy cycle stage	Coast Guard	Commer- -cial Fishers	TNC	Fishers	Fisher coop	Mari- time Author- ity	NEPA	Fisheries Division
<b>Finfish fishing</b>								
Policy advice	2	0	3	3	1	0	3	3
Policy setting	1	0	3	3	1	0	2	2
Management advice	2	0	3	3	2	0	2	3
Decision-making	2	1	3	3	2	0	2	3
Implementation	2	3	2	3	1	0	3	3
Review	2	2	2	2	2	0	2	2
Data and information	1	2	2	2	2	0	2	
<b>Conch fishing</b>								
Policy advice	3	0	1	2	2	0	2	1
Policy setting	3	0	1	2	2	0	1	0
Management advice	3	0	1	0	3	0	2	1
Decision-making	3	0	1	0	1	0	1	1
Implementation	3	0	1	2	2	0	1	2
Review	2	1	1	2	3	0	1	1
Data and information	1	1	1	3	1	0	1	1
<b>Lobster fishing</b>								
Policy advice	2	3	2	1	1	0	1	2
Policy setting	2	3	2	1	1	0	3	1
Management advice	2	3	2	1	2	0	1	2
Decision-making	2	3	2	1	1	0	3	1
Implementation	2	3	1	1	2	0	1	2
Review	2	3	2	1	2	0	1	1
Data and information	1	3	1	1	2	0	1	2
<b>Sea turtles-seabirds</b>								
Policy advice	2		2	3	1	0	3	1
Policy setting	2		2	3	1	0	1	0
Management advice	1		2	3	1	0	1	1
Decision-making	1		2	3	2	0	1	1
Implementation	2		1	3	1	0	1	1
Review	1		1	1	2	0	1	1
Data and information		1		1	0	2	0	1

Policy cycle stage	Coast Guard	Commercial Fishers	TNC	Fishers	Fisher coop	Maritime Authority	NEPA	Fisheries Division
<b>Land-based pollution</b>								
Policy advice	0	0	1	1	1	0	1	
Policy setting	0	0	1	0	1	0	3	
Management advice	0	1	2	0	2	0	1	
Decision-making	0	0	2	0	2	0	3	
Implementation	0	1	1	0	2	0	1	
Review	0	0	1	2	2	0	1	
Data and information	0	1	1	2	2	0	1	
<b>Marine-based pollution</b>								
Policy advice	0		2	1	2	2	3	
Policy setting	0		2	1	2	0	2	
Management advice	0		1	0	2	2	2	
Decision-making	0		1	0	2	2	2	
Implementation	0		1	0	2	2	2	
Review	0		1	0	1	2	2	
Data and information	0		1	0	1	2	2	

### Appendix 3. Tables for identification of stakeholders in Pedro Bank marine governance by issue (to be completed as needed)

Pedro Bank Fishery Ecosystem stakeholders for the finfish issue by policy cycle stage

<b>Policy cycle stage (governance function)</b>	<b>Regional</b>	<b>National/local</b>
Policy analysis and advice		
Policy decision-making		
Planning analysis and advice	CamPAm, FAO?	UWI
Planning decision-making		
Implementation		
Review and evaluation		
Data and information	Caribbean Regional Fisheries Mechanism?? FAO WECAFC??	National Fisher group? South coast coops (Old Harbour, Whitehouse??...others?? Treasure Beach?? Parrottee??), other fish sanctuaries (Oracabessa, CCAM)

Pedro Bank Fishery Ecosystem stakeholders for the conch fishery issue by policy cycle stage

<b>Policy cycle stage (governance function)</b>	<b>Regional</b>	<b>National/local</b>
Policy analysis and advice		
Policy decision-making		
Planning analysis and advice	CITES (International), CRFM, CFMC (Caribbean Fisheries Mgt Council)?	Conch fishers group? Formal committee of gov't/stakeholders?
Planning decision-making		CITES (International), CRFM??
Implementation		
Review and evaluation		
Data and information	CITES, CRFM	UWI/other Universities? (UPR)

Pedro Bank Fishery Ecosystem stakeholders for the lobster fishery issue by policy cycle stage

<b>Policy cycle stage (governance function)</b>	<b>Regional</b>	<b>National/local</b>
Policy analysis and advice		
Policy decision-making		
Planning analysis and advice	CRFM, FAO WECAFC	Lobster group??
Planning decision-making		
Implementation		
Review and evaluation		
Data and information		UWI/other Universities? (UPR)

Pedro Bank Fishery Ecosystem stakeholders for the biodiversity issue by policy cycle stage

<b>Policy cycle stage (governance function)</b>	<b>Regional</b>	<b>National/local</b>
Policy analysis and advice		
Policy decision-making		
Planning analysis and advice		Links with TNC?
Planning decision-making		
Implementation		
Review and evaluation		TNC, UWI, PBPC, community, CG TNC Formal role for the fish sanctuary re fisheries Pedro Bank Management Plan Advisory Committee (UWI, TNC, NEPA, Fish Div, Coast Guard, Jamaica Fishermen's Coop, MHEW, Finder) NEPA Fisheries Division, Coast Guard, Community/fishers UWI
Data and information	Links to SPAW, WIDECAS, Seabirds Sub-Committee?? UNEP RCU??	Links to National Committees re sea turtles, Biodiversity Policy?? Protected Areas Committee?? UWI – Marine Labs?? NCOZM

Pedro Bank Fishery Ecosystem stakeholders for the LBS issue by policy cycle stage

<b>Policy cycle stage (governance function)</b>	<b>Regional</b>	<b>National/local</b>
Policy analysis and advice	UNEP LBS Protocol	
Policy decision-making		
Planning analysis and advice		
Planning decision-making		
Implementation		
Review and evaluation		
Data and information		TNC, Pedro Fisher assn?? CCAM

Pedro Bank Fishery Ecosystem stakeholders for the marine based sources of pollution issue by policy cycle stage

<b>Policy cycle stage (governance function)</b>	<b>Regional</b>	<b>National/local</b>
Policy analysis and advice		
Policy decision-making		
Planning analysis and advice		
Planning decision-making		
Implementation		
Review and evaluation		
Data and information		TNC, Pedro Fisher assn?? CCAM

## Appendix 4: The importance and presence of principles in the policy process for each issue as indicated by each stakeholder group

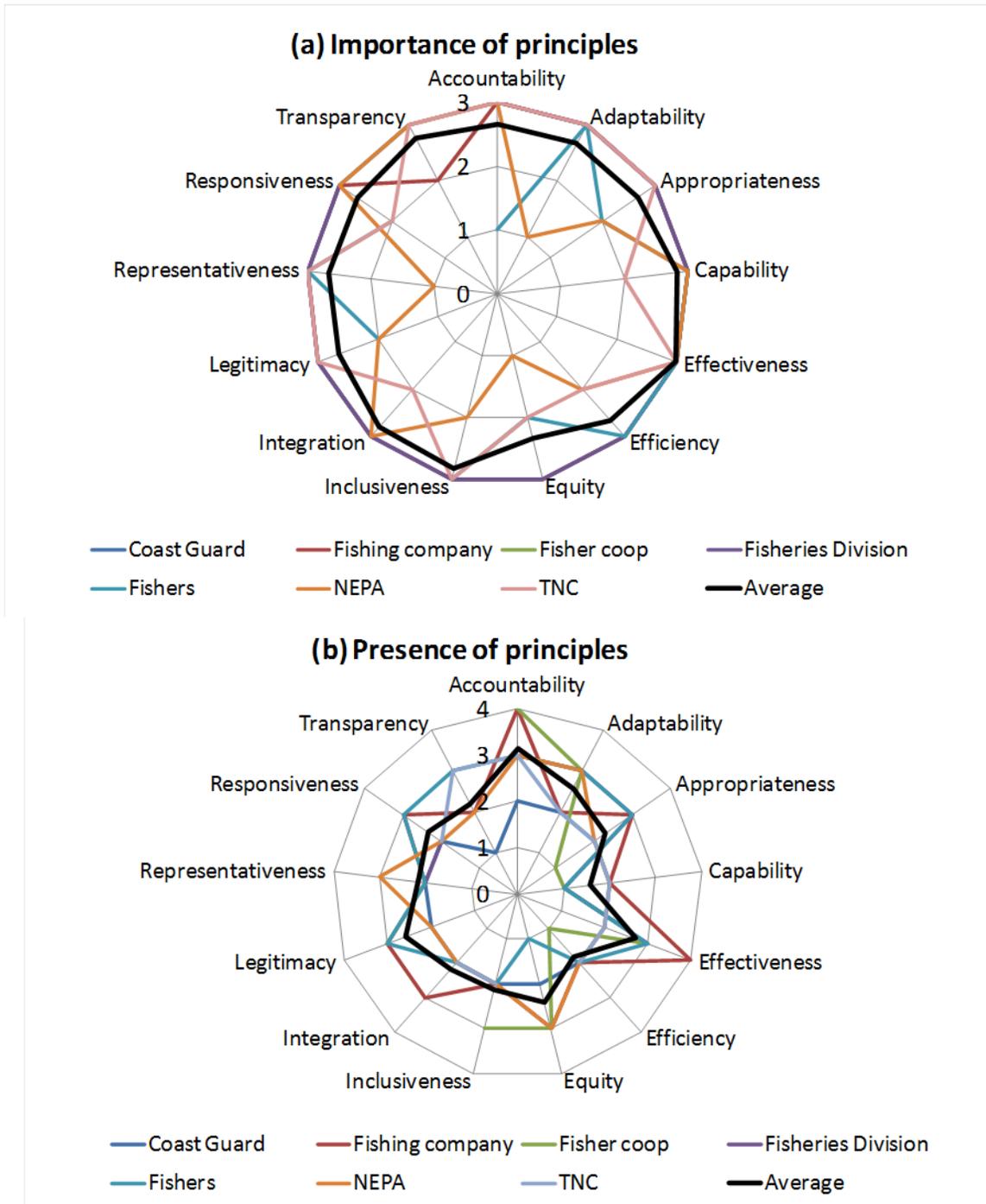


Figure A3.2. Assessment of the extent to which desired principles are considered to be (a) important (0 = none, 1 = low, 2 = medium, 3 = high) and (b) present (1 = Disagree strongly, 2 = Disagree, 3 = Agree, 4 = Agree strongly), in the Pedro Bank governance process for the finfish issue.

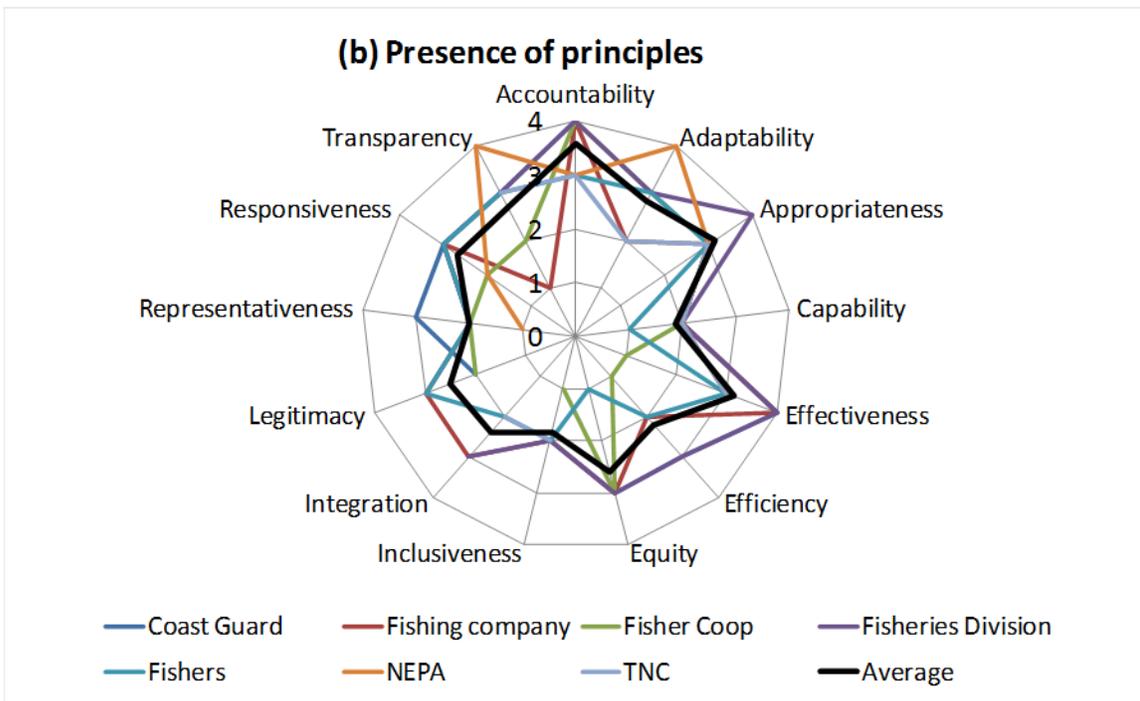
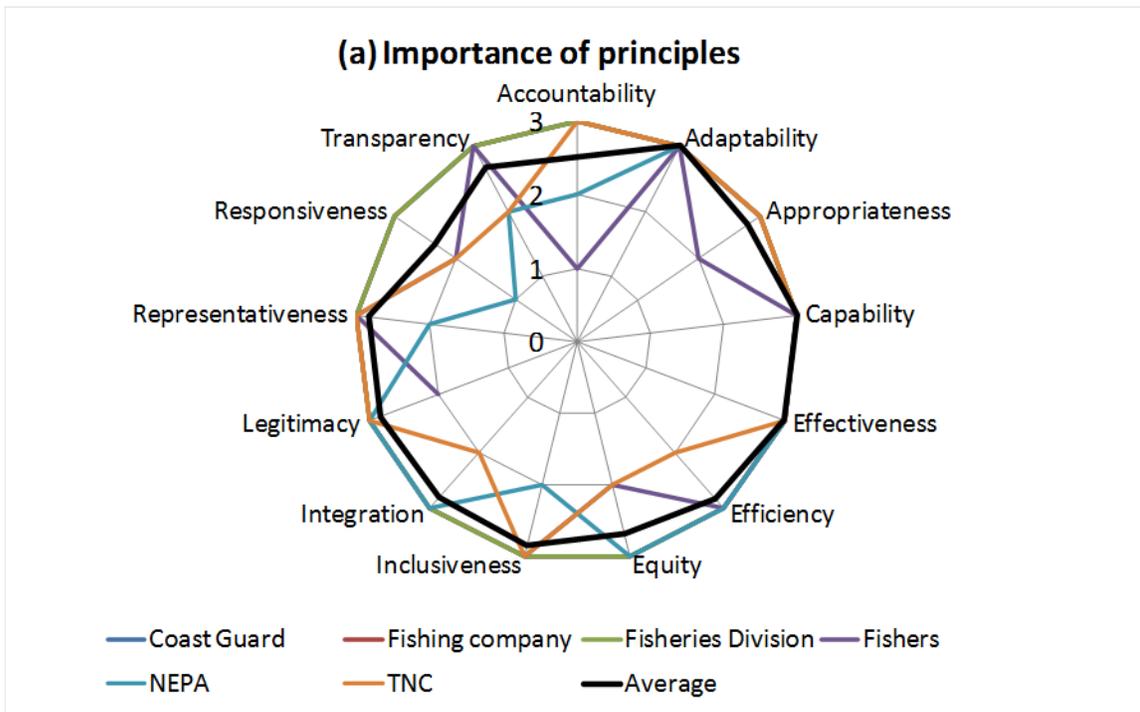


Figure A3.3. Assessment of the extent to which desired principles are considered to be (a) important (0 = none, 1 = low, 2 = medium, 3 = high) and (b) present (1 = Disagree strongly, 2 = Disagree, 3 = Agree, 4 = Agree strongly), in the Pedro Bank governance process for the conch fishery issue.

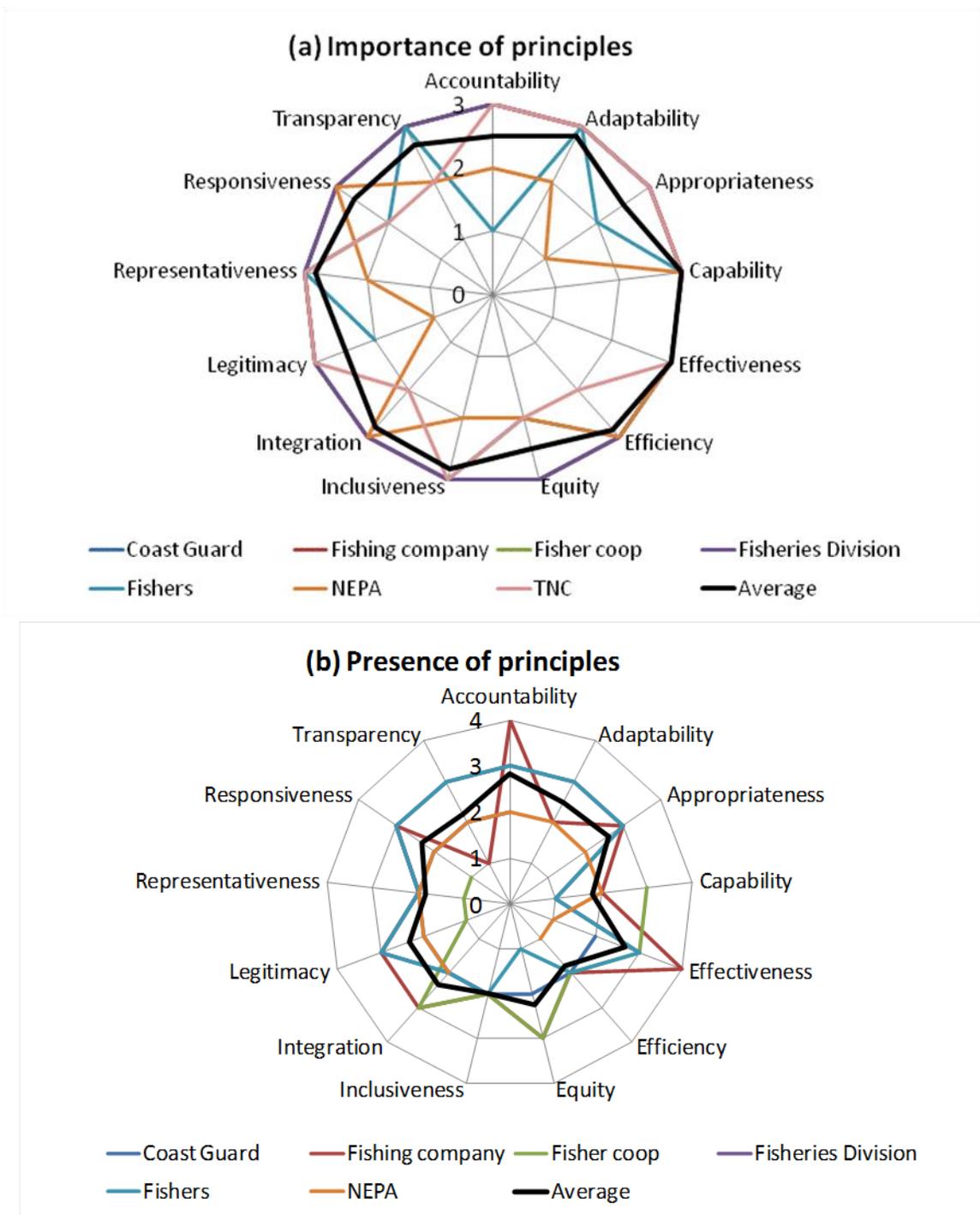


Figure A3.4. Assessment of the extent to which desired principles are considered to be (a) important (0 = none, 1 = low, 2 = medium, 3 = high) and (b) present (1 = Disagree strongly, 2 = Disagree, 3 = Agree, 4 = Agree strongly), in the Pedro Bank governance process for the lobster fishery issue.

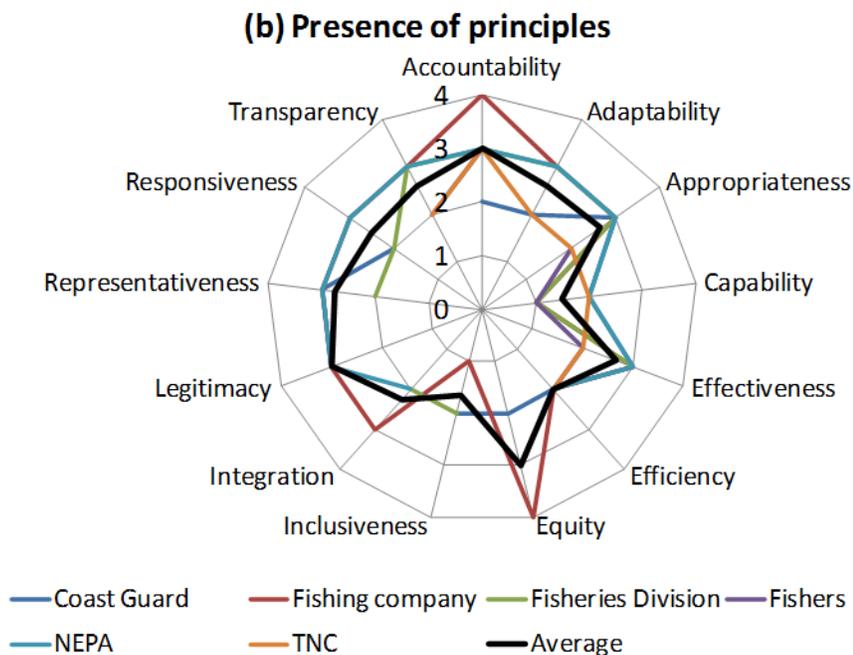
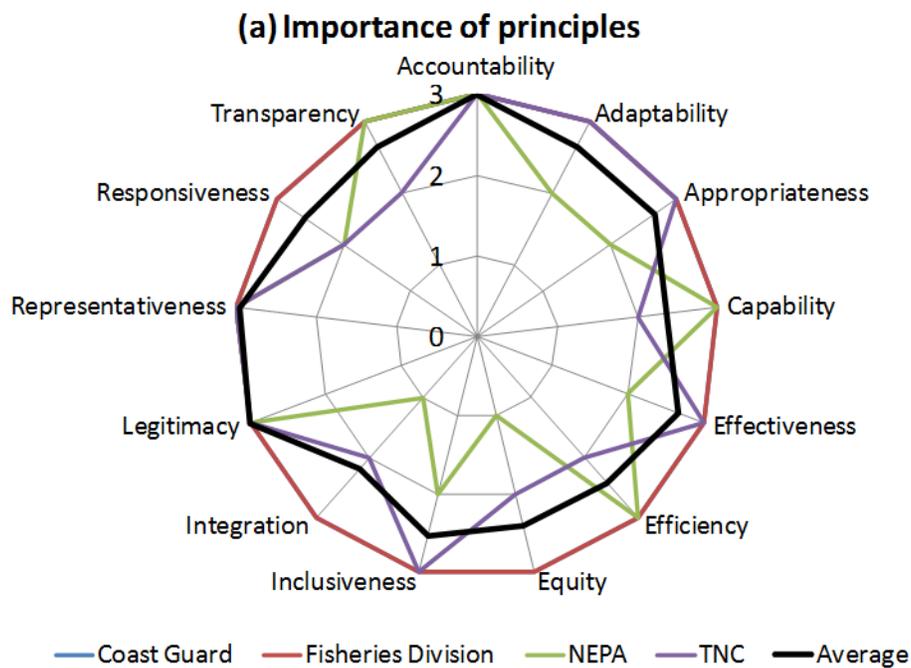


Figure A3.1. Assessment of the extent to which desired principles are considered to be (a) important (0 = none, 1 = low, 2 = medium, 3 = high) and (b) present (1 = Disagree strongly, 2 = Disagree, 3 = Agree, 4 = Agree strongly), in the Pedro Bank governance process for the biodiversity (seabirds and sea turtles) issue.

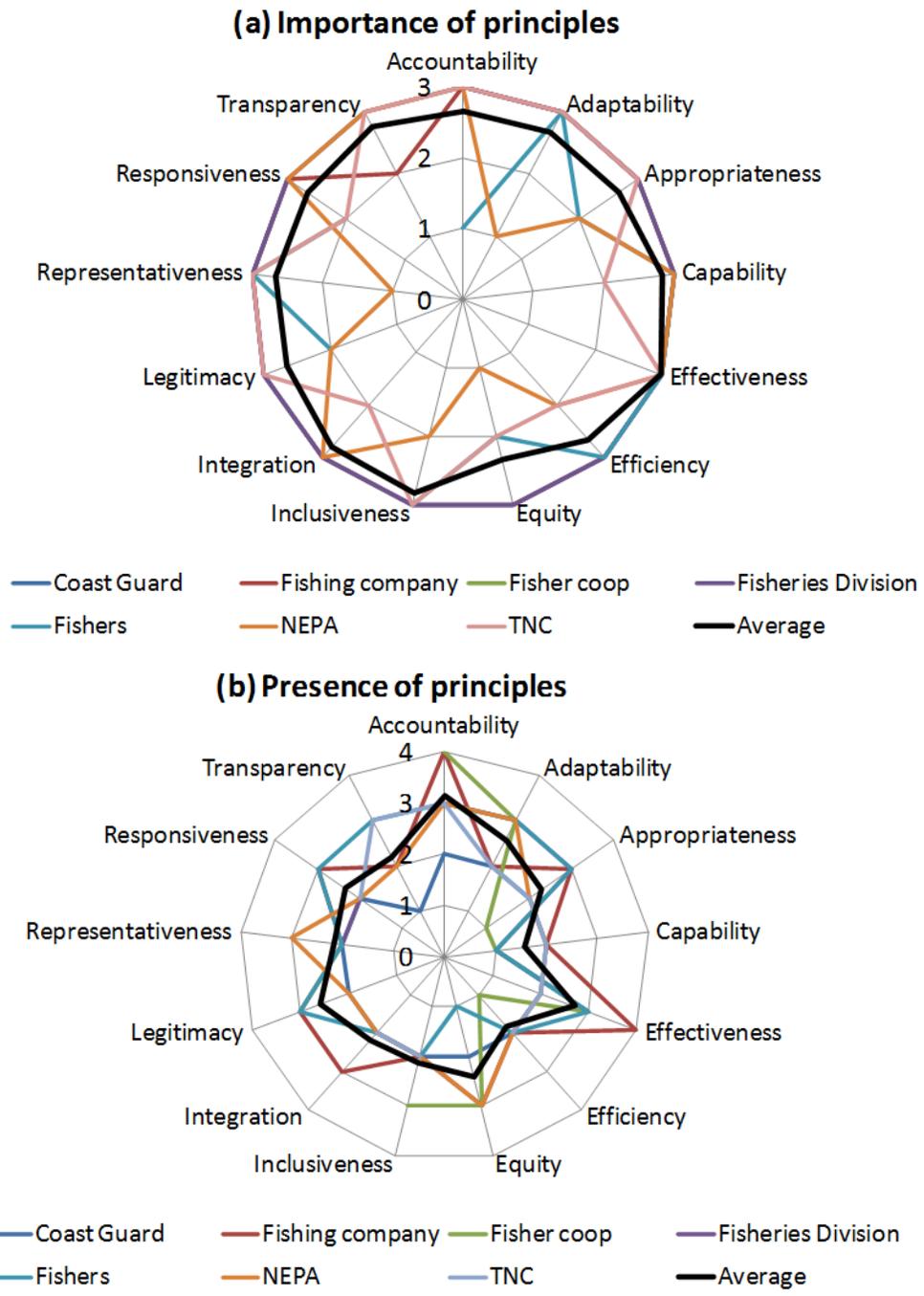


Figure A3.1. Assessment of the extent to which desired principles are considered to be (a) important (0 = none, 1 = low, 2 = medium, 3 = high) and (b) present (1 = Disagree strongly, 2 = Disagree, 3 = Agree, 4 = Agree strongly), in the Pedro Bank governance process for the land based sources of pollution issue.

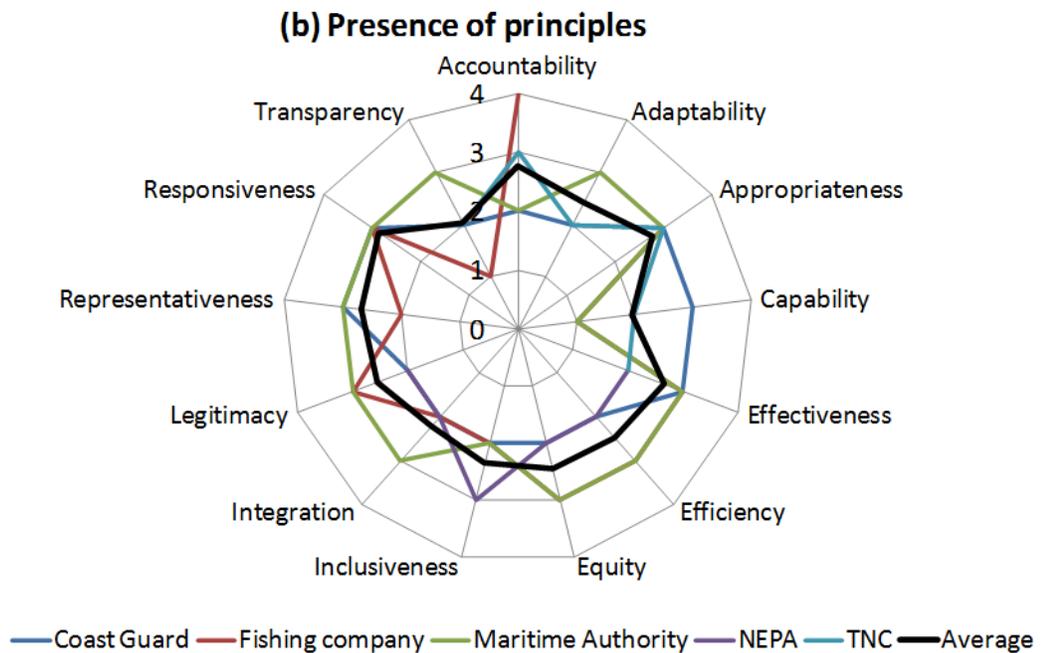
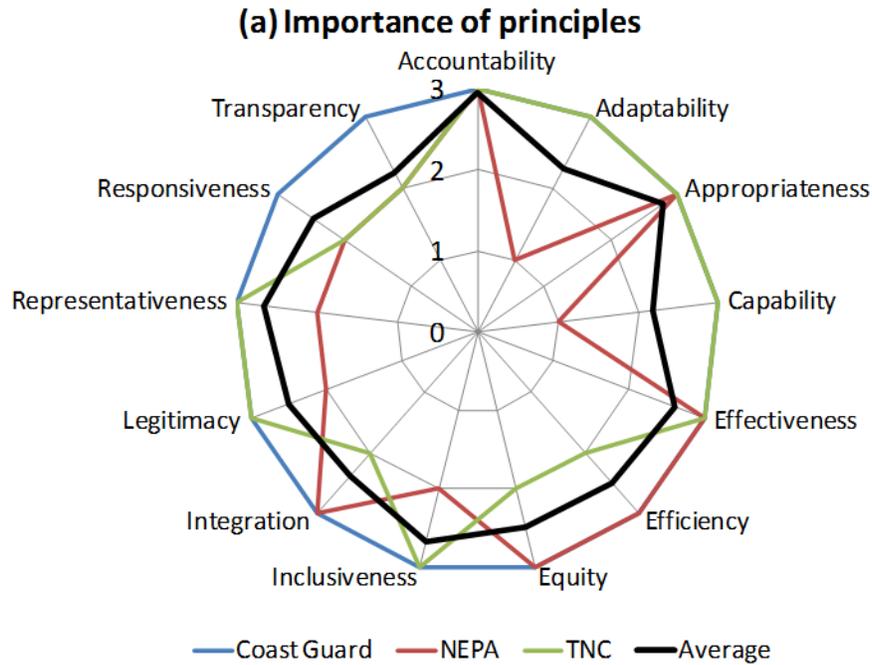


Figure A3.6. Assessment of the extent to which desired principles are considered to be (a) important (0 = none, 1 = low, 2 = medium, 3 = high) and (b) present (1 = Disagree strongly, 2 = Disagree, 3 = Agree, 4 = Agree strongly), in the Pedro Bank governance process for the marine based sources of pollution issue.

## End notes

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<sup>i</sup> This column lists the governance function that are considered to be necessary at two levels (a) the policy setting level and (2) the policy cycle level.

<sup>ii</sup> Organisation or organisations responsible for the function should be listed here

<sup>iii</sup> These are the institutional scale level or levels at which the function is performed (local, national, subregional, regional, extra-regional)

<sup>iv</sup> 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)

<sup>v</sup> 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.