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CARIBBEAN LARGE MARINE ECOSYSTEM+ STRATEGIC ACTION PLAN (SAP) MONITORING REPORT: BASELINE 2011-2015

L. FANNING AND R. MAHON

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Catalyzing implementation of the Strategic Action Programme for the Caribbean and North Brazil Shelf LME's (2015-2020)



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CONTENTS

ACKNOWLEDGEMENTS.....	V
ACRONYMS	VI
EXECUTIVE SUMMARY	VIII
INTRODUCTION	VIII
FISHERIES.....	IX
<i>Architecture</i>	<i>ix</i>
<i>Process</i>	<i>x</i>
<i>Pressure indicators</i>	<i>x</i>
<i>State</i>	<i>xi</i>
<i>Stakeholder engagement</i>	<i>xi</i>
<i>Social justice</i>	<i>xii</i>
POLLUTION	XII
<i>Architecture</i>	<i>xii</i>
<i>Process</i>	<i>xiii</i>
<i>Pressure indicators</i>	<i>xiv</i>
<i>State</i>	<i>xv</i>
<i>Stakeholder engagement</i>	<i>xvi</i>
<i>Social justice</i>	<i>xvi</i>
BIODIVERSITY AND HABITAT DEGRADATION.....	XVII
<i>Architecture</i>	<i>xvii</i>
<i>Process</i>	<i>xviii</i>
<i>Pressure indicators</i>	<i>xviii</i>
<i>State</i>	<i>xix</i>
<i>Stakeholder engagement</i>	<i>xx</i>
<i>Social justice</i>	<i>xxi</i>
HUMAN WELL-BEING.....	XXI
OVERALL CONCLUSIONS	XXI
1 INTRODUCTION.....	1
1.1 INDICATOR CATEGORIES.....	3
1.1.1 <i>Architecture in place?</i>	3
1.1.2 <i>Governance processes operational?</i>	4
1.1.3 <i>Ecosystem stressors reduced?</i>	4
1.1.4 <i>Ecosystem state improved/protected?</i>	5
1.1.5 <i>Stakeholders appropriately engaged?</i>	5
1.1.6 <i>Socially just outcomes achieved?</i>	5
1.1.7 <i>Human well-being improved/assured?</i>	6
1.2 REPORT PURPOSE.....	6
1.3 METHODS.....	6
1.3.1 <i>Data collection</i>	6
1.3.2 <i>Indicator approach</i>	8
1.3.3 <i>Data analysis</i>	8
1.4 REPORT LAYOUT.....	8
2 FISHERIES.....	10
2.1 ARCHITECTURE.....	13
2.1.1 <i>Methods</i>	13

2.1.2	Results.....	14
	<i>Mechanism to integrate regional policy cycles for fisheries</i>	14
	<i>Fisheries arrangements</i>	14
	<i>National Intersectoral Committees (NICs)</i>	15
2.2	PROCESS INDICATORS	16
2.2.1	Methods	16
2.2.2	Results	17
	<i>Instruments in place</i>	17
	<i>Processes according to principles</i>	19
	<i>Engagement in integration mechanism</i>	19
2.3	PRESSURE INDICATORS.....	19
2.3.1	Method.....	20
2.3.2	Results	20
	<i>Fishing effort/catch at agreed level</i>	20
	<i>Destructive fishing minimized</i>	22
	<i>IUU fishing minimized</i>	24
2.4	STATE	27
2.4.1	Methods	27
2.4.2	Results	27
2.5	STAKEHOLDER ENGAGEMENT	29
2.5.1	Methods	30
2.5.2	Results	30
	<i>Engagement in global and regional fisheries related agreements</i>	30
	<i>Engagement in regional fisheries policy processes</i>	31
2.6	SOCIAL JUSTICE	32
2.6.1	Methods	33
2.6.2	Results	33
	<i>Social justice policies in regional fisheries organisations</i>	33
	<i>Social justice policies in countries</i>	33
2.7	HUMAN WELL-BEING.....	34
3	POLLUTION	35
3.1	ARCHITECTURE.....	36
3.1.1	Methods	37
3.1.2	Results	37
	3.1.2.1 <i>Presence of integrating mechanism</i>	37
	3.1.2.2 <i>Strength of Arrangements</i>	37
	3.1.2.3 <i>National Intersectoral Committee (NIC)</i>	39
3.2	PROCESS.....	39
3.2.1	Method.....	39
3.2.2	Results	39
	3.2.2.1 <i>Presence of governance instruments</i>	39
	3.2.2.2 <i>Standards, monitoring and type of indicators tracked in effluents</i>	44
3.3	PRESSURE INDICATORS.....	45
3.3.1	Method.....	46
3.3.2	Results	46
	3.3.2.1 <i>Efforts to reduce the stress from land-based sources of pollution</i>	46
	3.3.2.2 <i>Efforts to reduce the stress from marine-based sources of pollution</i>	47
3.4	STATE	48
3.4.1	Method.....	48
3.4.2	Results	49
	3.4.2.1 <i>Presence of marine water quality standards</i>	49

3.4.2.2	State of marine water quality indicators.....	49
3.4.2.3	Information Sharing.....	50
3.5	STAKEHOLDER ENGAGEMENT	50
3.5.1	Methods.....	51
3.5.2	Results.....	51
3.5.2.1	Level of Engagement	51
3.5.2.2	Stakeholder participation	53
3.6	SOCIAL JUSTICE	54
3.6.1	Method.....	54
3.6.2	Results.....	55
3.6.2.1	Regional and Subregional Policies, Measures and Recourse to Pollution Impacts.....	55
3.6.2.2	National Policies, Measures and Recourse to Pollution Impacts	55
3.7	HUMAN WELL-BEING.....	56
4	HABITAT DEGRADATION AND BIODIVERSITY.....	57
4.1	ARCHITECTURE.....	59
4.1.1	Method.....	59
4.1.2	Results.....	59
4.1.2.1	Presence of integrating mechanism.....	59
4.1.2.2	Strength of Arrangements	59
4.1.2.3	National Intersectoral Committee (NIC).....	60
4.2	PROCESS.....	60
4.2.1	Method.....	60
4.2.2	Results.....	61
4.2.2.1	Presence of governance instruments	61
4.3	PRESSURE INDICATORS.....	64
4.3.1	Method.....	64
4.3.2	Results.....	64
4.3.2.1	Protection level in place to reduce the stress on habitat and biodiversity.....	64
4.4	STATE	66
4.4.1	Method.....	66
4.4.2	Results.....	67
4.4.2.1	Areal change in habitat type.....	67
4.4.2.2	Change in quality of habitat type.....	69
4.5	STAKEHOLDER ENGAGEMENT	70
4.5.1	Method.....	71
4.5.2	Results.....	71
4.5.2.1	Level of Engagement	71
4.5.2.2	Stakeholder participation	72
4.6	SOCIAL JUSTICE	74
4.6.1	Method.....	74
4.6.2	Results.....	75
4.6.2.1	Regional and Subregional Policies and Recourse to Habitat and Biodiversity Impacts.....	75
4.6.2.2	National Social Justice Policies and Recourse to Habitat/Biodiversity Conservation Measures	75
4.7	HUMAN WELL-BEING.....	76
5	HUMAN WELL-BEING	77
5.1	SINGLE ISSUE INDICATORS.....	77
5.1.1	Habitat and biodiversity efforts reduce risk to natural disasters? (habitat/biodiversity)	77
5.1.2	Fisher safety at sea (fisheries)	78
5.1.3	Food security improved/assured? (fisheries)	81
5.1.4	Fish loss/waste reduced to minimum (fisheries).....	82

5.2	INDICATORS ACROSS TWO ISSUES	82
5.2.1	<i>Malnutrition in communities decreased? (fisheries and habitat/biodiversity)</i>	82
5.2.2	<i>Aesthetics improved (pollution and habitat/biodiversity)</i>	83
5.2.3	<i>Increase in amenity area quantity (pollution and habitat/biodiversity)</i>	84
5.2.4	<i>Amenity area quality (pollution and habitat/biodiversity)</i>	85
5.2.5	<i>Human health benefitted (pollution and habitat/biodiversity)</i>	85
5.3	INDICATORS ACROSS ALL THREE ISSUES	85
5.3.1	<i>Incomes increased</i>	85
5.3.2	<i>Loss of cultural identity</i>	86
5.4	CONCLUSION	87
6	OVERALL BASELINE ASSESSMENT OF REGIONAL OCEAN GOVERNANCE IN THE WIDER CARIBBEAN REGION	88
6.1	A CROSSCUTTING PERSPECTIVE	88
6.1.1	<i>Architecture</i>	89
6.1.2	<i>Process</i>	89
6.1.3	<i>Pressure</i>	90
6.1.4	<i>State</i>	90
6.1.5	<i>Stakeholder engagement</i>	91
6.1.6	<i>Social justice</i>	91
6.1.7	<i>Human well-being</i>	91
6.2	LESSONS LEARNED	91
6.2.1	<i>Responses to questionnaires</i>	91
6.2.2	<i>Data forms and a database approach</i>	92
6.3	OTHER RELATED MONITORING AND EVALUATION ACTIVITIES	92
6.4	CONCLUSION AND RECOMMENDATIONS	92
7	REFERENCES CITED.....	93

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Acronyms

ACS Association of Caribbean States
AMLC Association of Marine Laboratories of the Caribbean
CaMPAM Caribbean Marine Protected Areas Managers Network and Forum
CANARI Caribbean Natural Resources Institute
CARICOM Caribbean Community and Common Market
CARISEC Caribbean Community Secretariat
CARPHA Caribbean Public Health Agency
CATHALAC Centro del Agua del Trópico Húmedo para América Latina y El Caribe
CBD Convention on Biological Diversity
CCA Causal Chain Analysis
CCAD Comisión Centroamericana de Ambiente y Desarrollo
CCCCV Caribbean Community Climate Change Centre
CCI Caribbean Challenge Initiative
CDCC Caribbean Development and Cooperation Committee
CELAC Community of Latin American and Caribbean States
CEP Caribbean Environment Programme
CERMES Centre for Resource Management and Environmental Studies
CI Conservation International
CIMH Caribbean Institute for Meteorology and Hydrology
CLME Caribbean Large Marine Ecosystem
CLME+ Caribbean Large Marine Ecosystem and North Brazil Shelf LME
CMBP Caribbean Marine Biodiversity Program
CNFO Caribbean Network of Fisherfolk Organizations
COCATRAM La Comisión Centroamericana de Transporte Marítimo
CONFEPESCA Confederación de Pescadores Artesanales de Centroamérica
CRFM Caribbean Regional Fisheries Mechanism
CSC Caribbean Sea Commission
CSI Caribbean Sea Initiative
CTO Caribbean Tourism Organization
EA Ecosystem Approach
EBM Ecosystem-based Management
ECLAC United Nations Economic Commission for Latin America and the Caribbean
EEZ Exclusive Economic Zone
FAO Food and Agricultural Organization
GEF Global Environment Facility
IAC Inter-American Convention for the Protection and Conservation of Sea Turtles
ICCAT International Commission for the Conservation of Atlantic Tunas
IEAG-SDG Inter-Agency and Expert Group on SDG Indicators (IEAG-SDG)
IMO International Maritime Organization
IOC Intergovernmental Oceanographic Commission of UNESCO
IOCARIBE Inter-governmental Oceanographic Commission Sub-Commission for the Caribbean and Adjacent Regions

IUCN International Union for the Conservation of Nature
IUU Illegal, Unreported and Unregulated
LAC Latin America and the Caribbean
LBS Land Based Sources
LME Large Marine Ecosystem
LMR Living Marine Resources
LOSC Law of the Sea Convention
MCS Monitoring, Control and Surveillance
MEA Multilateral Environmental Agreement
MPA Marine Protected Area
NBC North Brazil Current
NGO Non-Governmental Organization
NIC National Inter-ministerial/Inter-sectoral Committee
NOAA National Oceanic and Atmospheric Administration (United States)
OECAP Organización de Empresarios Centroamericanos Acuicultura y Pesca
OECs Organization of Eastern Caribbean States
OLDEPESCA Latin American Organization for Fisheries Development
OSP Oil Spill Protocol (Cartegena Convention)
OSPESCA Organización del Sector Pesquero y Acuícola del Istmo Centroamericano
REMP Regional Environmental Monitoring Programme
RFMO Regional Fisheries Management Organization
SAP Strategic Action Programme
SDG Sustainable Development Goal
SICA Central American Integration System
SIDS Small Island Developing States
SPAW Specially Protected Areas and Wildlife
TDA Transboundary Diagnostic Analysis
TNC The Nature Conservancy
TWAP Transboundary Waters Assessment Programme
UN United Nations
UNASUR Unión de Naciones Suramericanas
UNCLOS United Nations Convention on the Law of the Sea
UNDESA United Nations Department of Economic and Social Affairs
UNDP United Nations Development Programme
UNEP United Nations Environment Programme
UNFCCC United Nations Framework Convention on Climate Change
UNMSDF United Nations Multi-Country Sustainable Development Framework
USAID United States Agency for International Development
UWI University of the West Indies
WCR Wider Caribbean Region
WECAFC Western Central Atlantic Fishery Commission
WIDECASST Wider Caribbean Sea Turtle Network
WWF World Wildlife Fund

Executive summary

Introduction

In 2013, coastal countries of the CLME+ region (Caribbean Sea and North Brazil Current LMEs) adopted a 10-year Strategic Action Programme (SAP) for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME Project, 2013; Debels et al., 2017). This SAP provides a roadmap for sustainable living marine resources management, which is to be achieved by targeted interventions supported by strengthening and consolidating cooperative governance arrangements at regional and subregional levels.

The SAP specifies that “A sound Monitoring and Evaluation (M&E) Plan will be developed, to track the progress towards achieving the SAP objectives, and in order to facilitate adaptive management” (CLME Project, 2013). The M&E plan for the CLME+ SAP is supported by the Governance Effectiveness Assessment Framework (GEAF) which has been used to develop indicators for monitoring governance within the region. The GEAF comprises seven categories of indicators aimed at assessing whether good governance arrangements are in place and whether they are achieving what they set out to do:

- Governance architecture
- Governance process
- Ecosystem pressure
- Ecosystem state
- Stakeholder engagement
- Social justice
- Human well-being.

The indicator categories shown in Figure 1 form a graduated assessment sequence. Changes in the indicators for progress in the earlier (upstream) categories will be detectable sooner after implementation than the later (downstream) ones. Ecosystems and human communities may take decades to respond to reduce pressures. Therefore, desirable changes in human well-being are only likely to be detectable some time after achieving ecosystem and social justice outcomes.

The CLME+ SAP addresses three priority transboundary threats identified by the Transboundary Diagnostic Analysis (TDA) for the CLME+ region negatively impacting the societal benefits obtained from the CLME+ and its living resources:

- Unsustainable use of fisheries resources,
- Pollution
- Habitat degradation and impacts on biodiversity.

GEAF indicators for each of these threats were selected to provide a broad strategic, long-term perspective on effectiveness of the interventions undertaken to implement the SAP. The baseline period for the SAP M&E mechanism is 2011-2015, with most indicators being reviewed at a periodicity to be defined by the ICM/PCM membership (in alignment with their governance and programming processes).

This report provides an assessment of the seven categories of the GEAF for the baseline period (2011-2015) primarily using data provided by countries in the CLME+ Region and by the relevant intergovernmental organisations addressing fisheries, pollution and habitat degradation/ biodiversity. In some cases data and information from third party sources were used.

Fisheries

Based on the assessment of the GEAF categories for the transboundary issue of fisheries over the 2011-2015 baseline period, the following key points can be highlighted. However, caution must be exercised in reaching any definitive overall conclusions regarding the findings as the response rate from countries and territories was less than desirable. The lack of response ranged from 48% to 60% across the GEAF categories, despite numerous attempts and effort to garner data over a two-year period.

Architecture

Three indicators were assessed to evaluate the structure or architecture of the regional and subregional agreements in place for fisheries.

- *Presence of a mechanism to integrate regional policy cycles for fisheries* - For the baseline period, the Fisheries Interim Coordination Mechanism established by the CLME+ Project through an MOU among the three fisheries organisations was the overarching regional integrating mechanism addressing fisheries.
- *Strength of arrangements* - The average calculated strength of arrangements in place for fisheries on a scale of 0-1 was less than 0.4 for most species groups, except oceanwide large pelagics which are covered by ICCAT. These low scores can be improved significantly by examining the geographic coverage of the agreements in place and the ability of the agreement to include all components of the policy cycle (data and information, analysis and advice, decision making, implementation and monitoring and evaluation)
- *Status of National Intersectoral Committees (NICs) to facilitate bidirectional flow of cross-sectoral national input into regional and subregional decision making* - More than half the countries were found to have no discernable NIC. For those that did, the mode was 60-80% of functions in place. This leaves considerable scope for establishing NICs and for strengthening those that exist. While there is room for improvement regarding all functions that NICs can serve, the prominently weak area is in fulfilling the role of linking national and regional processes. As regards engagement of stakeholders, engagement with private sector was weakest.

Process

To assess the processes in place within the regional and subregional agreements addressing fisheries, the presence of regional/subregional governance instruments (policy, strategic plan, management plan, legislation, regulations) was evaluated. National level governing instruments were similarly evaluated for species/stocks that would be entirely within national jurisdiction.

- *Regional and subregional governing instruments* – The presence of the instruments indicating processes varied widely among species groups. Oceanwide large pelagics had the most instruments in place followed by conch, sea turtles and to a slightly lesser extent spiny lobster. In contrast there was very little in place for regional large pelagics, shrimps and prawns and groundfish. Regarding types of instruments, policies were most common. Regional level legislation and regulations were uncommon. This indicates the need for greater regional collaboration in developing these instruments.
- *National governing instruments* – At the national level instruments for national stocks of shallow-shelf and deep reef fishes were predominantly legislation and regulations, although even these were found in relatively low percentage of countries. This may indicate a lack of national level policy development and planning for fisheries overall or a relatively low importance afforded to management of reef fishes in most countries. Management plans, legislation and regulations for conch was considerably higher than for reef fishes, probably reflecting the impact of CITES Appendix 2 listing of conch on management.

Pressure indicators

Three pressure indicators were considered for fisheries.

- *Fishing effort/catch was at an agreed level.* There was no agreed level of fishing effort or catch for a wide cross section of shared stocks/species groups. Flyingfish was the notable exception. The absence of an agreed level of fishing effort or catch was also the case for most national stocks. The situation was best for conch which was at the agreed level in 67% of responding countries.
- *Use of destructive fishing gear was minimized.* Destructive fishing was reportedly ‘not an issue’ for several species groups (oceanwide and regional large pelagics, flyingfish shrimp and conch). It was reported most prominent for groundfish and lobster. In both cases there were differences in opinion among agencies as to whether it was a problem or not.
- *Illegal, unreported and unregulated (IUU) fishing was minimized.* IUU fishing is either unknown or not minimized, highlighting the severity of this issue in this region, and the need for measures to assess and address it. It was deemed to be ‘not an issue’ only for

flyingfish and conch. IUU fishing is also largely either unknown or not minimized at the national level for shallow reef and deep slope fishes.

State

The status of fishery stocks was assessed according to five categories: unknown, underexploited, fully exploited, overexploited and depleted.

- *Status of stocks* – There is considerable variability in status among stocks. The most striking overall feature is the relatively large percentage of stocks for which status is unknown. Also prominent is the relatively low percentage of stocks considered to be underexploited. Most stocks for which status is known are fully or overexploited. While oceanic large pelagics are extensively assessed and heavily fished, mostly by large-scale commercial fleets from outside the region, very little is known about regional large pelagics despite their critical importance for livelihoods of small-scale fishers throughout the region. Little is known about cetaceans and there is no management except for an indigenous quota for humpback whales. Flyingfish, spiny lobster and conch are species into which considerable research and management effort has been invested. This is reflected in their fully exploited status.

Stakeholder engagement

Indicators assessing the level of stakeholder engagement in fisheries arrangements focused on country engagement in regional and global agreements and participation of different stakeholders (countries, IGOs, NGOs and private sector) in meetings of the fisheries organisations.

- *Level of Engagement* - Country engagement in global fisheries-related agreements is highly variable. It is highest for the long standing agreements such as UNCLOS, the FAO Code of Conduct for Responsible Fisheries which is voluntary, and CITES. It is lowest for the FAO Port States and Compliance Agreements which are newer. There is considerable scope for states to increase engagement with most of these global agreements. In contrast, engagement of countries with regional fisheries agreements is relatively high. Low engagement with OLDESPESCA is probably due to its focus being more in South America than the Caribbean per se. Engagement with ICCAT is complex as CRFM engages with ICCAT on behalf of its member countries that are members of ICCAT. Others may then see that their interests are being represented and not feel the need to join, as it is expensive.
- *Governmental stakeholder participation in fisheries arrangements meetings* – The percentage of eligible countries participating in the meetings of the three regional fisheries IGOs is high for CRFM and OSPESCA and somewhat lower for WECAFC.

- *IGO participation in fisheries arrangements meetings* - The percentage of fisheries IGOs participating in the meetings of other fisheries IGOs (4-36%) is low, as it also is for regional ocean sustainable development IGOs (UNEP CEP, Caribbean Sea Commission (CSC), IOCARIBE, CAR-NBS SAP, ECLAC, OECS, IMO, IAC) (6-13%) participating in the meetings of these fisheries bodies.
- *Non-governmental stakeholder participation in pollution agreements meetings* – The number of NGOs and private sector representatives attending fisheries arrangement meetings was 4-5 NGOs and 2 private sector bodies.

Social justice

Seven social justice indicators were assessed by respondents at the regional/subregional level and nationally.

- *Regional and Subregional Policies* - With regards to an assessment of the presence of the seven social justice issues in regional fisheries agreements, WECAFC had all seven issues, OSPSCA five of them and CRFM four.
- *National social justice policies* – The percentage of countries with social justice policies addressing the seven issues was low overall, ranging from 28% for fisher labour rights and SSF-LSF distribution to 54% for preserving cultural traditions.

Pollution

Based on the assessment of the GEAF categories for the transboundary issue of pollution over the 2011-2015 baseline period, the following key points can be highlighted. However, caution must be exercised in reaching any definitive overall conclusions regarding the findings as the response rate from countries and territories was less than desirable. The lack of response ranged from 48% to 60% across the GEAF categories, despite numerous attempts and effort to garner data over a two-year period.

Architecture

Three indicators were assessed to evaluate the structure or architecture of the regional and subregional agreements in place that address pollution impacts.

- *Presence of a mechanism to integrate regional policy cycles for habitat and biodiversity* - For the baseline period, there was no overarching regionally integrating mechanism specifically addressing pollution. However, the interim CLME+ ICM can be considered a regional coordination mechanism that covers pollution.
- *Strength of arrangements* – This indicator was the average calculated strength of agreements in place by UN Environment (Cartagena Convention and its Oil Spill and LBS protocols), IMO (OPRC and Port State Control MOU), CARPHA and CCAD that addressed

land-based sources and marine-based sources of pollution. In the case of land-based sources, agreements pertaining to waste-water discharge and solid waste were assessed while for marine-based sources, agreements pertaining to oil spills, other liquids and solid waste were assessed. Overall the mean strength of agreements was greatest for marine-based sources at 0.6 out of a total of 1.0 for oil spills and 0.5 for other liquids and solid waste. This was due in large part to the high completeness (0.9) and coverage (0.9) scores for the Oil Spill Protocol. In contrast, agreements addressing land-based sources of waste-water discharge and solid waste had strengths of 0.3 and 0.2 respectively. This low score can be improved significantly by examining the geographic coverage of the agreements in place and the ability of the agreement to include all components of the policy cycle (data and information, analysis and advice, decision making, implementation and monitoring and evaluation).

- *Status of National Intersectoral Committees (NICs) to facilitate bidirectional flow of cross-sectoral national input into regional and subregional decision making* - More than half the countries were found to have no discernable NIC. For those that did, the mode was 60-80% of functions in place. This leaves considerable scope for establishing NICs and for strengthening those that exist. While there is room for improvement regarding all functions that NICs can serve, the prominently weak area is in fulfilling the role of linking national and regional processes. As regards engagement of stakeholders, engagement with private sector was weakest.

Process

In terms of assessing the processes in place within the regional and subregional agreements addressing pollution, the presence of regional/subregional governance instruments (policy, strategic plan, management plan, legislation, regulations) was evaluated. National level governing instruments were also evaluated for the two sources of land-based pollution (waste-water and solid waste) and the three sources of marine-based pollution (oil spills, other liquids and solid waste). Countries and territories were requested to provide data on the presence of national standard for a subset of pollutants in effluents, monitoring program and type of pollutants identified in the standard.

- *Regional and subregional governing instruments* - Policies (67%) and strategic plans (58%) were the governance instruments most in place during the baseline period among regional and subregional organisations. Additionally, these were most evident among the region-wide arrangements for both land-based and marine-based sources of pollution. It is also worth noting that only regional arrangements had governance instruments addressing marine-based sources of pollution. These results suggest room for improvement at both the regional and subregional level agreements. However, less than half of the agreements did not have management plans, legislation or regulations. This may be due to the expectation that regional conventions and their protocols leave it to the ratifying countries to develop these instruments for implementing the conditions of the convention and protocols at the national level.

- National governing instruments* - Based on a response rate ranging from 48 – 60% of all countries and territories providing data, legislation and regulations appeared to be the preferred instruments of choice for all land-based and marine-based sources of pollution, with strategic and management plans being the least preferred. Among pollution sources, domestic waste-water discharge had the highest level of response with 95% of responding countries indicating the presence of legislation and 80% indicating regulations in place. For marine-based sources of pollution, legislation for oil spills had the highest response rate at 81%. Overall, from a process perspective, land-based sources of pollution appear to be better governed nationally than marine-based sources. However, for both categories, the lack of attention to policies, strategic plans and management plans is a concern. Countries and territories were also asked to provide data relating to having governance instruments in place for marine water quality for recreational waters as well as non-recreational waters. The analysis showed the overall pattern of countries focusing on legislation and regulations continued but with a significantly lower level of countries having instruments in place. Approximately 60% of the responding countries and territories had legislation in place addressing recreational and non-recreational marine water quality followed by just under half of them having some form of regulations in place.
- Standards, monitoring and type of indicators tracked in effluents* – 80% of responding countries and territories indicated having standards in place for domestic and industrial waste effluents. However, only half of the respondents indicated having a monitoring program in place to determine compliance with the standard. In terms of the type of indicators included in national standards, fecal coliform, total suspended solids, pH, dissolved oxygen, and biological oxygen demand were cited by approximately 80% of respondents. Only one country indicated having a standard for heavy metals and nitrogen and phosphorus compounds.

Pressure indicators

Data focusing on efforts to reduce stress from land-based and marine-based sources of pollution were used to assess the pressure being exerted in the marine environment at the country level.

- National treatment level in place to reduce the stress from land-based sources of pollution* - While the target for stress reduction efforts would expectedly be to have all countries reporting “at agreed level” or “above agreed level” for all land-based sources of pollution, the results across the responding countries and territories showed the overwhelming response was the combined “no agreed level” and “lower than agreed level”, ranging from 65% to 79% across the five sources (industrial effluent, domestic effluent, solid waste, nutrients in agricultural run-off and sediments in run-off). On a

slightly positive note, for all but sediments in run-off, a small percentage (5% – 10%) of responding countries indicated treatment levels to be at the “above agreed” level. Nonetheless, the overall results suggest a pressing need for countries in the region to increase the level of treatment for all five types of pollution from land-based sources since less than 25% of respondents indicated treatment “at agreed level” or better.

- *National treatment level in place to reduce the stress from marine-based sources of pollution* - The results across the responding countries and territories for treatment levels for the three types of marine-based sources of pollution (oil spills, waste-water discharge and solid waste) showed a slight better response. Between 60% - 65% of the respondents indicated the combined “no agreed level” and “lower than agreed level”. Additionally, 15% of responding countries indicated treatment levels to be at the “above agreed” level. Nonetheless, as for land-based sources of pollution, the overall results suggest a pressing need for countries in the region to increase the level of treatment for all three types of pollution from marine-based sources since less than 35% of respondents indicated treatment “at agreed level” or better.

State

Indicators used to assess the status of marine water quality focused on the presence of a national marine water quality standard, status of selected marine water quality indicators and whether water quality information was shared with other stakeholders and the public.

- *Presence of marine water quality standard* – Eight of 19 countries and territories who provided responses indicated that they had marine water quality standards in place, corresponding to a low positive response rate of 42%.
- *State of marine water quality indicators* – Using similar indicators as were use in effluents entering marine waters, countries and territories were asked to assess whether standards were in place for these indicators in the marine environment and if so, whether they were within the standard or worse than the standard. The results indicated 50% to 59% of respondents had no monitoring in place for fecal coliform, total suspended solids, pH, dissolved oxygen, BOD and nitrogen and phosphorus compounds while 67% had no monitoring for fats, polyaromatic hydrocarbons and heavy metals. The range of countries responding “within standard” for one or more of the indicators was reported at 22% - 39% while 6% - 11% reported “worse than standard”. Clearly with the large number of responding countries indicating “no standard”, there is much room for improvement in tracking the state of marine water quality.
- *Communication of marine water quality information* – The sharing of information on the status of marine water quality showed 21% of responding countries indicating they shared information on the quality of marine recreational waters and 16% sharing

information on non-recreational waters. These results indicate the lack of transparency in informing stakeholders and the public on marine water quality during the baseline period.

Stakeholder engagement

Indicators assessing the level of stakeholder engagement in pollution arrangements focused on country engagement in regional and global agreements and participation of different stakeholders (countries, IGOs, NGOs and private sector) in meetings of the Conferences of the Parties (COPs) or Council of Ministers. Overall, given the increasing call for addressing pollution issues within the region, there is considerable room for greater participation among all stakeholder categories at these meetings.

Level of Engagement - During the baseline period of the study, regarding global pollution conventions, country engagement for IMO conventions and protocols ranged from 60% (MarPol Annex VI) to 100% (Antifouling Convention) while UNCLOS (93%) and UNFCCC (100%) showed a high level of engagement by countries in the region. The level of engagement of countries and territories in the region with regional and subregional arrangements was greatest at the subregional level for CCAD (100%) and CARPHA (100%), followed closely by engagement with the Cartagena Convention and Oil Spill Protocol (93%). There was a lower degree of engagement in IMO Port State Control agreements at 55% to 60%. Only 46% of eligible countries and territories are engaged with the LBS protocol of the Cartagena Convention, suggesting a need to better understand the factors that would encourage countries to adopt the protocol.

- *Governmental stakeholder participation in pollution agreements meetings* – An assessment of the percent of eligible countries, regional environmental and fisheries IGOs and global IGOs attending regional pollution meetings during the baseline period showed 97% of eligible countries participating in ordinary meetings of the Council of Ministers for CCAD. This was followed by 74% of eligible countries attending COP meetings for the Cartagena Convention and 67% attending the LBS Protocol COP. While regional environmental and fisheries IGOs did not attend any CCAD meetings, just over 50% of regional environmental IGOs attended Cartagena Convention COPs. Regional fisheries IGOs did not participate in any pollution meeting.
- *Non-governmental stakeholder participation in pollution agreements meetings* – The number of NGOs and private sector representatives attending Cartagena Convention and the LBS protocol meetings ranged from 6 – 9 NGOs and 2 -3 private sector bodies.

Social justice

Three social justice indicators focusing on disadvantaged groups (women, minorities, etc.), socially just pollution management and having recourse to pollution impacts were assessed by respondents at the regional/subregional level and nationally.

- *Regional and subregional policies and recourse to pollution impacts* - With regards to an assessment of social justice indicators in regional and subregional agreements, none of the agreements addressed policies focusing on management measures to reduce the impacts of pollution pressures on these groups and only the CARPHA agreement addressed disadvantaged groups. However, three of the six regional and subregional agreements (Oil Spill and LBS Protocols and the IMO Caribbean MOU) indicated mechanisms in place that allowed for recourse against pollution impacts.
- *National policies and recourse to pollution impacts* - Among the three social justice indicators, socially just pollution management mechanisms were in place for 60% of the responding countries and territories followed by 52% indicating the presence of mechanisms in place providing recourse to challenge pollution impacts. Only 19% of respondents had any policies or mechanisms to address disadvantaged groups.

Biodiversity and habitat degradation

Based on the assessment of the GEAF categories for the transboundary issue of habitat degradation and biodiversity over the 2011-2015 baseline period, the following key points can be highlighted. However, caution must be exercised in reaching any definitive overall conclusions regarding the findings as the response rate from countries and territories was less than desirable. The lack of response ranged from 38% to 45% across the GEAF categories, despite numerous attempts and effort to garner data over a two-year period.

Architecture

Three indicators were assessed to evaluate the structure or architecture of the regional and subregional agreements in place that address habitat and biodiversity.

- *Presence of a mechanism to integrate regional policy cycles for habitat and biodiversity* - For the baseline period, there was no overarching regionally integrating mechanism. However, the interim CLME+ ICM can be considered a regional coordination mechanism that covers pollution.
- *Strength of arrangements* - The average calculated strength of agreements in place by UN Environment and CCAD that addressed habitat and biodiversity for eight different types of habitat (beaches, mangroves, coastal wetlands and lagoons, seagrass beds, shallow reefs, deep slope reefs, muddy bottom shelf) was 0.3 out of a total of 1.0. This low score can be improved significantly by examining the geographic coverage of the agreements in place and the ability of the agreement to include all components of the policy cycle (data and information, analysis and advice, decision making, implementation and monitoring and evaluation)

- *Status of National Intersectoral Committees (NICs) to facilitate bidirectional flow of cross-sectoral national input into regional and subregional decision making* - More than half the countries were found to have no discernable NIC. For those that did, the mode was 60-80% of functions in place. This leaves considerable scope for establishing NICs and for strengthening those that exist. While there is considerable room for improvement regarding all functions that NICs can serve, the prominently weak area is in fulfilling the role of linking national and regional processes. As regards engagement of stakeholders, engagement with private sector was weakest.

Process

In terms of assessing the processes in place within the regional and subregional agreements addressing habitat and biodiversity, the presence of governance instruments (policy, strategic plan, management plan, legislation, regulations) was evaluated. National level governing instruments were also evaluated for eight types of habitat and five types of areas specific for maintaining the biodiversity of important species and groups within the region.

- *Regional and subregional governing instruments* – The analysis indicated that at the regional level, there was only attention to having policies in place for habitat and biodiversity. This might be expected since regional conventions and their protocols leave it to the ratifying countries to develop the legislation, regulations and management plans for implementing the conditions of the convention and protocols.
- *National governing instruments* - Based on a response rate ranging from 55 – 60% of all countries and territories providing data, legislation and regulations appeared to be the preferred instruments of choice for all habitat types and areas specific for priority species/groups, with strategic and management plans being the least preferred. Among habitat types, shallow reefs and mangroves had the highest level of response with approximately 75% of responding countries indicating the presence of legislation and regulations. A positive sign is the attention being paid to nesting and breeding areas for sea turtles where 42% of responding countries had both policies and management plans in place. Overall, from a process perspective, given the increasing need to conserve habitat types and reduce biodiversity loss in the region, more attention needs to be paid to implementing all five types of governing instruments, especially strategic and management plans.

Pressure indicators

Data focusing on the level of protection in place for each habitat type and specific areas for priority species/groups were used to assess the pressure being exerted on these habitats at the regional and the country level.

- *Regional protection level in place to reduce the stress on habitat and biodiversity* - The results shown that for all habitats and specific areas needing protection, there is no agreed level designated in regional agreements. Understanding the rationale behind this and whether it should be changed to ensure a region-wide level of protection for these habitats may be a topic worthy for subsequent discussion at the relevant conference of the parties.
- *National protection level in place to reduce the stress on habitat and biodiversity* - While the target for stress reduction efforts would expectedly be to have all countries reporting “at agreed level” or “above agreed level”, the results across the responding countries and territories showed the overwhelming response was the combined “no agreed level” or “lower than agreed level”. Across the eight habitat types, the best result was obtained for shallow reefs where 40% of the respondents indicated “no agreed level” and “below agreed level” as compared to 91% indicating these levels for muddy bottom shelf habitat. For four of the five specific areas aimed at protecting finfish, seabirds, cetaceans and sharks, 64 -76% of respondents indicated there was “no agreed level” and “below agreed level” while the best result was obtained for nesting/breeding habitat for sea turtles where the response was 40%. Overall, these results suggest that the percent of countries reporting protection levels “at agreed level” or “better than agreed level” for the habitats was quite low for all but two habitat types (nesting/breeding areas for sea turtles and shallow reefs).

State

Indicators used to assess the status of the targeted habitat types and five areas specific to priority species/groups focused on the quantity and quality of these habitats over the baseline period as reported by responding countries and territories.

- *Change in areal extent of habitat type* – The results for changes in areal extent of key habitats showed the majority of responding countries and territories assessed the habitat types to be “not monitored”, “significant loss” or “measurable loss”. The results are cause for concern when these three qualitative rankings are combined as they range from 100% for muddy bottom shelf, 96% for deep slope reefs, 92% for seagrasses, 88% for beaches to 67% for coastal wetlands/lagoons. The results for the five habitat types specific for priority species/groups are only marginally better, ranging from 40% of respondents citing these same three rankings combined for nesting/breeding habitat for sea turtles to 76% for finfish spawning areas. On a somewhat positive note, a small percentage of respondents indicated coastal wetlands and lagoons (8%), mangroves, seagrass beds and shallow reefs (4% each), spawning areas for finfish (4%), breeding areas for seabirds (4%), nesting /breeding areas for sea turtles (16%) and nursery areas for cetaceans (5%) as “measurable gain”, along with 4% reporting coastal wetlands/lagoons as “significant gain”.

- *Change in quality of habitat type* – The results for changes in the quality of the habitat types follow a similar pattern to the quantity with the majority of responding countries and territories indicating “not monitored”, “measurably degraded” and “significantly degraded”. These results are equally cause for concern when these three qualitative rankings are combined as they range from 100% for seagrass beds and muddy bottom shelf, 92% for deep slope reefs, 76% for shallow reefs, 69% for beaches, 62% for mangroves and 60% for coastal wetlands/lagoons. On a somewhat positive note, in addition to reporting “no change”, a small percentage of respondents indicated beaches (4%), mangroves (12%) and coastal wetlands and lagoons (4%) as measurably improved along with 8% reporting shallow reefs and 4% reporting beaches as significantly improved.

Stakeholder engagement

Indicators assessing the level of stakeholder engagement in habitat/biodiversity arrangements focused on country engagement in regional and global agreements and participation of different stakeholders (countries, IGOs, NGOs and private sector) in meetings of the Conference of the Parties (COP) or Council of Ministers. Overall, given the increasing call for addressing habitat and biodiversity issues within the region, there is considerable room for greater participation among all stakeholder categories at these meetings.

- *Level of Engagement* - During the baseline period of the study, regarding global habitat/biodiversity conventions, country engagement was 95% and higher for CBD, CITES, UNCLOS and UNFCCC, falling to 50% or lower for other agreements including the Convention on Migratory Species and its MOU for sharks. The level of engagement of countries and territories in the region with regional and subregional arrangements was greatest at the subregional level for CCAD (100%), followed closely by engagement with the Cartagena Convention (93%) and to a lesser extent its SPAW Protocol (61%), suggesting a need to better understand the factors that would encourage countries to adopt the protocol.
- *Governmental stakeholder participation in habitat/biodiversity agreements meetings* – An assessment of the percent of eligible countries, regional environmental and fisheries IGOs and global IGOs attending regional habitat and biodiversity meetings during the baseline period showed 97% of eligible countries participating in ordinary meetings of the Council of Ministers for CCAD. This was followed by 74% of eligible countries attending COP meetings for the Cartagena Convention and 52% attending the SPAW Protocol COP. While regional environmental and fisheries IGOs did not attend any CCAD meetings, just over 50% of regional environmental IGOs attended Cartagena Convention COPs. Regional fisheries IGOs did not participate in any habitat/biodiversity meeting.

- *Non-governmental stakeholder participation in habitat/biodiversity agreements meetings* – The number of NGOs and private sector representatives attending Cartagena Convention and the SPAW protocol meetings ranged from 3 – 5 NGOs and 2 private sector bodies.

Social justice

Five social justice indicators focusing on women, minorities, cultural traditions, small scale fishers and mechanisms providing recourse to habitat/biodiversity conservation measures were assessed by respondents at the regional/subregional level and nationally.

- *Regional and subregional policies and recourse to habitat and biodiversity impacts* - With regards to an assessment of social justice indicators in regional and subregional agreements, none of the agreements indicated having mechanisms in place that allowed for recourse against these issues. However, the SPAW Protocol did provide for addressing the remaining four social justice indicators.
- *National policies and recourse to habitat and biodiversity impacts* - Among the five social justice indicators, policies to respect cultural traditions were in place for 62% of the responding countries and territories followed by 42% indicating the presence of mechanisms in place providing recourse to challenge habitat/biodiversity conservation measures that were deemed by stakeholders to be socially unjust. The remaining three indicators were present in less than 40% of respondents.

Human well-being

The development and application of human well-being indicators is a relatively new endeavor. Significant challenges were experienced with acquiring the needed information at an appropriate geographical scale and specifically for the three transboundary issues in question. These challenges indicate the need to initiate collection and/or compilation of these data at the national level. A follow-on initiative to compare the first assessment period for the CLME+ SAP (2016-2020) with the baseline period should take a country level approach to determining availability of these data in a comparable format. Alternatively, a nominal scale system of assessment, such as was used for several other GEAF categories (pressure, state) could be developed. At the very least, this would indicate the extent to which such information was available in national statistical systems.

Overall conclusions

The relatively low response rate by countries indicates that the results presented here should be viewed cautiously. It is hoped that what has been provided in this report will illustrate the value of such a high level region-wide approach for strategic planning. This could lead to more comprehensive responses in the future and even retrospectively for this baseline.

The findings of this GEAF indicator based assessment for the CLME+ SAP for the baseline period of 2011-2015 indicate the need to greatly upscale efforts at management for the three issues and especially to improve the collection of data for evidence based management. In terms of Architecture, the strength of regional arrangements was generally found to be weak and lacking formal connectivity across the issues. Regarding Process indicators, regional arrangements focused on developing policies as the main form of governing instrument while countries gave attention to legislation and regulations, likely in an effort to meet their ratification requirements. For Pressure and State indicators, the consistent finding for each issue was either 'no agreed level' or 'below agreed level', highlighting the significant effort needed to be put in place to minimize stresses on the marine environment and maintain a healthy state that supports ecosystems services. From an Engagement perspective, countries demonstrate significant engagement with global and regional agreements but very little involvement with NGOs and the private sector was noted. At the regional and national level, the need to address social justice issues was being recognized, albeit more so for fisheries than pollution and habitat and biodiversity. As an overall conclusion, there is much room for improvement across all categories of the GEAF framework and moving towards an ecosystem based approach to the sustainable management of the CLME+ region.

1 Introduction

In 2013, coastal countries of the CLME+ region (Caribbean Sea and North Brazil Current LMEs) adopted a 10-year Strategic Action Programme (SAP) for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME Project, 2013; Debels et al., 2017). This SAP provides a roadmap for sustainable living marine resources management, which is to be achieved by targeted interventions supported by strengthening and consolidating cooperative governance arrangements at the regional and subregional levels.

The SAP defines six strategies with short-term (0-5 years) and medium-term actions (6-10 years). The first three strategies focus on the strengthening of regional-level governance and policy mechanisms:

- Strategy 1 focuses on the protection of the marine environment,
- Strategy 2 focuses on achieving sustainable fisheries,
- Strategy 3 aims at achieving broader coordination and integration of ocean policies, to enable and enhance the implementation of an ecosystem approach (CLME+ SAP, 2013).

Strategies 4 to 6 focus on the implementation of the ecosystem approach to the management of the CLME+'s three sub-ecosystem types and their associated living marine resources: the reefs and associated sub-ecosystems (Strategy 4), the pelagic sub-ecosystem (Strategy 5), and the Guianas-Brazil continental shelf sub-ecosystem (Strategy 6). Under Strategies 4 and 5, there are four additional sub-strategies to implement the ecosystem approach to four key CLME+ fisheries: Caribbean spiny lobster (sub-strategy 4A), queen conch (sub-strategy 4B), fourwing flyingfish (sub-strategy 5A) and large pelagics (sub-strategy 5B) (CLME Project, 2013).

The 5-year UNDP/GEF CLME+ Project (2015-2020) initiated the implementation of the 10-year CLME+ SAP through a series of activities and outputs structured under distinct Project Components/Outcomes.

The SAP specifies that "A sound Monitoring and Evaluation (M&E) Plan will be developed, to track the progress towards achieving the SAP objectives, and in order to facilitate adaptive management" (CLME Project, 2013). The M&E plan for the CLME+ SAP is supported by the Governance Effectiveness Assessment Framework (GEAF) which has been used to develop indicators for monitoring governance within the region (Mahon et al., 2017). The GEAF comprises seven categories of indicators (Figure 1.1) aimed at assessing whether good governance arrangements are in place and whether they are achieving what they set out to do:

- Governance architecture
- Governance process
- Ecosystem pressure
- Ecosystem state
- Stakeholder engagement
- Social justice
- Human well-being.

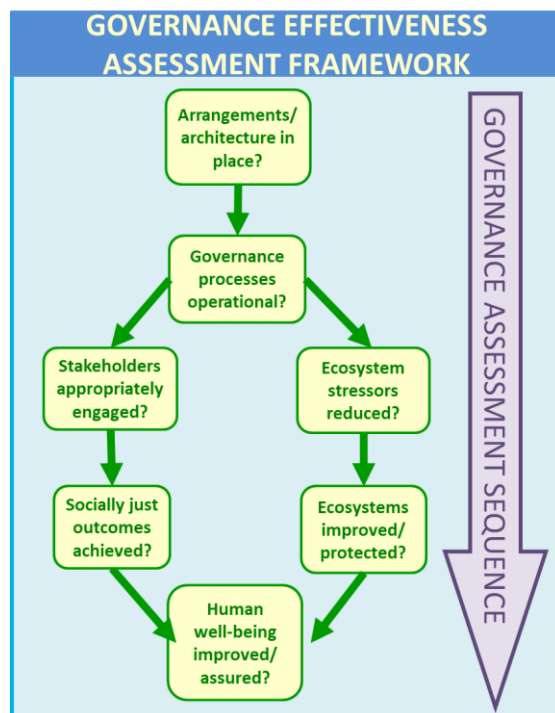


Figure 1.1. GEAF indicator categories that will be used in monitoring the CLME+ SAP, showing the temporal sequence for assessing governance

The indicator categories shown in Figure 1.1 form a graduated assessment sequence (UNEP/GPA, 2006). Changes in the indicators for progress in the earlier (upstream) categories will be detectable sooner after implementation than the later (downstream) ones. Ecosystems and human communities may take decades to respond to reduce pressures. Therefore, desirable changes in human well-being are only likely to occur after achieving ecosystem and social justice outcomes. This graduated assessment sequence means that different time frames for baselines and periodicity of assessment may be needed for the various categories of indicators.

A further complication is that as one moves down the sequence, it will be more difficult to demonstrate cause and effect between interventions, outcomes and impacts. It may be clear that a process outcome (e.g. a plan or regulation) has led to a pressure reduction. However, tracking the effects of a pressure reduction on system state or of system state on well-being may be more difficult due to confounding factors that are external to the intervention that is being assessed. Therefore, in selecting indicators for these later categories, care has been taken to choose indicators that are most closely related to the objectives of the intervention and thus likely to reflect impacts of stress reduction and/or improved social justice.

The CLME+ SAP addresses three cross-cutting and inter-linked priority transboundary threats identified by the Transboundary Diagnostic Analysis (TDA) for the CLME+ region as causing severe negative impacts on the volume and quality of regional and global societal benefits

obtained from the CLME+ and its living resources (Heileman, 2011; Phillips, 2011; CLME Project, 2011):

- Unsustainable use of fisheries resources,
- Pollution, and
- Habitat degradation and biodiversity,

The GEAF indicators for each of these threats were selected to provide a broad strategic, long-term perspective on effectiveness of the interventions undertaken to implement the SAP, based on the GEAF categories. These indicators specifically target CLME+ countries and implementing partners, including the IGOs that comprise the CLME+ SAP ICM and the future Coordination Mechanism (CM). However, all countries and territories within the Wider Caribbean Region were also invited to contribute to the governance assessment.

The baseline period for the SAP M&E mechanism is 2011-2015. It is anticipated that most indicators will be reviewed at a five-year periodicity or similar interval to be defined by the ICM/CM membership (in alignment with their governance and programming processes).

1.1 Indicator Categories

Following are brief explanations of the meaning and relevance of each indicator category as well as examples of guiding questions to identify indicators that have been applied. There is a wealth of readily available literature on the many indicators which may be appropriate for the range of issues and water systems identified for the CLME+ region. These include those identified in international and regional level agreements and guidelines such as the 1992 Convention on Biological Diversity, the 1995 FAO Code of Conduct for Responsible Fisheries and the 2015 Sustainable Development Goals. The actual indicators used for the CLME+ SAP are context specific and examples of these for fisheries, pollution, and habitat degradation and biodiversity are provided in the following chapters focusing on each of these transboundary threats.

1.1.1 Architecture in place?

Governance architecture is the institutional context for the governance process. It is the rules and upon which governance will be based as well as the organisational arrangements and processes (e.g. bodies and how they will function) that are put in place to ensure that the rules are followed. Governance architecture is seen to be an essential component of the framework because assessment of the existing or proposed additional categories of indicators will be dependent upon the institutional structure in place to facilitate decision-making, planning and implementation. This is an essential precursor of the assessment of governance process (Mahon et al. 2013). This distinction is considered to be particularly important in the case of multilevel nesting typical of international environmental governance systems (Young, 2002; Fanning et al., 2007; Biermann, 2007). If architecture is absent, incomplete or inappropriate then the processes for achieving stated outcomes will either not occur, or will be ineffective. With regard to governance architecture as a category of the assessment framework, the key questions are:

- What institutional arrangements are in place for governance?
- Is their mandate and thematic scope adequate for EBM?
- Are they formal or informal?
- Do they cover the full set of key issues?
- Do they make where responsibilities for implementation lie clear?

1.1.2 Governance processes operational?

Once appropriate arrangements are in place, it is necessary to ensure that the processes provided for in the arrangements are actually taking place as envisaged. Any good governance arrangement will provide for a variety of processes ranging from policy setting through planning to implementation (Kooiman *et al.*, 2005; De Stefano *et al.*, 2014). It will also include processes for vertical and lateral interactions needed for the multilevel, polycentric governance typical of transboundary systems, for example the operation of National Interministerial Committees (NICs) (Fanning *et al.*, 2007, Vousden, 2016, McConney *et al.*, 2016a). Process indicators respond to queries about operations such as:

- Has policy for the issues been developed?
- Is there a management plan?
- Have strategies for implementation been developed?
- Does the plan adequately reflect EBM or EAF?
- Has the plan been disseminated widely?
- Have regulations been developed to give effect to the plan?
- Has sufficient capacity been developed to enable plan implementation that engages the full range of stakeholders?
- Are enforcement mechanisms in place?

1.1.3 Ecosystem stressors reduced?

Ecosystem stressors are the proximate drivers of ecosystem degradation and unsustainable use. They are the consequence of human behaviour, for example, release of pollutants into water systems, excess fishing effort, destructive fishing practices, overharvesting of coastal forests for firewood and charcoal. Consequently, stress reduction indicators will often pertain to tracking changes in the behaviour of resource users and/or their institutions. In many instances this will also extend to tracking ultimate drivers of those behaviours such as market demand, subsidies or investment funding. As one of the original GEF indicator categories, stress reduction indicators are already well described with examples by Duda (2002). The primary question here is:

- Are measures in place actually preventing or reducing the human activities which are exerting the stress on the system? For example, are inputs of pollutants to marine ecosystems reduced, is fishing effort on fish stocks reduced, is harvesting of coastal forests reduced?

1.1.4 Ecosystem state improved/protected?

A primary objective of transboundary water system governance is to achieve actual improvement in the capacity of water systems to deliver ecosystem services, or at least prevent further degradation. As one of the original GEF indicator categories, ecosystem state indicators are already well described with examples by Duda (2002). However, the increased prominence of EBM and EAF since then calls for additional indicators to monitor progress towards achievement of those objectives. The key question for this indicator category is:

- Have preventing or reducing the human activities that stress the ecosystem resulted in desired changes in the state of key environmental variables in the system? For example, in relation to the stressors listed in the previous section, are levels of water pollutants reduced, are fish stocks recovering and producing sustainable yields, are exploited coastal forests regenerating?

1.1.5 Stakeholders appropriately engaged?

The engagement of stakeholders is now accepted as highly desirable, if not essential, for processes that are effective, transparent and legitimate (Bass et al., 1995; Borrini-Feyerabend et al., 2007). Nonetheless, it is common to find that mechanisms for stakeholder engagement are subverted for political expediency and disconnected from decision-making (Jones et al., 2016). Hence, there is the need for indicators to ensure that these mechanisms are indeed working. Enabling mechanisms for stakeholder involvement in natural resource management, often broadly referred to as stakeholder empowerment, can be expected to range widely across specific skill sets, training, community/civil society organisations, exposure to how things are being done elsewhere and learning-by-doing programs. The key questions in this indicator category are:

- Do governance processes operate according to agreed principles for stakeholder engagement?
- Are enabling mechanisms in place to ensure appropriate levels of stakeholder engagement?
- Are stakeholders engaged?

1.1.6 Socially just outcomes achieved?

The social justice category in the indicator framework is needed because it is possible to achieve stressor reduction and ecosystem state improvement by disadvantaging some sets of people relative to others (Young 2013). There are numerous examples of people losing access rights and food security as a result of increased conservation (Mathew, 2006). In many instances the disadvantaged are already marginalised with regard to benefits, for example, indigenous peoples, rural communities and the poor (Jentoft et al., 2003, Makagon et al., 2014). Given its prominence as an issue in sustainable development, the social justice aspect of governance needs separate treatment. The major questions here include:

- Are processes resulting in outcomes that are consistent with agreed principles such as equitable sharing of benefits, reduction of poverty, protection of the rights of the poor, women, minorities and indigenous peoples?
- Is there equitable sharing of responsibility for sustainability?

1.1.7 Human well-being improved/ assured?

The ultimate objective of GEF IW interventions must be to improve human well-being. The emphasis on human well-being became prominent in the development of the conceptual framework for the Millennium Assessment which places it as the central focus for assessment (Alcamo *et al.*, 2003).

Increased human well-being is perhaps the most difficult outcome to measure. Attention has only recently shifted from economic variables such as Gross Domestic Product (GDP) and the Human Development Index (HDI) used by the World Bank and other development agencies as measures of development success to measures of well-being (Costanza, *et al.*, 2014; Kubiszewskia *et al.*, 2013; Rogers, *et al.*, 2012; Bacon *et al.*, 2010). The key idea in these formulations is that there is much more to well-being than income and material things. In some instances, there are initiatives to measure human happiness as a component of well-being (Bacon, *et al.*, 2010; Young Foundation, 2009). Furthermore, well-being can be affected by many factors external to the LME, therefore despite successful interventions, it might decrease due to other factors. This requires the use of well-being indicators that are as closely related as possible to the interventions being pursued. Thus the critical question in this indicator category is:

- Has attention to social justice and sustainability of ecosystem goods and services brought about the desired assurance of, or improvements in human well-being and taken trade-offs with ecosystem status into account? For example, has reduction in water pollution reduced incidence of water borne disease, has increased fished yield increased food and livelihood security, has regenerated coastal forest led to reduced risk of coastal flooding in storms?

1.2 Report Purpose

This report contributes to the Monitoring and Evaluation process for the CLME+ SAP (Mahon and Fanning 2021) by providing a baseline assessment of the seven categories of the GEAF for the baseline period (2011-2015) using data provided by countries in the Wider Caribbean Region and by the relevant intergovernmental organisations addressing fisheries, pollution and habitat degradation and biodiversity.

It is important to stress that efforts were made to collect data from all 42 countries and territories bordering the CLME+ region, not only those that were signatory to the GEF-funded CLME+ project. This was deemed necessary to provide a meaningful regional overview of governance affecting transboundary fisheries, pollution, and habitat degradation and biodiversity, as called for in the GEAF.

1.3 Methods

1.3.1 Data collection

Over a two-year period (2018-2020), surveys containing questions relating to the seven GEAF indicator categories were emailed to country and territorial representatives with responsibility

for fisheries, pollution, and habitat degradation and biodiversity (see Appendix 1a, 1b and 1c). A different set of surveys was also sent to relevant IGOs in the region including FAO, OSPESCA, CRFM (for fisheries), UNE, CCAD, CARPHA, IMO (for pollution and habitat degradation and biodiversity) (see Appendix 2a, 2b and 2c). Telephone calls, assistance from the CLME+ PCU and other contacts, and follow-up emails were sent to countries and IGOs to encourage them to provide the requested data.

Table 1.3. Country responses to questionnaires

Country	Fisheries	Pollution	Habitats/ biodiversity
Anguilla			
Antigua-Barbuda			
Aruba	✓		
Bahamas	✓		✓
Barbados	✓	✓	✓
Belize	✓	✓	✓
Bonaire	✓		✓
Brazil	✓		
BVI			
Cayman	✓	✓	✓
Colombia	✓	✓	✓
Costa Rica			
Cuba			
Curacao	✓	✓	✓
Dominica			
DR		✓	✓
French Guiana	✓		✓
Grenada	✓	✓	✓
Guadeloupe			
Guatemala	✓	✓	✓
Guyana	✓	✓	✓
Haiti	✓	✓	✓
Honduras	✓	✓	✓
Jamaica	✓	✓	✓
Martinique			
Mexico	✓	✓	✓
Montserrat	✓	✓	✓
Nicaragua	✓		
Panama	✓	✓	✓
Saba	✓	✓	✓
St Eustatius	✓	✓	✓
St Maarten	✓	✓	✓
St Kitts-Nevis	✓	✓	✓
St Lucia	✓	✓	✓
St Vincent-Grenadines	✓	✓	✓
Suriname	✓		
TCI	✓	✓	✓

Country	Fisheries	Pollution	Habitats/ biodiversity
Trinidad-Tobago	✓	✓	✓
USA PR/USVI	✓	✓	
USA			
Venezuela			
Total responses	30	24	26
Percent responses	71	57	62

1.3.2 Indicator approach

The GEAF indicator set is developed around the regional level strategies (1-3 in the SAP), with reference to the resource specific strategies (4-6 in the SAP). This indicator set is based on a series of guiding questions in each of the GEAF indicator categories. For each question, indicators are proposed that show the direction of change, or if a target has been set, status in relation to the target. Indicators variously include:

- Continuous variables (e.g. percent of countries engaged in agreements);
- Categorical (e.g. level of agreement = disagree strongly, disagree, agree, agree strongly);
- Cumulative scores (e.g. number of desirable characteristics demonstrated);
- Narrative (e.g. progress in a particular area such as inclusion of disadvantaged groups in strategic plans).

In several instances, in order to be comparable across countries at the regional level, response categories were relative to the country's own reference point, which we assume to be valid for that country. For example in the case of fishery pressure using catch/effort as an indicator the responses are relative to agreed national or regional levels of catch/effort. The response categories were: no agreed level, at agreed level, above agreed level, below agreed level. The questionnaires did not ask what the agreed levels were; only where the indicator was relative to an agreed level (if indeed there was one).

1.3.3 Data analysis

The data provided by responding countries and IGOs were entered in Excel workbooks for analysis. Further details regarding how each indicator was analysed are provided in the relevant sections and in Appendix 3 as appropriate)

1.4 Report Layout

This report begins with this introductory chapter that sets the context for a baseline assessment (2011-2015) of governance effectiveness relating to fisheries, pollution, and habitat degradation and biodiversity in the Wider Caribbean Region. It begins by providing a brief overview of the overarching strategies outlines in the 10-year Strategic Action Programme (SAP) for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME Project, 2013) and the use of the GEAF in contributing to the overall M&E plan for the SAP objectives. This chapter also describes the seven categories of the GEAF and provides a summary of the questions relating to

transboundary fisheries, pollution, and habitat degradation and biodiversity for each of the categories comprising the framework, along with the methods used for both data collection and analysis.

The remainder of the report provides the analysis of governance effectiveness based on data provided by the responding countries and IGOs for the baseline period (2011-2015).

- Chapter 2 focuses on the analysis of the data relevant to transboundary fisheries for each of the seven categories in the GEAF.
- Chapter 3 focuses on assessing the GEAF categories relating to pollution.
- Chapter 4 addresses habitat degradation and biodiversity.
- Chapter 5 examines progress with quantifying indicators of human well-being across the three issues.
- Chapter 6 provides an overall assessment of the effectiveness of marine governance in the Wider Caribbean Region for the baseline period based on the findings from each of the three major issues identified in the 10-year Strategic Action Programme (SAP) for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+, 2013).

It is anticipated that the data collection and analysis will be conducted for each subsequent five-year period so as to monitor and evaluate the progress towards effective governance in the WCR by comparing results with the previous five-year assessment.

2 Fisheries

This section reports on the indicators that pertain to fisheries. The questions upon which these indicators are based are shown in Table 2.1.

Table 2.1. GEAF fisheries guiding questions to be addressed by indicators.
Architecture
Are arrangements in place to address fisheries governance at regional/subregional levels?
Is there a mechanism for integrating regional/subregional fisheries policy cycles at the policy level?
Are there mechanisms in place to ensure national coordination and national-regional interaction?
Process
Are there regional/subregional policies in place for fisheries? (WECAFC, OSPESCA, CRFM, OECS)
Are there regional/subregional strategic plans in place for fisheries?
Are there regional/subregional management plans in place for fisheries?
Is there regional/subregional (harmonised) legislation in place for fisheries?
Are there regional/subregional (harmonised) regulations in place for fisheries?
Is there evidence that the processes for fisheries are conducted according to agreed principles?
Is there evidence of integration as per the mechanism referred to in F2
Ecosystem stressors (pressure)
Is fishing effort at the agreed upon level for the region/subregion?
Is the use of destructive gear minimised for each of the key fisheries?
Has IUU fishing been minimized
Ecosystem State
Are fish stocks at sustainable levels? (summary of questions listed below)
Are reef fish stocks at sustainable levels?
Are lobster stocks at sustainable levels?
Are conch stocks at sustainable levels?
Are deep slope snapper/grouper stocks at sustainable levels?
Are shrimp and groundfish stocks at sustainable levels?
Are large pelagic fish stocks at sustainable levels?
Are flyingfish stocks at sustainable levels?
Stakeholder Engagement
Are fisheries agreements well subscribed to by countries?
Are fisheries stakeholders participating in regional/subregional processes
Are country fisheries agencies participating in regional/subregional fisheries processes
Are other regional IGOs participating in regional/subregional fisheries processes?
Are regional fisheries NGOs participating in regional/subregional processes?
Are regional fisheries private sector bodies participating in regional/subregional fisheries processes?
Are regional environmental NGOs participating in regional/subregional fisheries processes?
Social Justice

Table 2.1. GEAF fisheries guiding questions to be addressed by indicators.

Status of implementation of FAO SSF guidelines relating to social justice in SSF?
Do regional fisheries agreements include specific reference to social justice issues as per the following list?
Are there national policies regarding the participation of women in fisheries?
Are there national policies regarding the preservation of cultural traditions in fisheries?
Are there national policies regarding the participation of disadvantaged groups and minorities in fisheries?
Are there national policies regarding the equitable access to the resource for all stakeholder categories fisheries?
Are there national policies regarding the distribution of benefits between small-scale and large-scale fisheries?
Are the measures taken to reduce fishing pressures socially just (differentially negatively impacting certain groups)?
Human Well-Being
Have fisher folk incomes increased?
Has incidence of malnutrition in fishing communities decreased?
Has loss of cultural identity with fisheries resources and traditions been reduced?
Has food security been improved/assured?
Has fish loss/waste been reduced?
Has fisher safety at sea been improved?

For several indicators, specific responses were sought by species or species group. A list of indicator species was developed to facilitate this (Table 2.2). It is important to note that these species/species groups are considered to be the most important ones in the major fisheries ecosystems. However, the list is not exhaustive and there are many species/species groups that may be of less or only local importance that are not included, but for which management is nonetheless required for sustainable use; for example, bullet tunas among regional pelagics and snook in coastal lagoons.

Table 2.2, Species/species groups/stocks for which information was sought in this survey.

Species/group	Stock	Scientific name
Pelagics		
Oceanwide large pelagics (by stocks)		
	Skipjack tuna	<i>Katsuwonus pelamis</i>
	Yellowfin tuna	<i>Thunnus albacares</i>
	Bigeye tuna	<i>Thunnus obesus</i>
	Blue marlin	<i>Makaira nigricans</i>
	White marlin	<i>Kajikia albida</i>
	Swordfish	<i>Xiphias gladius</i>
	Sharks	
Regional large pelagics (by stocks)		
	Dolphinfish,	<i>Coryphaena hippurus</i>
	Wahoo	<i>Acanthocybium solandri</i>

Kingfish	<i>Scomberomorus cavalla</i>
Blackfin tuna	<i>Thunnus atlanticus</i>
Eastern Caribbean flyingfish	<i>Hirundichthys affinis</i>
Cetaceans	
Whales	
Dolphins and porpoises	
Sea turtles	
Green	<i>Chelonia mydas</i>
Loggerhead	<i>Caretta caretta</i>
Leatherback	<i>Dermochelys coriacea</i>
Hawksbill	<i>Testudo imbricata</i>
Shrimp and groundfish (by region)	
Guianas Brazil region	
Shrimps and prawns	
Seabob	<i>X. kroyeri</i>
Pink spotted shrimp	<i>Farfantepenaeus brasiliensis</i>
Brown shrimp	<i>F. subtilis</i>
Southern pink shrimp	<i>F. notialis</i>
White shrimp	<i>Litopenaeus schmitti</i>
Groundfish	
Sea trout	<i>Cynoscion virescens</i>
Grey snapper	<i>Cynoscion acoupa</i>
Jamaica weakfish	<i>Cynoscion jamaicensis</i>
Bangamary	<i>Macrodon ancyclodon</i>
Butterfish	<i>Nebris microps</i>
Whitemouth croaker	<i>Micropogonias furnieri</i>
Gillbacker	<i>Sciades parkeri</i>
Sharks and rays	
Reef fishes	
Deepwater snapper and grouper - national	
Southern red snapper	<i>Lutjanus purpureus</i>
Vermilion snapper	<i>Rhomboplites aurorubens</i>
Silk snapper	<i>Lutjanus vivanus</i>
Queen snapper	<i>Etelis oculatus</i>
Shallow-shelf reef fishes - national	
Groupers	Serranidae
Snappers	Lutjanidae
Parrotfishes	Scaridae
Grunts	Haemulidae
Squirrelfish	Holocentridae
Surgeonfish	Acanthuridae
Goatfish	Mullidae

Sharks and rays	
Spiny lobster (by stocks)	<i>Panulirus argus</i>
Southwestern Caribbean	
Northern Caribbean	
Central Caribbean	
Queen conch (regional and national)	<i>Aliger gigas</i>

2.1 Architecture

There are three indicators pertaining to governance architecture (Table 2.1).

- Is there a mechanism for integrating regional/subregional fisheries policy cycles at the policy level?
- Are arrangements in place to address fisheries governance at regional/subregional levels?
- Are there mechanisms in place to ensure national coordination and national-regional interaction?

2.1.1 Methods

Strength of arrangements is calculated as the completeness of the arrangement which is measured on a scale of 0-1 multiplied by the geographical coverage of the arrangement which is also measured on a scale of 0-1, as the proportion of the species range that is covered by the arrangement. Completeness is estimated according to how well the arrangement is structured to carry out the stages of the policy cycle considered to be necessary for effective governance (Mahon et al., 2015)(Appendix 3)

National Intersectoral Committees were assessed based on whether they carried out nine key functions:

- Involve state actors
- Involve non-state actors (NGOs, CBOs and academia)
- Involve private sector
- Promote an enabling environment
- Indicate a clear mandate
- Documentation of activities
- Regular review, evaluation, learning and adaptation
- Integrate sectors and actors at the national level
- Function as national-regional linkage

The strength of the NICs in countries was assessed as the percentage of these functions that the NIC carried out.

2.1.2 Results

Mechanism to integrate regional policy cycles for fisheries

The Fisheries Interim Coordination Mechanism (ICM) established by the CLME+ Project in 2015 is the mechanism that integrates regional policy cycles for fisheries. It consists of representatives of the three major fisheries bodies in the region: the CRFM, OSPESCA and WECAFC.

Fisheries arrangements¹

There are a variety of international arrangements in place for fisheries in the region. An arrangement is taken as an agreement among countries as well as the institutions and processes put in place to give effect to the agreement. The strength of the existing arrangements is shown in Figure 2.1 for the species/groupings in Table 2.2.

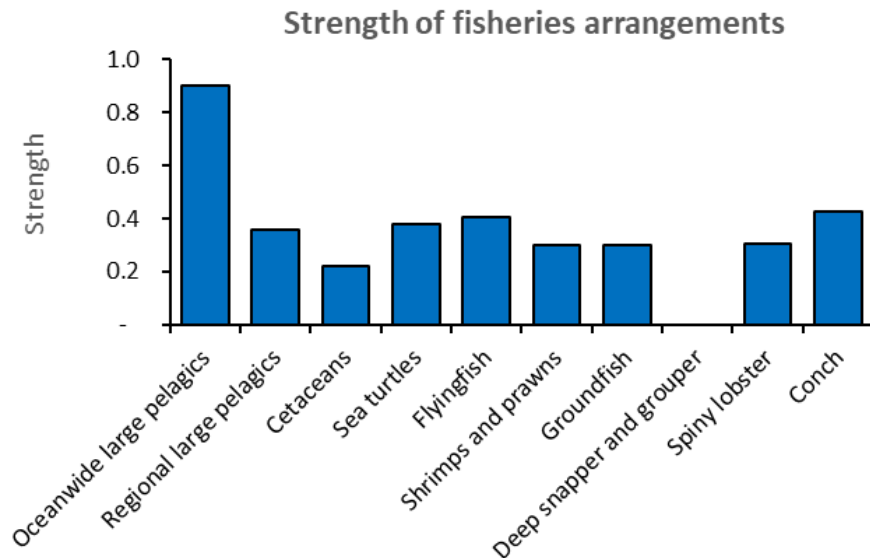


Figure 2.1. The strength of fisheries arrangements in the Wider Caribbean Region

Where one arrangement has a clear mandate, such as ICCAT for oceanic large pelagics, the strength is shown for that arrangement alone. Where several organisations have a mandate, the average is shown. The relatively low strength shown for the arrangements for most transboundary resources stems from a combination of incomplete arrangements and inadequate geographic coverage.

These findings reveal that there is the need to focus attention on strengthening arrangements and developing fuller geographic coverage through MOUs among organisations or broadening country membership in organisations.

¹ Show coverage and completeness separately and completeness by policy cycle stage?

National Intersectoral Committees (NICs)

Regarding mechanisms in place to ensure national coordination and national-regional interaction, National Intersectoral Committees play a crucial role in linking local and national stakeholders to regional processes needed for transboundary governance. They also play a critical role in stakeholder integration at the national level needed for effective ecosystem based governance.

More than half the countries were found to have no discernable NIC (Figure 2.2). For those that did, the mode was 60-80% of functions in place. This leaves considerable scope for establishing NICs and for strengthening those that exist.

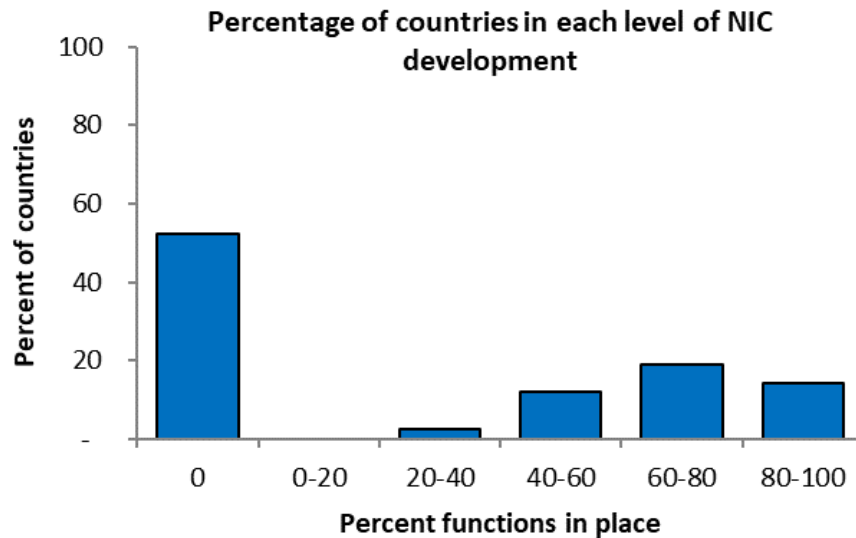


Figure 2.2. Percentage of countries in each level of NIC development.

The percentage of countries with an identifiable NIC that carried out each of these functions is shown in Figure 2.3. While there is considerable room for improvement regarding all functions, the prominently weak area is in fulfilling the role of linking national and regional processes. As regards engagement of stakeholders, engagement with private sector was weakest. The survey of NICs and also best practices for NICs are discussed by McConney et al. (2016b) and Compton et al. (2020).

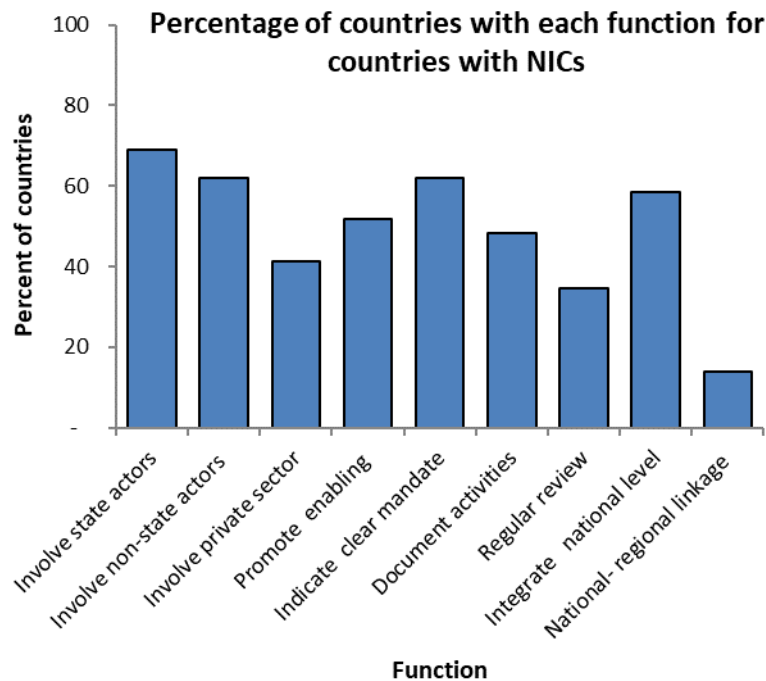


Figure 2.3. Percentage of countries with NICs that carry out each of the key functions

2.2 Process indicators

Once governance arrangements/architecture is in place, process indicators tell whether they are leading to the kinds of outputs that can be expected to result in the intended outcomes.

Three kinds of indicators were determined to be needed for process:

- Whether key instruments (policies, strategic plans, management plans, legislation and regulations) were in place for the key fisheries resources;
- Whether the processes for fisheries are conducted according to agreed principles.
- Whether there is evidence of integration as per the mechanism referred to under architecture.

2.2.1 Methods

The extent to which transboundary processes are taking place for shared resources was determined by asking the relevant regional organisations what instruments were in place. For national stocks, namely shallow reef fishes, deep slope fishes and conch, countries were asked to indicate what instruments they had in place. In calculating the percentage of plans in place for shared resources, each regional organisation was considered to potentially have its own set of instruments. For example, given their different geographic coverage, each of CRFM, OSPESCA and WECAFC would be expected to have plans for a regionwide resource such as regional large pelagics. In contrast, for spiny lobster, each organisation would only be expected to have plans for the stocks within their geographic mandate.

2.2.2 Results

Instruments in place

Looking first by resource grouping we see that there is very little in place by way of regional level process indicators for regional large pelagics, shrimps and prawns and groundfish (Figure 2.4 although they are included in broad generic policies of the regional fisheries bodies). Oceanwide large pelagics, managed by ICCAT, spiny lobster and conch have received considerably more management attention and are therefore covered by fuller sets of instruments. For sea turtles, CITES and the regional fisheries bodies have most of the required instruments in place. Only two arrangements pertained to cetaceans, CRFM which has policy concerning them, and the International Whaling Commission which has a set of instruments covering humpback whales.

Looking by instruments in Figure 2.4, it is clear that policies and strategic plans are more common than actual management plans, legislation and regulations. Notably, ICCAT and IWC would not be expected to have legislation as each is governed by an international convention. It should be noted that information was not sought on national level instruments for transboundary stocks, because transboundary or regional instruments are considered to be necessary for their effective management.

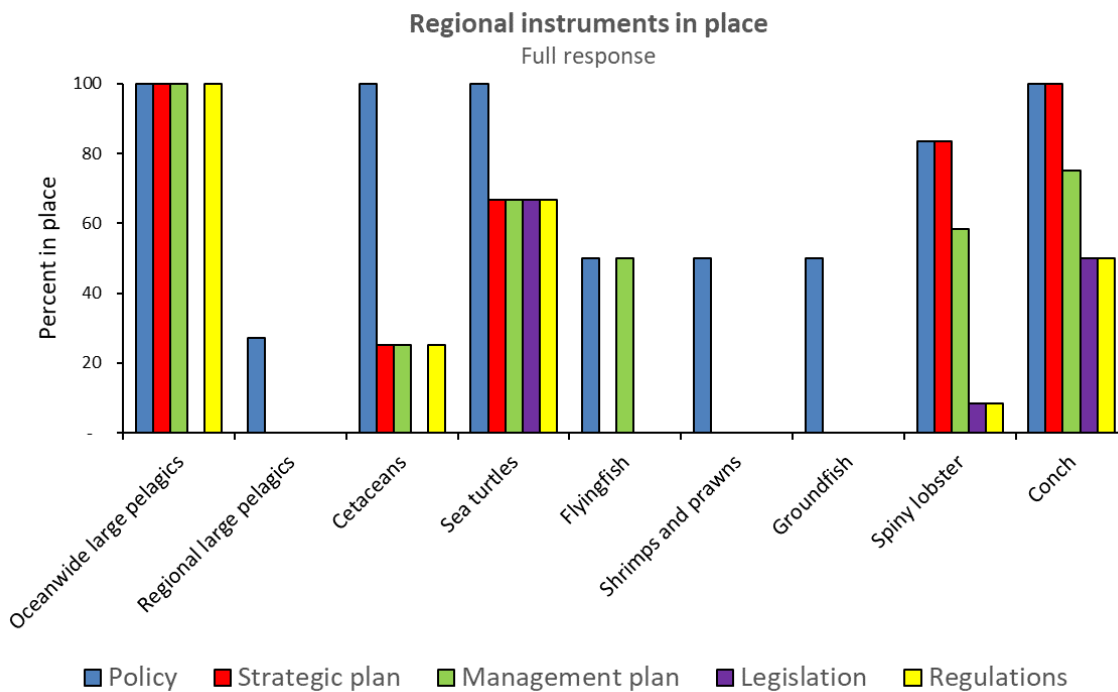


Figure 2.4. The extent of regional instruments in place for shared stocks as indicators of governance processes taking place.

Turning to national instruments for reef and deep slope fishes it is notable that there is very little in place across all groups and species (Figures 2.5, 2.6). Among shallow reef fishes there

was slightly more in place for snappers, groupers, parrotfishes and sharks/rays than for the other groupings. Also notable is that legislation and regulations are often not supported by policy and planning instruments. For conch the prevalence of legislation and regulations over plans is understandable because the former are developed in response to regional plans and CITES directives (Figure 2.7).

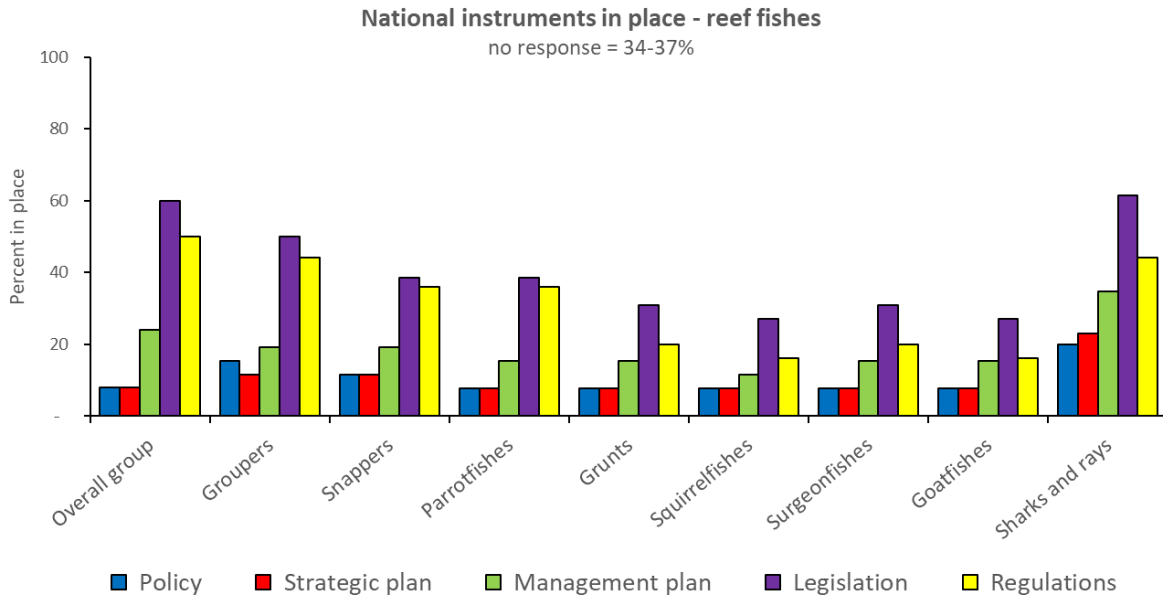


Figure 2.5. The extent of national instruments in place for shallow reef fish stocks as indicators of governance processes taking place.

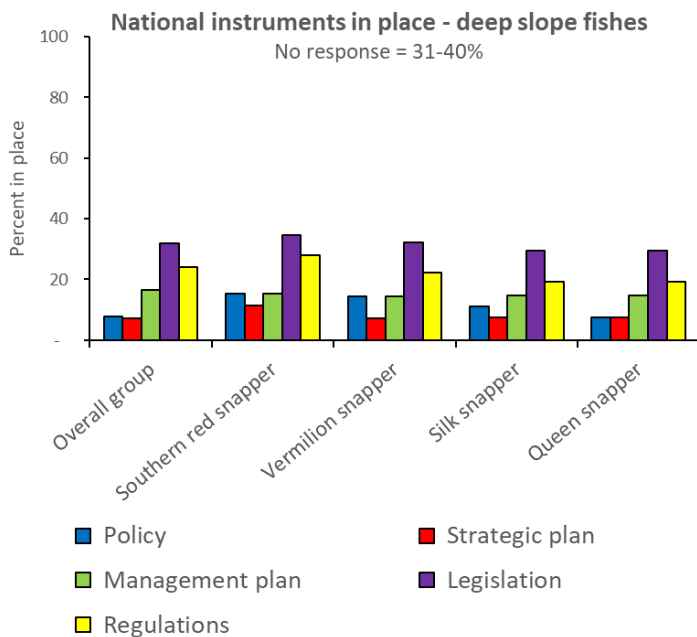


Figure 2.6. The extent of national instruments in place for deep slope fish stocks as indicators of governance processes taking place.

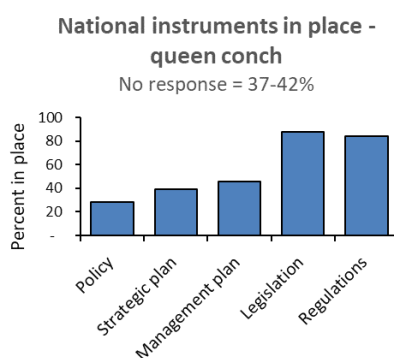


Figure 2.7. The extent of national instruments in place for conch stocks as indicators of governance processes taking place.

Altogether, the picture is one of significant gaps in management instruments for some groups of shared stocks and low incidence for national stocks, indicating the need to make fisheries management more process based.

Processes according to principles

Evidence that the processes generating the outputs described in the section above are taking place according to international governance principles will require a substantial research effort that was beyond the scope of this baseline study. Examples of the type of research that could be conducted can be found in Mahon and Phillips (2012) for the Guianas-Brazil region, Mahon (2013) for reef fish fisheries on Pedro Bank, Jamaica, and Fanning (2012) for Central American lobster. Those reports examine the extent to which various stakeholder groups considered principles to be reflected in fisheries processes in the those fisheries.

Engagement in integration mechanism

There was full engagement by the three regional fisheries organisations (CRFM, OSPESCA, WECAFC) in the Fisheries Interim Coordination Mechanisms since its establishment at the end of the current (baseline) assessment period. The mechanism does not include a way for countries to participate, other than through the CLME+ Project Steering Committee.

2.3 Pressure indicators

Pressure indicators tell the extent to which there are human behaviours and activities that lead to undesirable fishery resource states. Three indicators were used to characterise pressure on fisheries for the range of indicator stocks. The indicators were whether:

- Fishing effort/catch was at an agreed level
- Use of destructive fishing gear was minimised
- Illegal, unreported and unregulated (IUU) fishing was minimized

2.3.1 Method

In each case an ordinal scale response was sought from regional organisations for shared stocks and countries for national stocks.

2.3.2 Results

Fishing effort/catch at agreed level

Figure 2.8 shows the extent to which fishing effort or catch was at an agreed level for groupings of shared stocks. In this figure, the overall group is not an average, but is a separate score for the collective category which was included in case they were managed as an overall group. Notable is the extent to which there was no agreed level of fishing effort or catch, especially for regional large pelagics and groundfish. These two groups support extensive small-scale fisheries in this region. The same situation prevails at the national level for shallow reef fishes (Figure 2.9) and deep slope fishes (Figure 2.10). These findings underscore the need for assessment and management of these shallow and deep reef species.

In the case of oceanwide large pelagics, the species for which there is no agreed level are skipjack tuna, kingfishes and marlins. Eastern Caribbean flyingfish is at an agreed precautionary level which was set at the existing level of catch/effort at the time. Shrimp stocks are predominantly overexploited, and have been for decades. For conch, agreed national levels are determined by assessments done for CITES. Still, there appear to be conch stocks for which there is no agreed level (Figures 2.11).

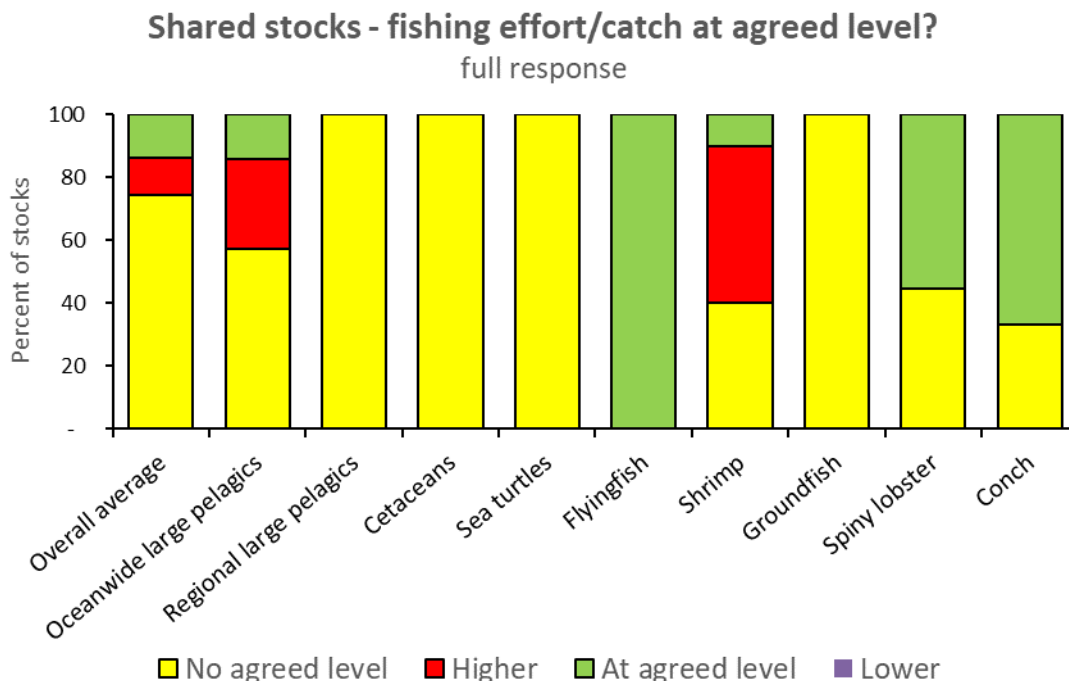


Figure 2.8. The extent to which fishing effort or catch was at an agreed level for groupings of shared stocks.

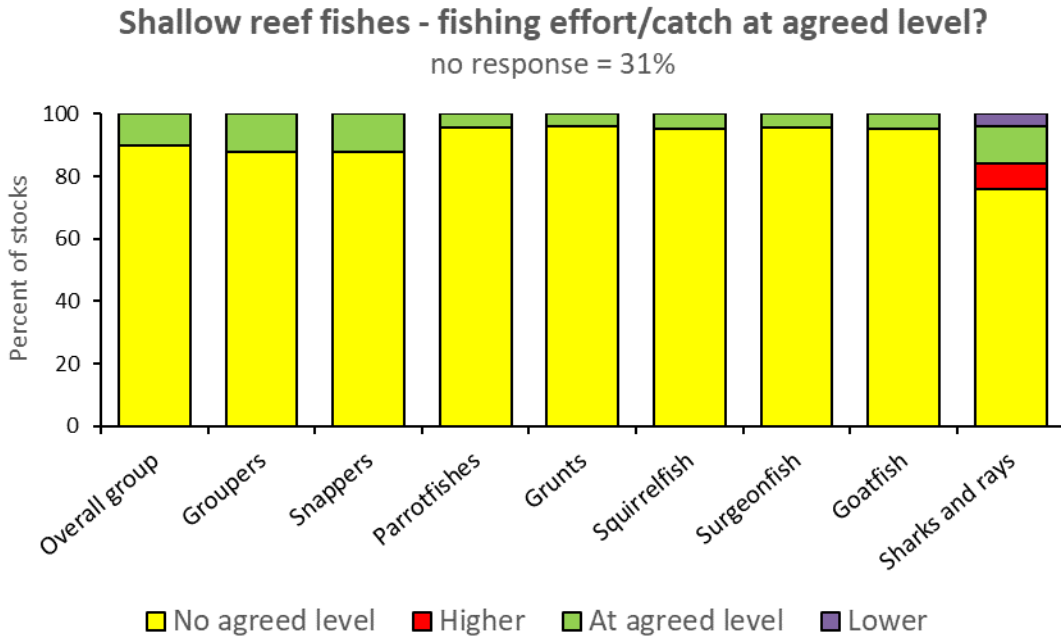


Figure 2.9. The extent to which fishing effort or catch was at an agreed level for groupings of shallow reef fishes.

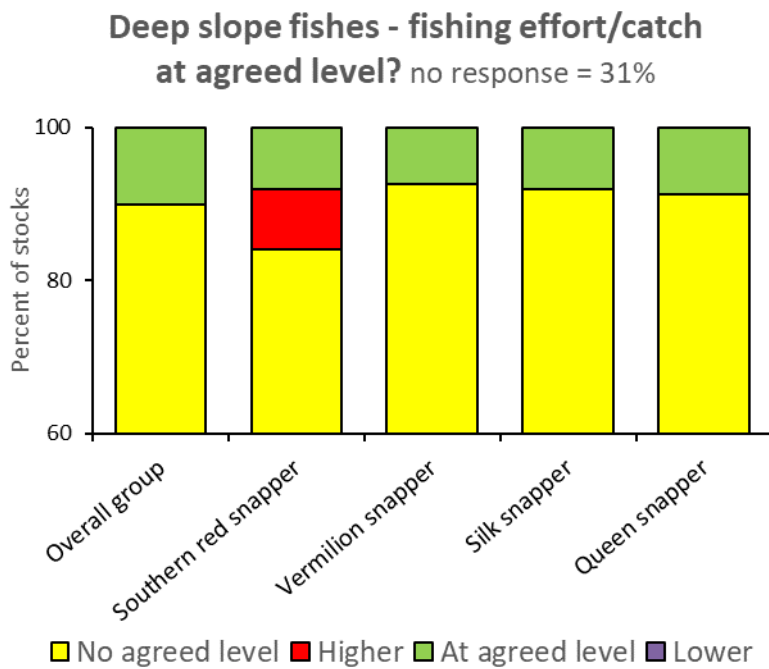


Figure 2.10. The extent to which fishing effort or catch was at an agreed level for key deep slope fish stocks.

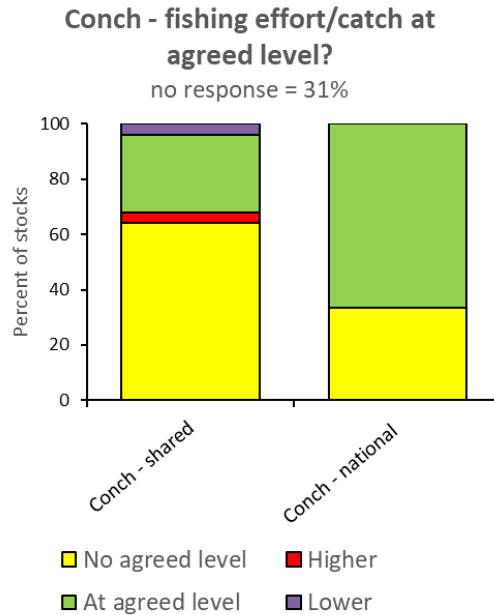


Figure 2.11. The extent to which fishing effort or catch was at an agreed level for conch stocks as reported by regional organisations and countries.

Destructive fishing minimized

Figure 2.12 shows the extent to which destructive fishing was at an agreed level for groupings of shared stocks. The large extent to which this was deemed to be ‘not an issue’ indicates that this may not be as widespread a problem as thought when developing the indicators. Nonetheless, where the problem does occur it can be severe, as in the case of groundfishes and spiny lobster. In both cases there were differences in opinion among agencies as to whether it was a problem or not. Surprising was the extent to which destructive gear was considered to be ‘not an issue’ for shallow reef fishes (Figure 2.13). The use of small mesh seine nets, tangle nets, small mesh traps, and even dynamiting in reef related habitats is extensive throughout the region. The response may also be determined to some extent by whether respondents perceive spearfishing as destructive. Detailed information on the types of gear was not sought in the survey.

In contrast to shallow reef species, use of destructive gear for deep slope species would not be expected to be a widespread issue as is confirmed in Figure 2.14. Nor did countries perceive destructive fishing to be an issue for conch (Figure 2.15). The main destructive practice for this species is removing the meats on the bottom and leaving the empty shells on the fishing ground. The use of hookah and inappropriate diving practices that put divers at risk is a social justice/fishing safety issue that is not covered by this question which focusses on the impact on the resources.

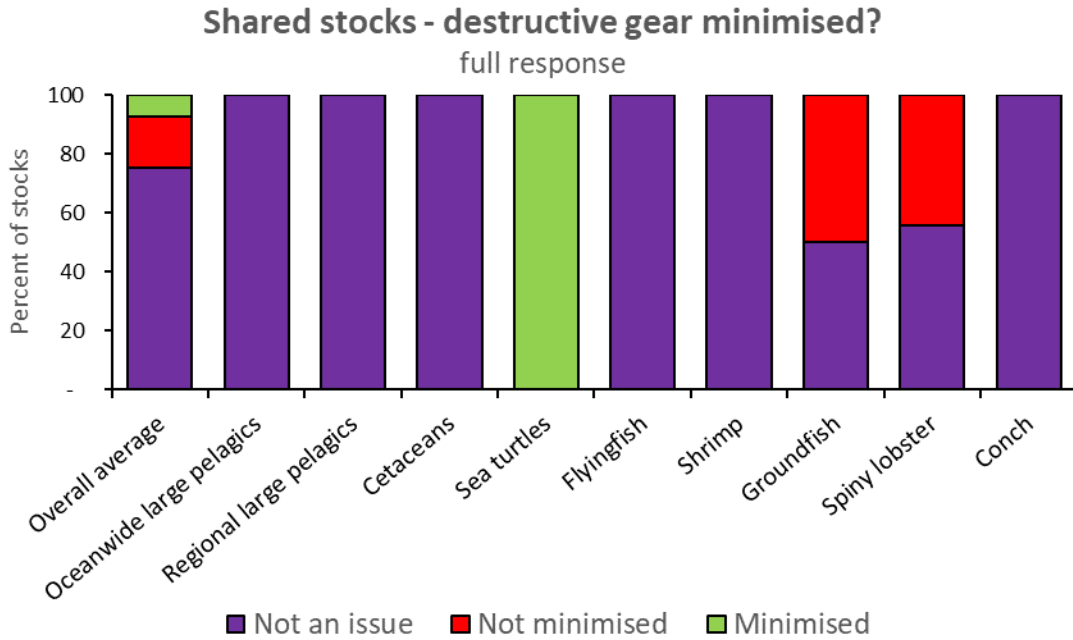


Figure 2.12. The extent to which destructive fishing was minimised for groupings of shared stocks.

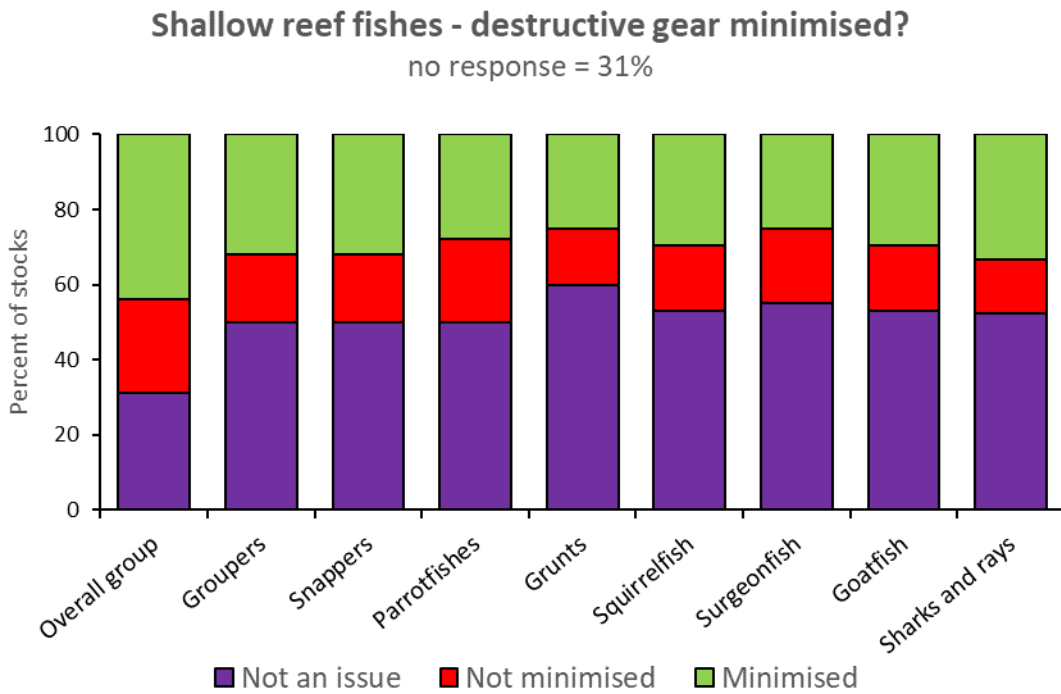


Figure 2.13. The extent to which destructive fishing was minimised for groupings of shallow reef fishes.

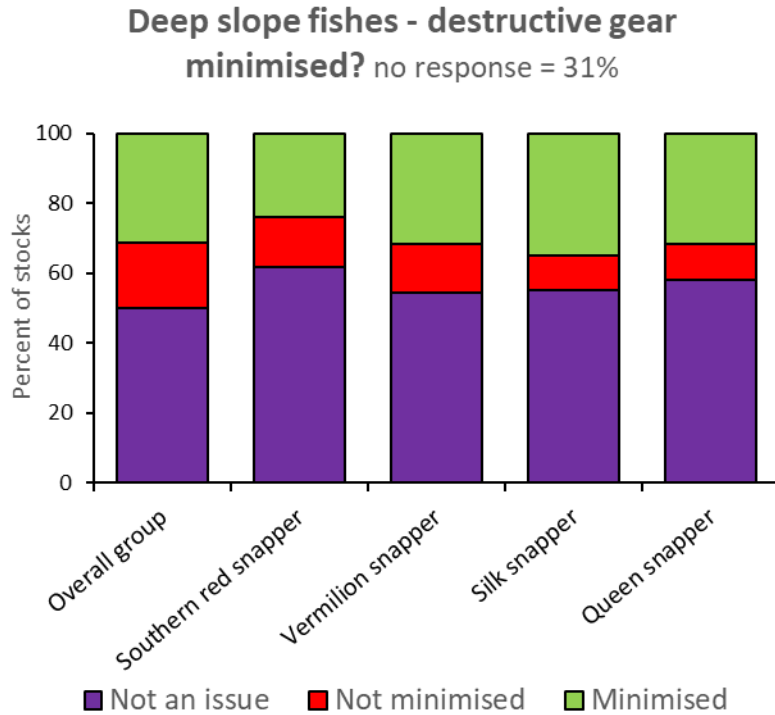


Figure 2.14. The extent to which destructive fishing was minimised for key deep slope species.

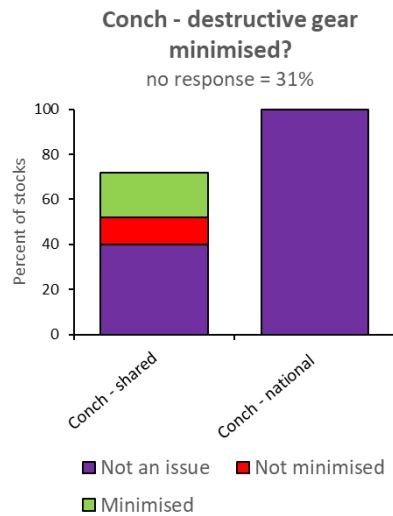


Figure 2.15. The extent to which destructive fishing practices were minimized for conch stocks as reported by regional organisations and countries.

IUU fishing minimized

Figure 2.16 shows the extent to which IUU fishing was considered to be minimized for groupings of shared stocks. The extent to which IUU fishing is either unknown or not minimized highlights the severity of this issue in this region, and the need for measures to assess and

address it. It was deemed to be 'not an issue' only for flyingfish and conch. IUU fishing is also largely either unknown or not minimized for shallow reef and deep slope fishes (Figures 2.17, 2.18).

It should be noted that IUU fishing is not just fishing by vessels from other countries, it includes illegal fishing by domestic vessels as well. However, if there is little or no management of reef and deep slope fishes as indicated by the absence of agreed levels of effort or catch for these species, it follows that there are few regulations and that fishing cannot be illegal, even though stocks may be severely depleted. The contrast between the perspectives of regional organisations and countries for conch (Figure 2.19) are interesting and unexplained.

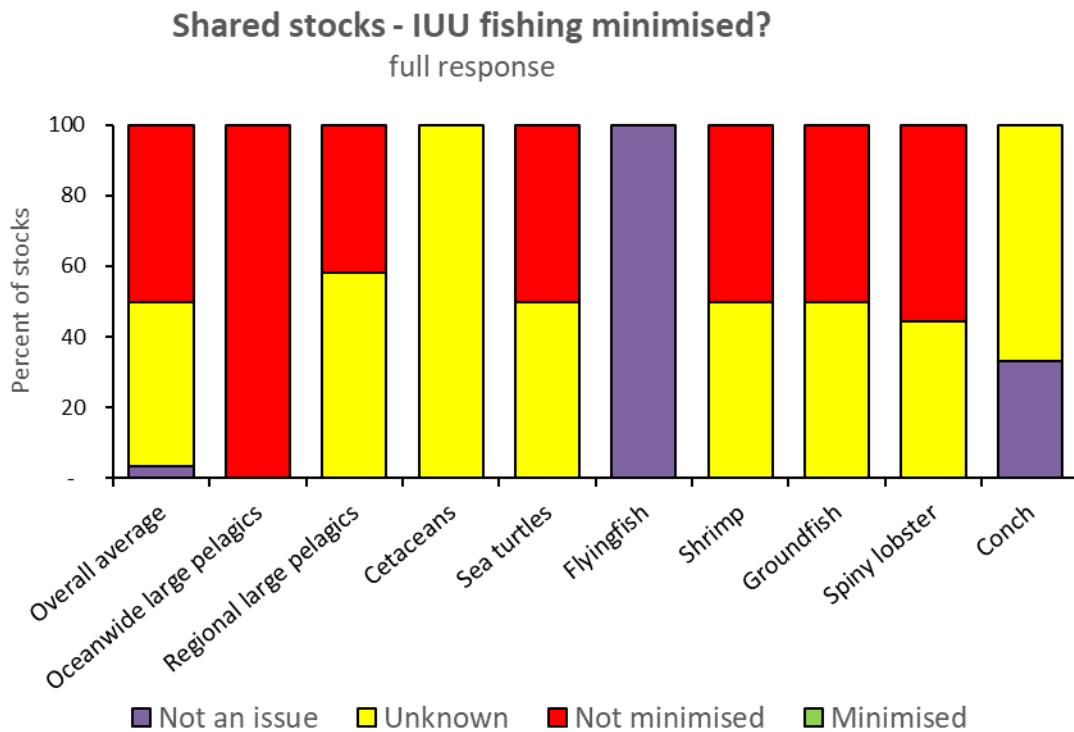


Figure 2.16. The extent to which IUU fishing was minimised for groupings of shared stocks.

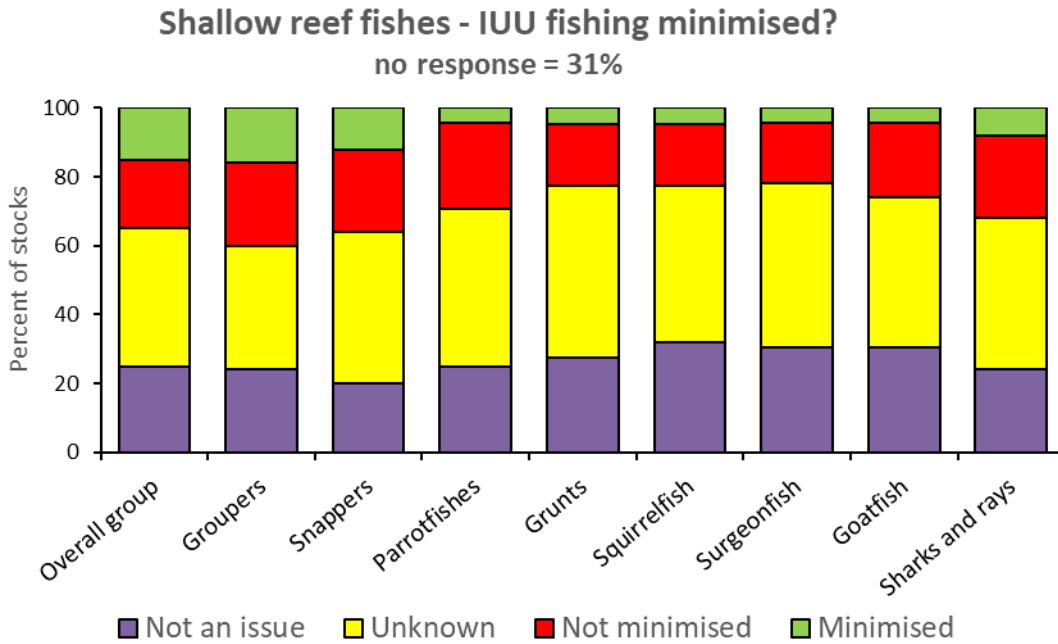


Figure 2.17. The extent to which destructive fishing was minimised for groupings of shallow reef fishes.

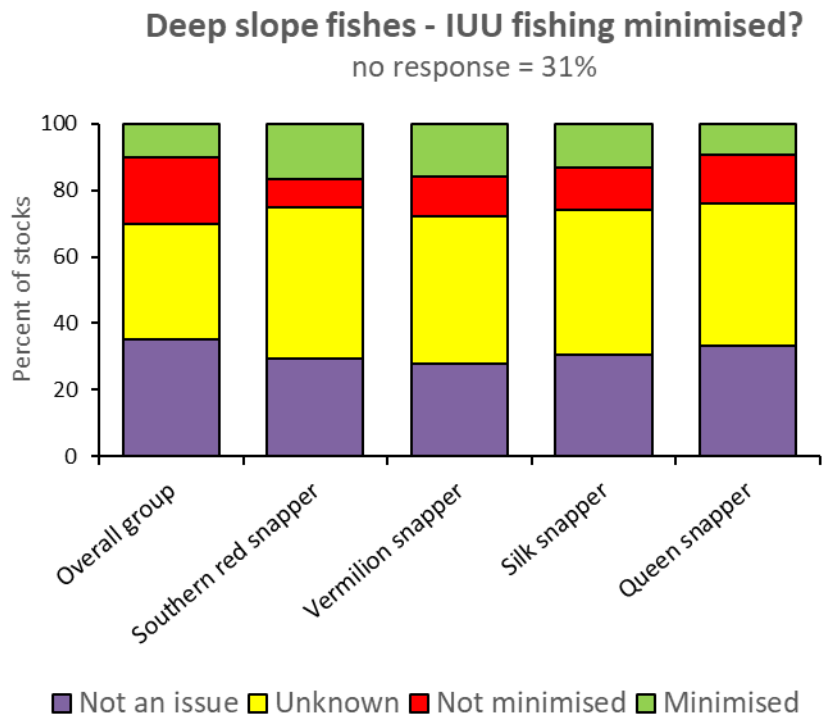


Figure 2.18. The extent to which IUU fishing was minimised for key deep slope species.

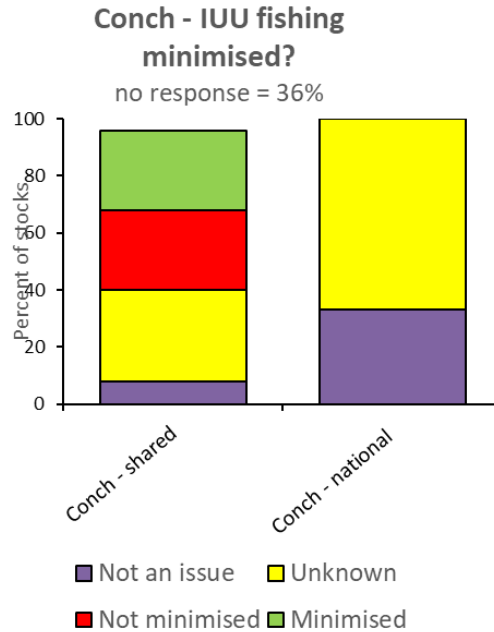


Figure 2.19. The extent to which IUU fishing was minimised for conch stocks a reported by regional organisations and countries.

2.4 State

The status of stocks indicates whether the preceding measures of establishing good governance and reducing pressure has actually resulted in improvement in stocks.

2.4.1 Methods

The status of stocks is reported on a ordinal scale in five categories which are the same as those used by FAO:

- 0 = Unknown
- 1 = Underexploited
- 2 = Fully exploited
- 3 = Overexploited
- 4 = Depleted.

The information was obtained from ICCAT reports for oceanwide large pelagics, from regional organizations (CRFM, OSPESCA, WECAFC) for shared stocks and from countries for national stocks. Shared stocks must be managed collectively through regional organisations and status must be assessed for the entire stock. While deep reef slope and shallow shelf reef fishes may be shared as adults or through transboundary movement of early life-history stages, they are treated as national stocks in this report.

2.4.2 Results

There is considerable variability in status among stocks (Figure 2.20). The most striking overall feature of this figure is the relatively large percentage of stocks for which status is unknown

(yellow). Also prominent is the relatively low percentage of stocks considered to be underexploited (green). Most stocks for which status is known are fully or overexploited.

While oceanic large pelagics are extensively assessed and heavily fished, mostly by large scale commercial fleets from outside the region, very little is known about regional large pelagics despite their critical importance for livelihoods of small-scale fishers throughout the region. Little is known about cetaceans and there is no management except for an indigenous quota for humpback whales from the IWC. Flyingfish, spiny lobster and conch are species into which considerable research and management effort has been invested. This is reflected in their fully exploited status.

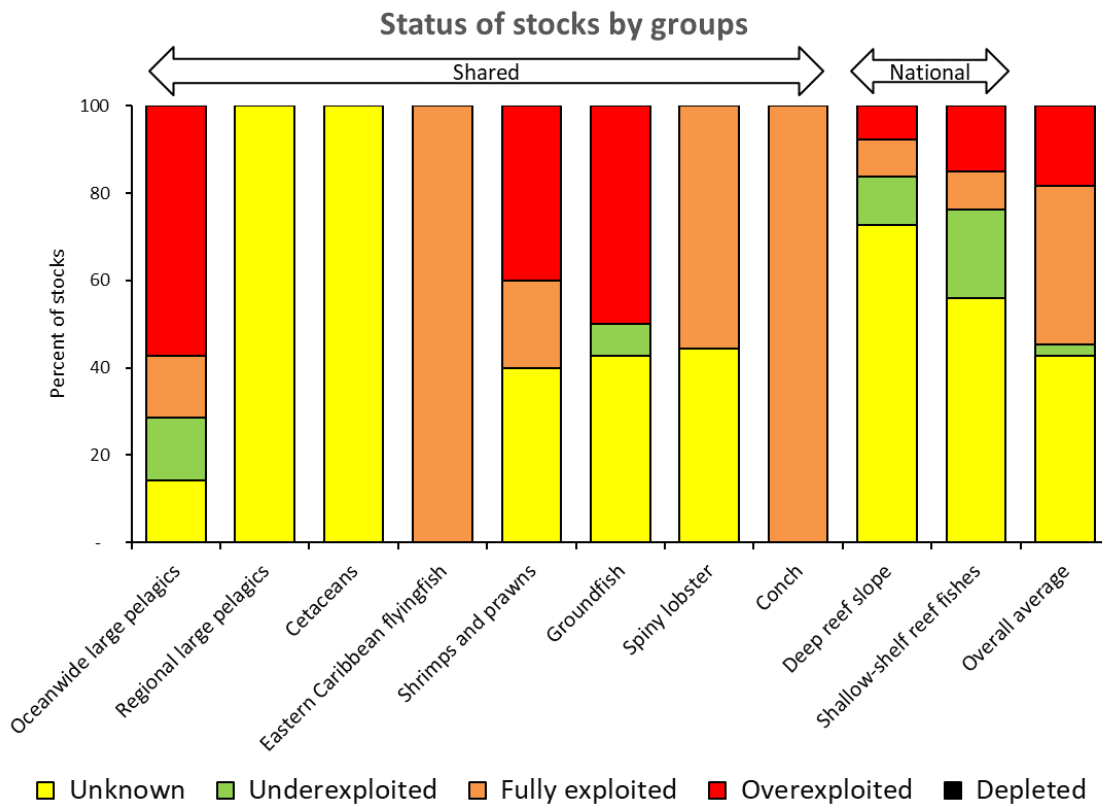


Figure 2.20. Overall summary of the status of stocks according to responses from IGOs for shared stocks and from countries for national stocks.

Looking more closely at shallow-shelf reef fishes, there is also a high proportion of unknown status, although the situation is slightly better for groupers than for other species groups (Figure 2.21). The situation is similar for deep-slope fishes, with little variability among indicator species (Figure 2.22a). The difference in regional and national perspectives for conch is interesting with IGOs rating all conch stocks as fully exploited (Figure 2.22b).

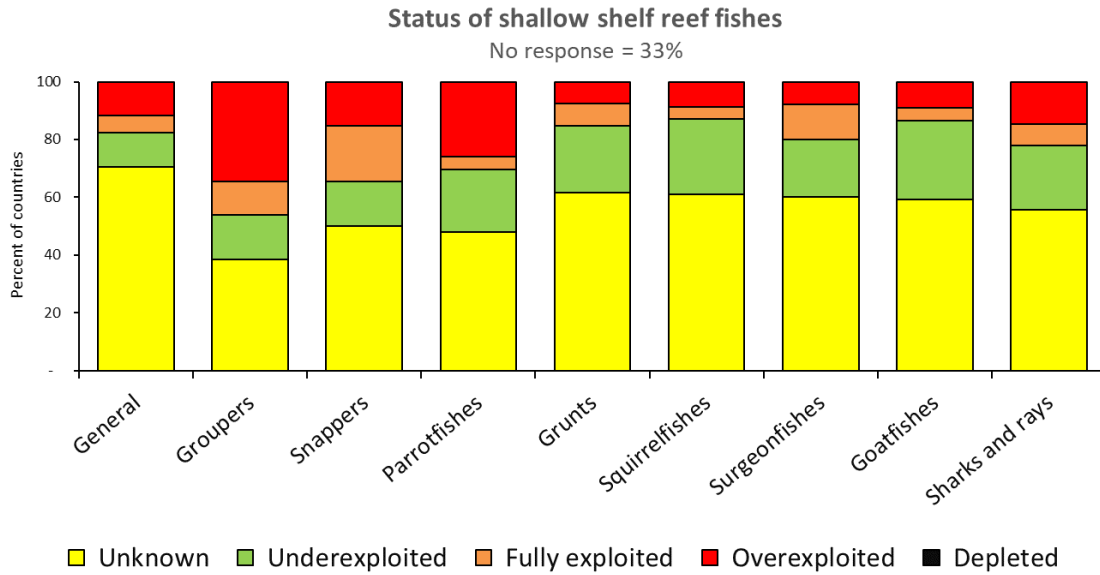


Figure 2.21. Status of shallow shelf reef fish stocks according to responses from countries.

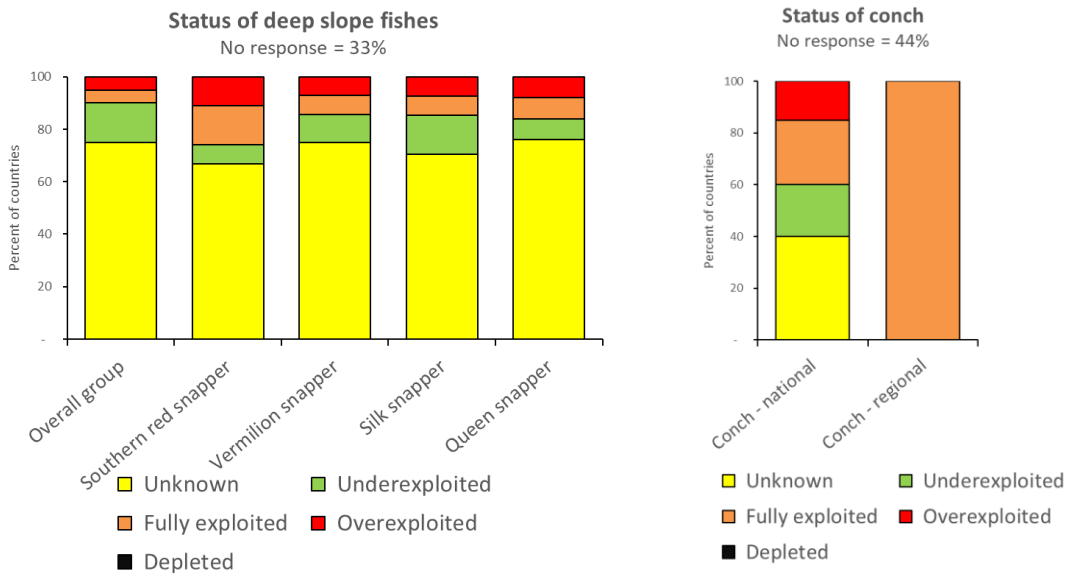


Figure 2.22. Status of (a) deep slope fish stocks according to responses from countries, and (b) conch according to regional organisations and countries.

2.5 Stakeholder engagement

The extent to which stakeholders were engaged in global and regional fisheries processes was explored in two ways:

- The first was the extent to which countries had signed on to the key global and region fisheries related agreements.

- The second was the extent to which various stakeholders (countries, other regional fisheries IGOs, regional fisheries NGOs, regional environmental NGOs, regional private sector) participated in meetings of the three regional fisheries bodies.

2.5.1 Methods

Data on country engagement in global and regional agreements were obtained from the websites of the organisations. A desktop review of the engagement of countries and territories in relevant global and regional fisheries related agreements was conducted and the level of their engagement in each relevant agreement was calculated as a percentage of the total that are eligible to be engaged. Data on stakeholder engagement in meetings of regional fisheries bodies were obtained from reports of the meetings of these bodies. The meetings for which this information was sought was the highest level body of the organisation: the CRFM Fisheries Forum, the WECAFC Commission meetings and the OSPESCA Meeting of Directors of Fisheries and Aquaculture.

2.5.2 Results

Engagement in global and regional fisheries related agreements

Country engagement in global fisheries-related agreements is highly variable (Figure 2.23). It is highest for the long standing agreements such as UNCLOS, the FAO Code of Conduct for Responsible Fisheries which is voluntary, and CITES. It is lowest for the FAO Port States and Compliance Agreements. There is considerable scope for states to increase engagement with most of these global agreements.

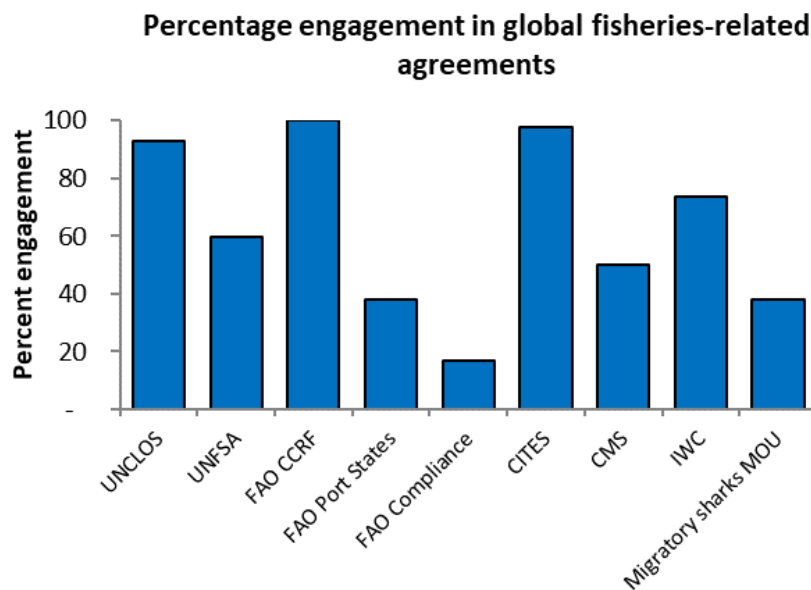


Figure 2.23. Country engagement in global fisheries-related agreements (From left to right - United Nations Convention on the Law of the Sea, United Nations Fish Stocks Agreement, FAO Code of Conduct for Responsible Fisheries, FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, FAO Compliance Agreement,

Convention on International Trade in Endangered Species, Convention on Migratory Species, International Whaling Commission, Convention on Migratory Species Migratory Sharks MOU).

In contrast, engagement of countries with regional fisheries agreements is relatively high (Figure 2.24). Low engagement with OLDESPESCA is probably due to its focus being more in South America than the Caribbean. Engagement with ICCAT is complex as CRFM engages with ICCAT on behalf of its member countries that are members of ICCAT. Others may then see that their interests are being represented and not feel the need to join, as it is expensive.

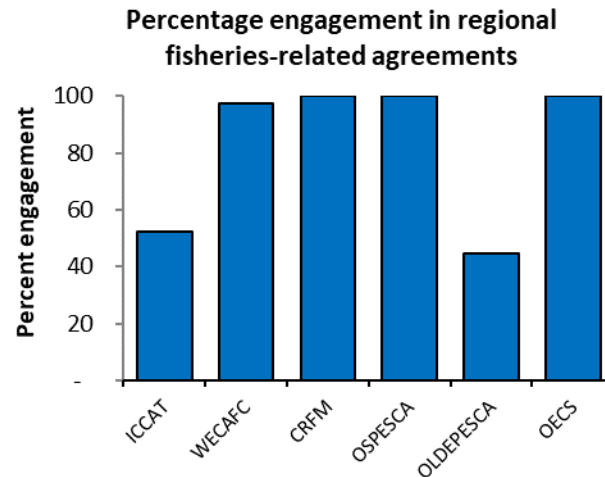


Figure 2.24. Country engagement in regional fisheries-related agreements (From left to right – International Convention on the Conservation of Atlantic Tunas, FAO Western Central Atlantic Fisheries Commission, Caribbean Regional Fisheries Mechanism, Central America Fisheries and Aquaculture Organization, Latin American Organization for Fisheries Development, Organisation of Eastern Caribbean States).

Engagement in regional fisheries policy processes

The percentage of eligible countries participating in the meetings of the three regional fisheries IGOs is high for CRFM and OSPESCA and somewhat lower for WECAFC (Figure 2.25a). In contrast the percentage of other regional fisheries IGOs (Figure 2.25b) and ocean sustainable development IGOs (UNEP CEP, Caribbean Sea Commission (CSC), IOCARIBE, CAR-NBS SAP, ECLAC, OECS, IMO, IAC) (Figure 2.25b) participating in the meetings of these fisheries bodies is low.

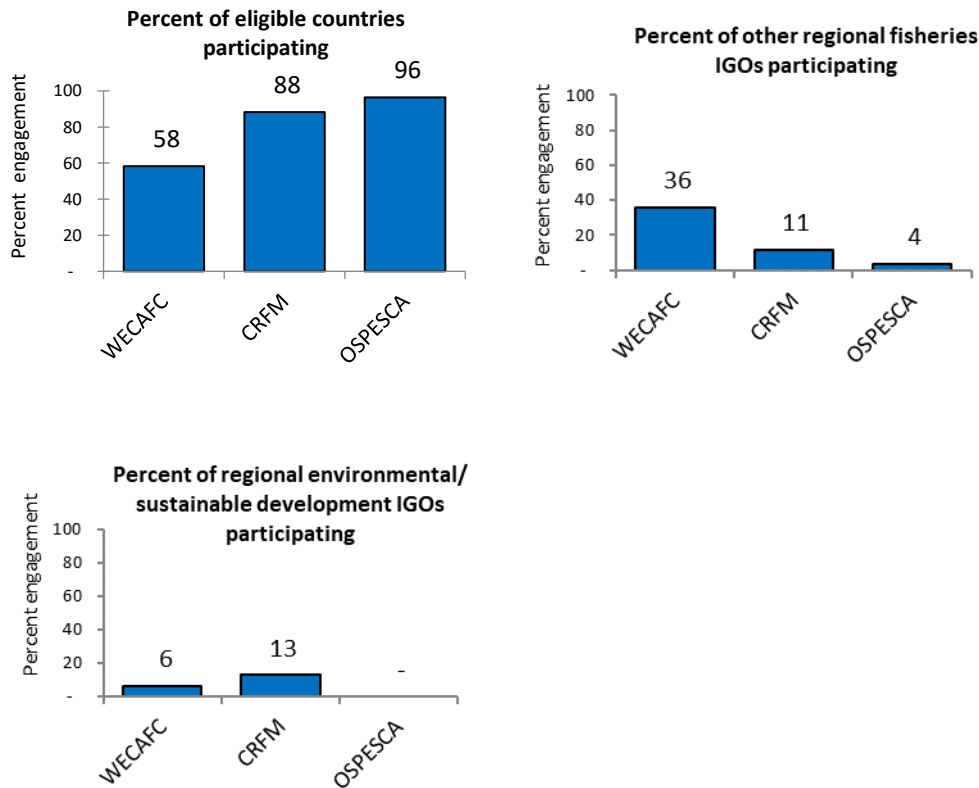


Figure 2.25. (a) Country engagement (b) engagement of regional fisheries-related IGOs, (c) engagement of regional environment/sustainable development IGOS in meetings of regional fisheries IGOs.

For NGOs and private sector, percentage participation could not be determined as the total number of entities that could participate is unknown. Therefore, the actual number participating over the five-year baseline period is used:

- One regional fisheries NGO participated in the meetings of CRFM (4 times) and WECAFC (1 time), but none participated in OSPESCA.
- Private sector participated in the WECAFC Commission on two occasions
- Five regional environment/sustainable development NGOs participated in CRFM meetings, four in WECAFC meetings and none in OSPESCA meetings.

2.6 Social justice

Two approaches were taken to assessing the extent to which policies addressing social justice issues were present. The first was the extent to which the issues were reflected in the policies of the regional fisheries IGOs. The second was the extent to which they were reflected in national policies. The issues explored were:

- Participation of women
- Preservation of cultural traditions
- Disadvantaged groups

- Equitable access to the resource
- Distribution between SSF and LSF
- Fisher folks labour rights
- Socially just measures to reduce fishing pressures.

2.6.1 Methods

The respective IGO and national data were sought in the questionnaires.

2.6.2 Results

Social justice policies in regional fisheries organisations

Whether the issues were addressed in the regional fisheries agreements or policies of the three regional fisheries bodies, CRFM, OSPESCA and WECAFC is shown in Table 2.3. All issues are covered by WECAFC, and most by CRFM and OSPESCA. This is not unexpected given that the FAO Code of Conduct and Small-Scale Fisheries Guidelines extensively cover social justice issues. Notably missing from both CRFM and OSPESCA are overarching policies that ensure socially just fisheries management. These are needed to ensure that fisheries management measures do not place an unjust burden on any particular group of stakeholders.

Table 2.3. The extent to which social justice issues are addressed in regional fisheries agreements and policies.

Social justice issues	IGOs		
	WECAFC	CRFM	OSPESCA
Participation of women	✓		✓
Preservation of cultural traditions	✓		✓
Disadvantaged groups	✓	✓	✓
Equitable access to the resource	✓	✓	✓
Distribution between SSF and LSF	✓	✓	✓
Fisher folks labour rights	✓	✓	
Socially just measures to reduce fishing pressures	✓		

Social justice policies in countries

The extent to which the social justice issues were addressed in national policies is shown in Figure 2.26. The presence of social justice policies is lower across all issues than is desirable. Lowest are policies for fisher folk labour rights and disadvantaged groups. The high proportion of not applicable for SSF-LSF distribution is understandable as several countries do not have large-scale fisheries. Less understandable is why some countries consider the other social justice areas (except equitable access) to be not applicable.

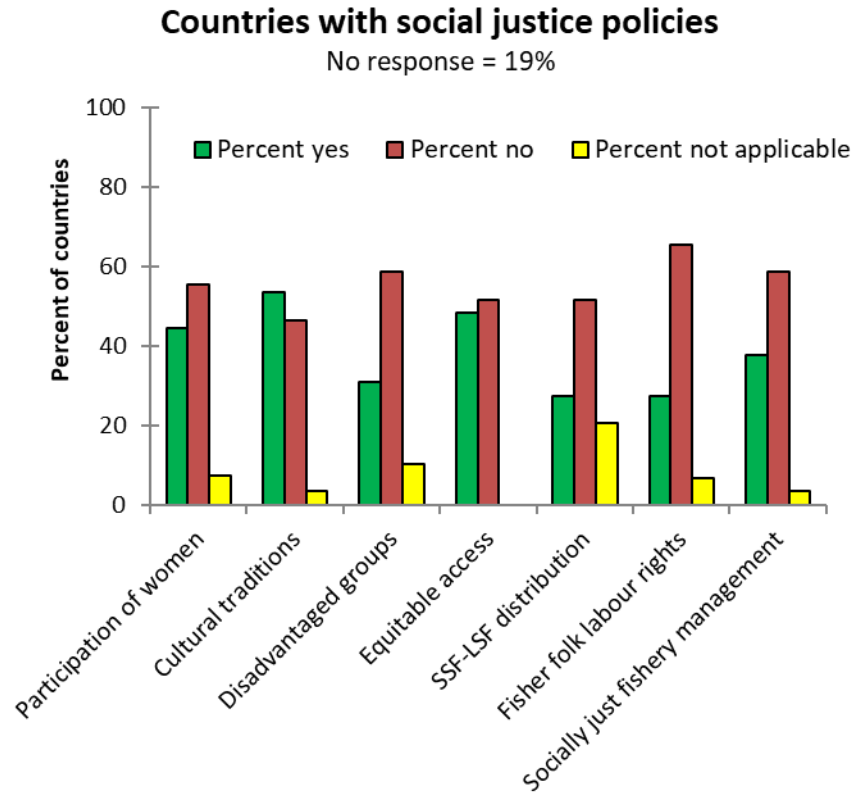


Figure 2.26. The extent to which social justice issues are addressed in national fisheries policies.

2.7 Human well-being

The following questions were considered to be the key ones regarding human well-being and fisheries:

- Food security been improved/assured?
- Fisher folk incomes increased?
- Malnutrition in fishing communities decreased?
- Loss of cultural identity reduced?
- Measures to reduce fish loss/ waste?
- Measures for fisher safety at sea.

The treatment of human well-being will be treated together for fisheries, pollution and biodiversity/habitats in section 5, as there is considerable overlap in the indicators selected.

3 Pollution

Although pollution in the CLME+ region affects the pelagic, coral reef and continental shelf subecosystem types, its impacts are typically more evident near the coast. Pollution problems can be linked to both land-based and marine sources and activities: e.g. tourism, households, industry, agriculture, forestry, mining, shipping and exploration for oil and gas. Generally, there is a direct link between the often more localized problems of marine pollution near the coast and the human activities occurring in these areas. However, land-based sources of pollution located at considerable distances from the sea may still impact the marine environment through increased sediment, nutrient and contaminant loads discharged into the CLME+ area by the region’s major rivers such as the Amazon, Orinoco and Magdalena in South America. The volume of maritime transport in the region suggests that this activity also constitutes an important (potential) source of pollution through the dumping of solid and liquid waste, the possibility of accidents including oil spills, and more chronic and insidious discharges while at sea and in port.

Based on these land-based and marine-based pollution threats, this assessment identified a need to address arrangements in place for two types of land-based sources of pollution (waste-water discharge and solid waste disposal) and three types of marine-based sources (oil spills, other liquids discharge and solid waste disposal). The principal regional organisations addressing these sources of pollution are UN Environment (UNE) (overseeing for the Cartagena Convention and its relevant protocols), the International Maritime Organization (IMO) (overseeing the Oil Pollution Response Convention (OPRC) and the Port State Control mechanisms (PSC-MoU). At the subregional level, the principal organisations addressing these sources of pollution are the Caribbean Public Health Agency (CARPHA) and the Comisión Centroamericana de Ambiente y Desarrollo (CCAD)

As previously mentioned in Chapter 1, the identification of indicators to assess each of the seven categories of the GEAF with respect to regional, subregional and national efforts to address land-based and marine-based pollution were guided by a suite of questions. These are presented in Table 3.1 below.

Table 3.1. GEAF pollution guiding questions to be addressed by indicators

Architecture
Are there mechanisms for integrating regional/subregional pollution policy cycles at the policy level?
Are arrangements in place to address marine pollution governance at regional/subregional levels?
Are there mechanisms in place to ensure national-regional interaction?
Process
Is there regional/subregional policy in place for pollution? (UNEP, CCAD, CARPHA)
Are there regional/subregional strategic plans in place for pollution?
Are there regional/subregional management plans in place for pollution?
Is there regional/subregional (harmonised) legislation in place for pollution?
Are there regional/subregional (harmonised) regulations in place for pollution?

Table 3.1. GEAF pollution guiding questions to be addressed by indicators

Do countries have a policy, strategic plans, management plans, legislation and regulations in place for pollution?
Do countries have national standards and a monitoring program in place for pollutants in effluents?
Pressure
Are land-based sources of pollution inputs reduced to agreed-upon levels? (Industrial wastewater, Domestic wastewater, River inputs, Nutrients in agricultural run-off, Solid waste)
Are marine-based sources of pollution reduced to agreed-upon levels? (Oil spills, waste water, Solid waste)
State
Is marine water quality at agreed upon levels?
Is information on marine water quality shared?
Stakeholder Engagement
Are pollution agreements well subscribed to?
Are the pollution stakeholders identified below participating in regional/subregional processes?
Are country environmental agencies participating in regional/subregional pollution processes?
Are other regional IGOs (environmental and fisheries) participating in regional/subregional pollution processes?
Are regional NGOs participating in regional/subregional processes?
Are regional private sector bodies participating in regional/subregional pollution processes?
Social Justice
Do regional, subregional and national pollution instruments include specific reference to disadvantaged groups and minorities?
Are the measures taken to reduce pollution pressures socially just (differentially negatively impacting certain groups)?
Are there measures allowing for recourse against pollution impacts?
Human Well-Being
Has pollution reduction protection benefitted human health?
Has pollution reduction benefitted livelihoods?
Has pollution reduction resulted in improved access to recreational amenity areas?
Has loss of cultural identity with coastal ecosystems and resources been reduced?

3.1 Architecture

In response to the questions pertaining to Architecture in Table 3.1, three indicators were used to assess the current institutional structure in place to facilitate decision-making, planning and implementation affecting the two types of land-based sources and the three types of marine-based pollution.

- Presence of a mechanism to integrate regional policy cycles for pollution.
- Strength of arrangements in place for each type of pollution, where strength of arrangement is based on calculated completeness scores times percentage of countries in the arrangement.
- Status of National Intersectoral Committees (NICs) to facilitate bidirectional flow of cross-sectoral national input into regional and subregional decision making.

3.1.1 Methods

For a detailed description of methods used, please see Appendix 3.

- Completeness is based on an assessment of each stage of the policy cycle for each agreement in place regionally and subregionally and the operational rules of the organisations responsible for implementing the agreement. The calculation of a completeness score is based on the methodology developed for the TWAP ABNJ assessment (Mahon et al. 2015).
- Coverage is based on the percentage of countries within the region that are in the arrangement.
- NICs assessment is based on a percentage of countries with NICs deemed to be active, planned for the near future, inactive and not present based on the presence of nine criteria (McConney et al. 2016).

3.1.2 Results

The results for each of the three indicators for Architecture addressing transboundary sources of land-based and marine-based pollution are presented below.

3.1.2.1 *Presence of integrating mechanism*

While the Cartagena Convention and its protocols can be said to address all five types of pollution (see Table 3.2), the only overarching mechanism in place that integrated all of the arrangements addressing pollution at the regional and subregional level during the baseline period (2011-2015) was the Interim Coordinating Mechanism for the CLME+ SAP which was established in 2015.

3.1.2.2 *Strength of Arrangements*

The average strength of the arrangements addressing the five types of pollution sources are shown in Figure 3.1, based on the individualised assessment for each of the regional and subregional organisations involved in these arrangements (Table 3.2).

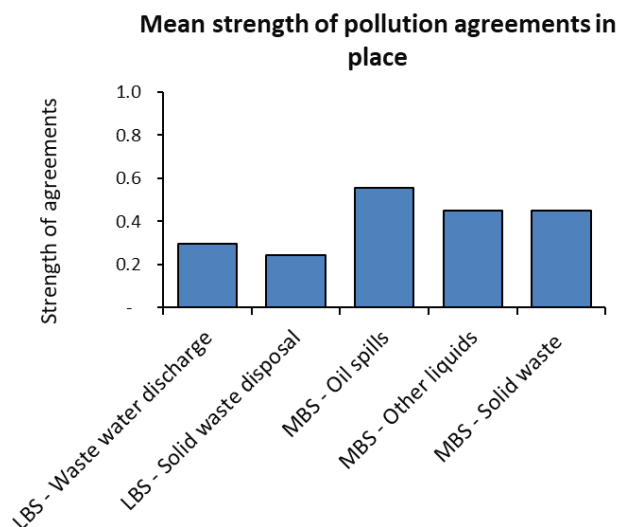


Figure 3.1. Average strength of all arrangements addressing land-based and marine-based sources of pollution

As shown in Table 3.2, the number of arrangements for addressing each type of pollution source ranges from one (UNE – LBS protocol addressing land-based solid waste) to three (UNE-LBS, CCAD and CARPHA addressing land-based waste-water discharge). The three marine-based sources of pollution each have two arrangements with the arrangements for oil spills (UNE – Oil spill protocol and IMO-OPRC being assessed as the strongest due to the high level of completeness of the protocol as well as the proportion of countries covered by the protocol). Nonetheless, the analysis for the baseline period shows that there is considerable room for improvement through strengthening arrangements and developing fuller geographic coverage through MOUs among organisations or broadening country membership in organisations.

Table 3.2. Strength of each arrangement addressing land-based and marine-based sources of pollution

Arrangement	Land-based sources of pollution		Marine-based sources of pollution		
	Waste-water discharge	Solid waste disposal	Oil spills	Other liquids discharge	Solid waste disposal
UNE - Cartagena Convention				0.5	0.5
UNE – LBS Protocol	0.2	0.2			
UNE – Oil Spill Protocol			0.8		
IMO – PSC MOUs				0.4	0.4
IMO - OPRC			0.3		
CCAD	0.1				
CARPHA	0.5				

3.1.2.3 National Intersectoral Committee (NIC)

The assessment of the status of NICs in the countries or territories of the CLME+ area during the baseline period (2011-2015) is the same for all three transboundary issues. For the findings on NICs, please see section 2.1.2.3 of this report.

3.2 Process

Process indicators assess the degree to which the structure of the arrangement is actually being implemented, including mechanisms in place to ensure vertical (between national to regional) and lateral (across different sectors) interactions among the policy actors. In response to the questions pertaining to Process in Table 3.1, the following indicators were determined useful to assess the current processes in place to facilitate decision-making, planning and implementation for the two types of land-based sources and the three types of marine-based pollution:

- Presence of governance instruments (policy, strategic plan, management plan, legislation, regulations) at regional/subregional and national levels.
- Presence of national standard for a subset of pollutants in effluents, monitoring program and type of pollutants identified in the standard

3.2.1 Method

Data and information for the process indicators were acquired as follows.

- IGOs and countries and territories were requested to indicate the presence or absence of governance instruments (policy, strategic plan, management plan, legislation, regulations) addressing the five types of pollution sources and the results expressed as a percentage of having all possible instruments.
- Countries and territories were requested to indicate the presence or absence of:
 - a national standard for a number of pollutants in effluents being discharged at point sources
 - the requirement for monitoring pollutants in effluents being discharged
 - the type of the pollutant indicators identified in the standard

3.2.2 Results

The results for each of the three indicators for the process category of the GEAF that address transboundary sources of land-based and marine-based pollution are presented below.

3.2.2.1 Presence of governance instruments

Figure 3.2 illustrates the overall percent of governance instruments (policies, strategic plans, management plans, legislation and regulations) in place to address land-based sources and marine-based sources of pollution based on all of the possible regional (IMO-OPRC and PSC MOU; UNE Cartagena Convention, Oil Spill and LBS protocols) and subregional (CARPHA, CCAD) arrangements that could be in place to address these pollution sources.

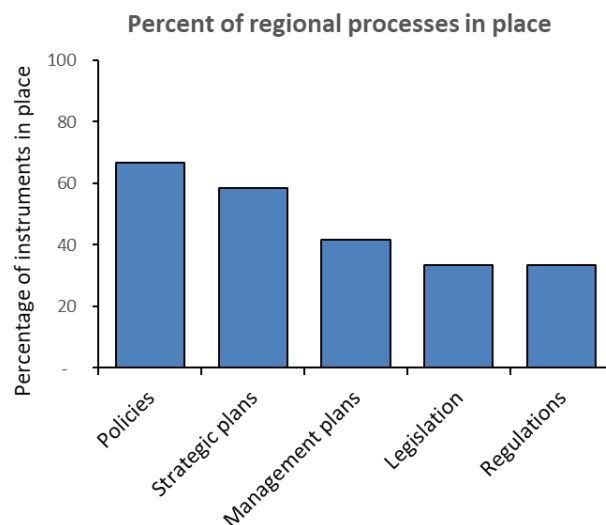


Figure 3.2. Overall percentage of governance instruments in place by regional and subregional organisations to address land-based and marine-based sources of pollution

Table 3.3 shows the detailed responses for each type of pollution source by each arrangement. As is evident from the Table, a total of 12 possible policies, strategic plans, management plans, legislation and regulations) could be put in place to address these pollution sources.

Table 3.3. Regional and subregional governance instruments in place to address land-based and marine-based sources of pollution.

Pollution Sources	Arrangements	Governance Instruments				
		Policies	Strategic plans	Management plans	Legislation	Regulations
Land-based waste water discharge	UNE-LBS protocol	✓	✓	✓	✓	✓
	CARPHA	✓	✓	✓		
	CCAD ²	n/r	n/r	n/r	n/r	n/r
Land-based solid waste disposal	UNE-LBS	✓				
	CARPHA					
	CCAD	n/r	n/r	n/r	n/r	n/r
Marine-based oil spills	UNE-Oil spill protocol	✓	✓	✓	✓	✓
	IMO-OPRC	✓	✓	✓	✓	✓
Marine-based other liquids	IMO -PSC MoU					
	UNE – Cartagena Conv	✓	✓			
Marine-based solid waste disposal	IMO – PSC MoU	✓	✓	✓	✓	✓
	UNE – Cartagena Conv	✓	✓			

Based on the results, policies and strategic plans were the governance instruments most in place during the baseline period by regional and subregional organisation. Additionally, these were most evident among the regional arrangements for both land-based and marine-based

² No response was provided by CCAD

sources of pollution. It is also worth noting that only the regional arrangements were likely to have governance instruments addressing marine-based sources of pollution.

National level governance instruments: Given the expectation that states would have some concern over sources of pollution being discharged into their nearshore waters and the overall quality of their marine waters, data regarding the presence of governance instruments were also solicited from the national level. Figure 3.3 illustrates the percentage of responding countries and territories having national level instruments for the following land-based sources of pollution while Figure 3.4 shows the results from responding countries and territories for the following marine-based sources of pollution:

- Land-Based Sources – Industrial waste water effluent, domestic waste water effluent, sediment in run-off, nutrients in agricultural run-off and solid waste
- Marine-Based Sources – Oil pollution, waste water, solid waste

Regarding land-based sources (Figure 3.3), based on approximately half of all countries and territories responding to the request for data, at least 80% of respondents had legislation in place for industrial and domestic waste water discharges and for solid waste discharge and the response for regulations in place for these three types of pollution sources ranged from 66% to 80%. Non-responses from countries and territories addressing sediment run-off and nutrients in agricultural run-off ranged from 52% to 60%. These two types of land-based sources of pollution had the least number of governance instruments in place, suggesting improvements are needed to better govern these non-point sources of land-based pollution into the marine environment.

Overall, strategic and management plans were the most limiting instruments in place for all five types of land-based sources examined. This reflects often seen behaviour where efforts are expended to address issue by developing policies, legislation and regulation but fall short of developing and implementing strategic and management plans to actually achieve the policy objectives.

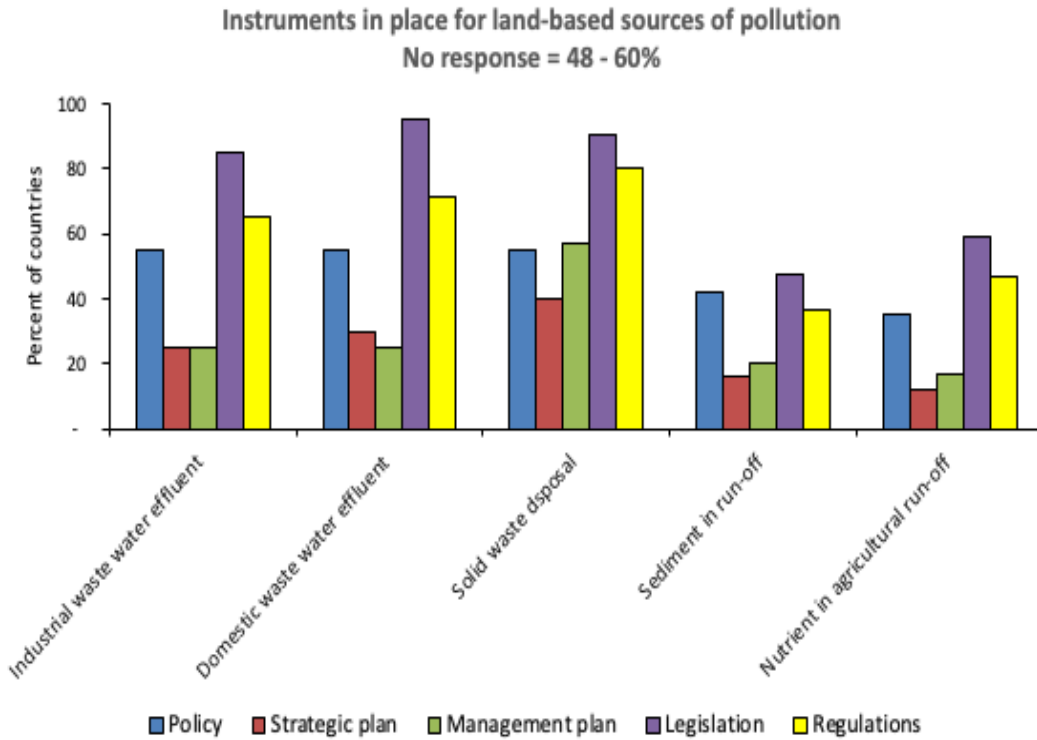


Figure 3.3. Percent of responding countries and territories having governance instruments in place for land-based sources of pollution.

As can be seen from Figure 3.4, the overall pattern for marine-based sources of pollution is similar to that of land-based sources with responding countries focusing on legislation and regulations to address marine-based sources of pollution. This is likely due to their compliance with international and regional conventions and protocols governing these types of pollution sources. However, as for land-based sources, the ability to actually achieve policy objectives aimed at marine-based sources of pollution are significantly limited by the low number of countries having strategic and managements plans in place.

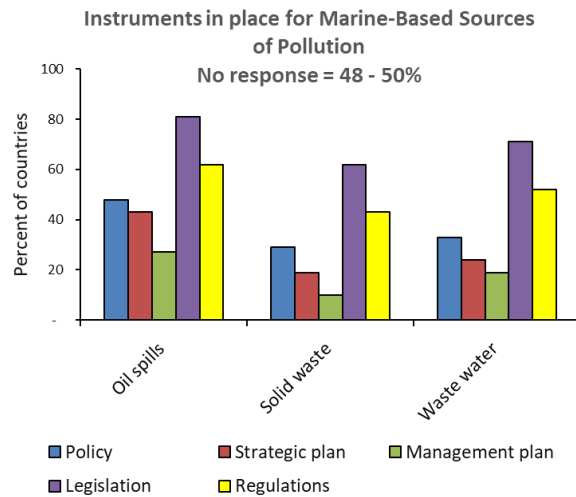


Figure 3.4. Percent of responding countries and territories having governance instruments in place for marine-based sources of pollution.

Countries and territories were also asked to provide data relating to having governance instruments in place for marine water quality for recreational waters as well as non-recreational waters. The results for these are provided in Figure 3.5 and 3.6. Both figures show the overall pattern of countries focusing on legislation and regulations continue but with a significantly lower level of countries having instruments in place. Approximately 60% of the responding countries and territories had legislation in place addressing recreational and non-recreational marine water quality followed by just under half of them having some form of regulations in place.

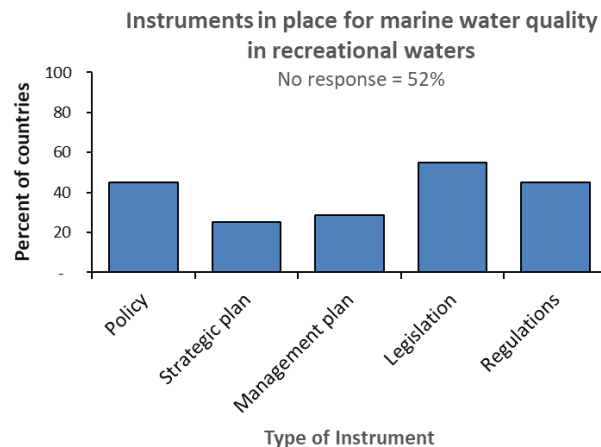


Figure 3.5. Percent of Responding Countries and Territories having Governance Instruments in Place for Marine Recreational Waters

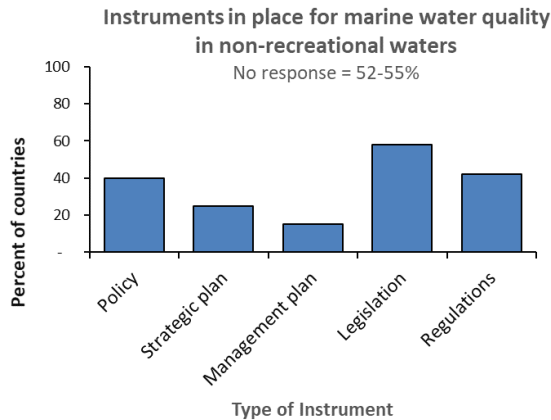


Figure 3.6. Percent of Responding Countries and Territories having Governance Instruments in Place for Other Non-Recreational Waters

3.2.2.2 Standards, monitoring and type of indicators tracked in effluents

To assess the processes in place for addressing the level of pollutants in effluents, states were asked to report on the presence of standards, a monitoring program and the type of indicators being tracked in the standard. Figure 3.7 Identifies the percent of responding countries and territories with national standards for domestic and industrial effluent discharges and those responding with a monitoring program in place. As highlighted in Figure 3.7, 80% of those responding had standards in place while just over 50% included having a monitoring program. The discrepancy between the two highlights the inability for respondents to actually know if the standards are being met.

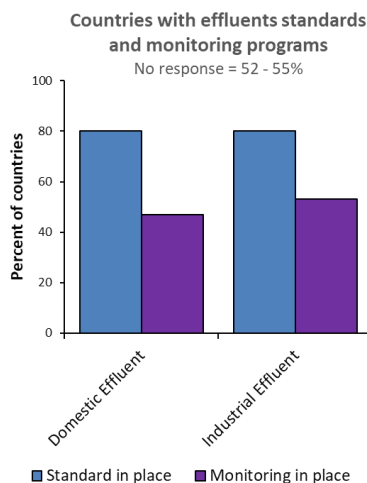


Figure 3.7. Presence of national standards and monitoring programs in place for domestic and industrial effluent discharges

Data were also solicited on the types of indicators being tracked in national standards. As shown in Figure 3.8, the most commonly identified indicators related to pH, fecal coliform, total suspended solids, dissolved oxygen and biological oxygen demand, with a minimum of 80% of

responding countries and territories including these in their standards. In contrast, heavy metals and nitrogen and phosphorus compounds were among the least mentioned by respondents, with just one of the countries identifying them in their standard. Given that 55% of countries and territories in the region did not respond to the request for data, the results may not be representative of the region as a whole.

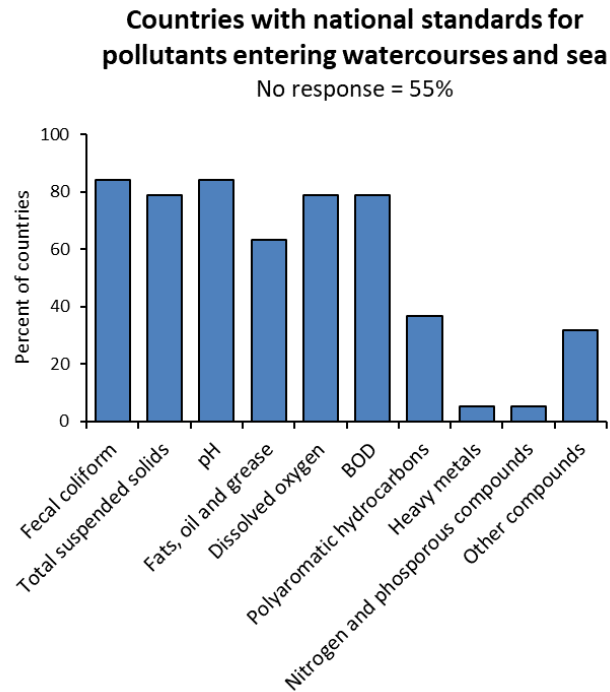


Figure 3.8. Type of pollutants included in national standard by responding countries and territories.

3.3 Pressure indicators

The GEAF category focusing on pressure indicators attempts to address the stressors that humans (and the natural system) exert on the marine environment. Based on the questions highlighted in Table 3.1, indicators addressing the level of treatment in place for five land-based and three marine-based sources of pollution during the baseline period were identified as useful to assess the current level of stress on the system during the baseline period:

- Land-Based Sources – Levels of stress reduction efforts targeting industrial waste water effluent, domestic waste water effluent, sediment in run-off, nutrients in agricultural run-off and solid waste.
- Marine-Based Sources – Levels of stress reduction efforts targeting oil pollution, waste water, solid waste.

3.3.1 Method

Data and information for the pressure indicators were acquired as follows. Countries and territories were requested to indicate the level of each type of land-based and marine-based sources of pollution based on the following qualitative scoring: no agreed level; treatment of pollution source worse than agreed level; treatment of pollution source at agreed level; treatment of pollution source better than agreed level; not applicable.

3.3.2 Results

The results of the assessed stress reduction levels by countries and territories in the region for each of the pollution sources for the pressure category of the GEAF are presented below.

3.3.2.1 Efforts to reduce the stress from land-based sources of pollution

Figure 3.9 illustrates the assessment by countries and territories of the ability of the current level of effort to reduce the stress in marine waters from land-based sources of industrial wastewater, domestic waste-water, sediments run-off, agricultural run-off and solid waste. While the expected target for stress reduction efforts would be to have all countries reporting “at agreed level” or “better than agreed level”, as can be seen from Figure 3.9, the majority of the countries and territories responding to the data request fell far below this target as “no agreed level” (yellow) and “worse than agreed level” (red) accounted for over 70% of the responding countries and territories. This suggests that more effort is needed to monitor and reduce the level of stress from these land-based sources of pollution. It is also worth noting that while countries with a small land mass or very arid climate might have some justification in reporting that the level of nutrient in agricultural runoff and sediment in runoff might be “not applicable” (black), it is somewhat puzzling to have this response for solid waste treatment.

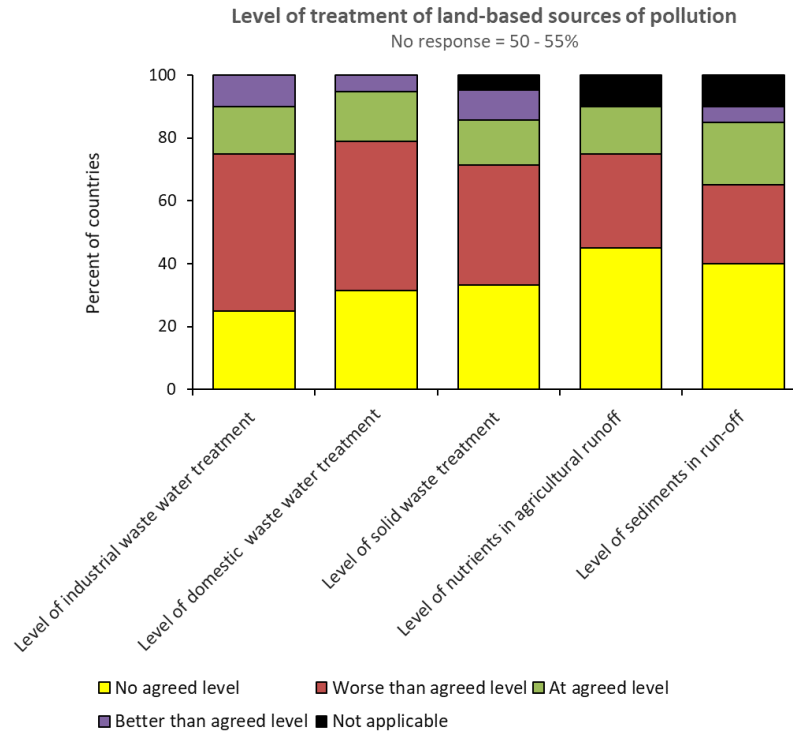


Figure 3.9. Level of effort to reduce stress from land-based sources of pollution

3.3.2.2 Efforts to reduce the stress from marine-based sources of pollution

Regarding efforts to address stress from marine-based sources of pollution, approximately 60% of countries and territories who responded indicated that they had “no agreed level” (yellow) for minimising the stress from these pollutants or that the level was “worse than the agreed level” (red) (Figure 3.10). As with the situation for land-based sources, the majority of the countries and territories fell far below the 100% target of being at or above an agreed level, suggesting that marine-based sources of pollution also required more effort to be put in place in order to reduce the pressure from these sources. Five percent of respondents indicated treating marine-based sources of solid waste and waste water was not applicable.

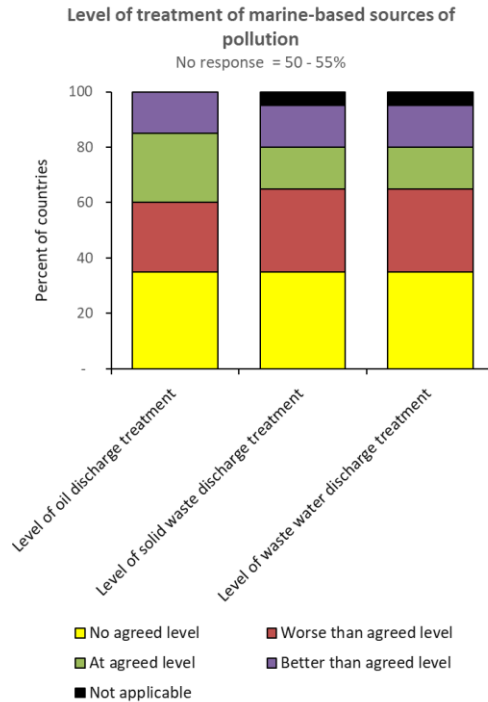


Figure 3.10. Level of effort to reduce stress from marine-based sources of pollution

3.4 State

The fundamental purpose of assessing state indicators in the GEAF for the baseline period is to have an understanding of the current status of the marine environment and to subsequently determine whether interventions aimed at improving governance are in fact having the desired effect on the state of the marine environment. Consequently, and as indicated in Table 3.1, this category of the GEAF focused on the following three indicators:

- Presence of a national marine water quality standard
- Status of marine water quality indicators
- Information sharing

3.4.1 Method

Data and information for the state indicators were acquired as follows:

- Countries and territories were requested to indicate whether they had a marine water quality standard in place.
- Countries and territories were requested to indicate the status of each type of marine water quality indicator based on the following qualitative scoring: no standard in place; status is better than the standard; status is worse than the standard.
- Information sharing - Countries and territories were requested to indicate whether or not they shared information regarding quality of marine recreational waters and other waters.

3.4.2 Results

3.4.2.1 Presence of marine water quality standards

Eight of 19 countries and territories who provided responses indicated that they had marine water quality standards in place, corresponding to a low positive response rate of 42%. However, due to the low response rate, this percentage is not necessarily reflective of the total number of countries and territories with marine water quality standards throughout the region.

3.4.2.2 State of marine water quality indicators

Data were also solicited on the status of a suite of marine water quality indicators that are generally tracked in national standards. Figure 3.11 illustrates the percent of countries with no standards, as well as those with indicators that were assessed as worse than the accepted standard and within the accepted standard. The majority of responding countries and territories had no marine water quality standards in place for the indicators being assessed (yellow). Only four of the responding countries indicated that they were within their national standard for all parameters. Overall, the marine quality parameters as assessed by countries and territories indicated considerable room for improvement, especially if one assumes that the target for all parameters should be that they are within an acceptable limit. Given that only 19 of 42 countries and territories responded to the request for data and of those, only eight reported having a national standard, it is possible that the results obtained may not be representative of the region as a whole.

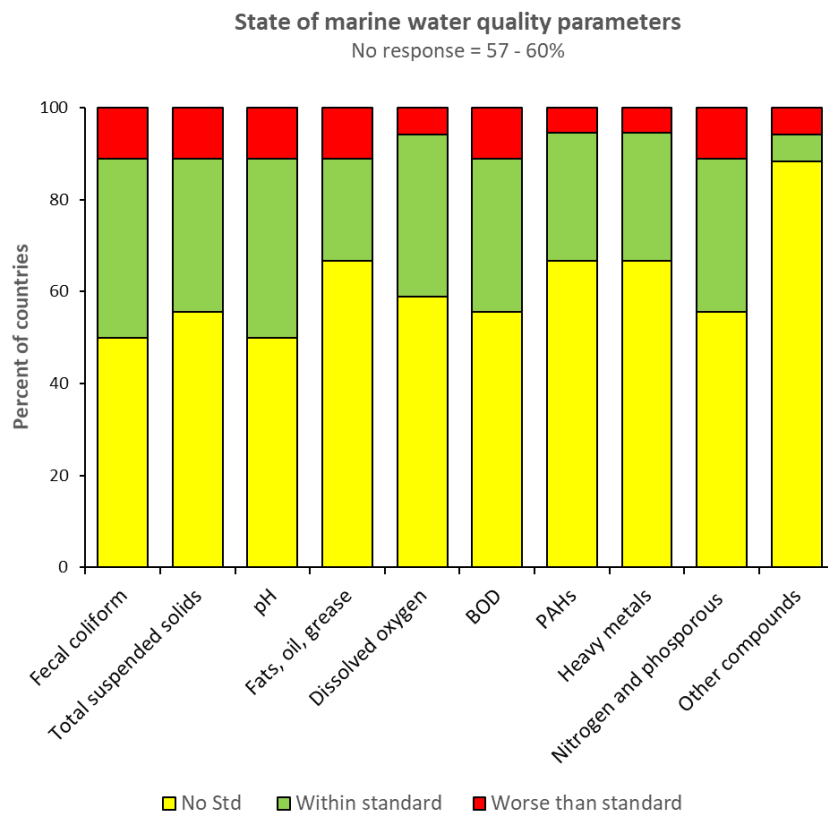
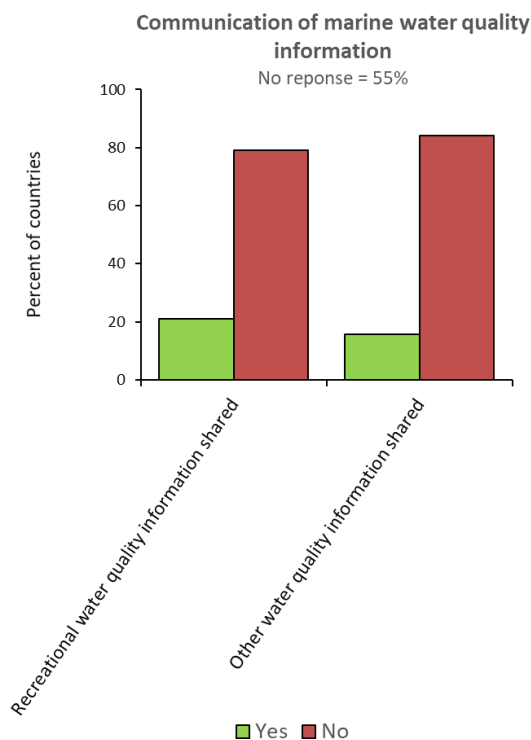


Figure 3.11. Percent of countries and territories tracking marine water quality parameters

3.4.2.3 Information Sharing

In terms of sharing information regarding the quality of recreational waters, only 4 of the 19 countries and territories (20%) who responded to the data request identified that they shared recreational water quality information while only three indicated sharing non-recreational water quality data (Figure 3.12). However, there would appear to be a considerable time-lag between the availability of the data on recreational water quality and the sharing of the information publicly as one country identified sharing 2004-2005 data in 2012. Given the potential for poor water quality to have a significant negative effect on the health and socio-economic well-being of a country, this may explain the low level of communication reported by countries. However, given the increasing role of civil society and the private sector in ocean governance, the demand for transparency over marine water quality data is likely to increase.



3.12 Communication sharing of marine water quality information

3.5 Stakeholder engagement

Indicators for stakeholder engagement focus on good governance principles of inclusiveness and transparency and are tracked to assess the degree to which processes may be deemed effective, transparent and legitimate by stakeholders. In response to the questions pertaining to stakeholder engagement in Table 3.1, the following two indicators were determined useful to assess during the baseline period (2011-2015).

- Level of engagement by countries in relevant global and regional pollution agreements
- Level of stakeholder participation in regional pollution processes:

- Countries engaged in regional pollution processes
- Other regional environmental IGOs engaged in regional pollution processes
- Other regional fisheries IGOs engaged in regional pollution processes
- Regional environmental NGOs engaged in regional pollution processes
- Private sector organisations engaged in regional pollution processes

3.5.1 Methods

Engagement in global and regional/subregional agreements addressing the different types of land and marine-based pollution sources was determined from a desktop review and the level of engagement in each relevant agreement was calculated as a percentage of the total that are eligible to be engaged.

Regarding stakeholders participation in pollution processes, regional and subregional organisations with a mandate addressing one or more of the land and marine-based types of pollution sources were requested to provide copies of meeting reports of the conference of the parties taking place during the baseline period. Additionally, every effort was made to search the internet for meeting reports. Participant lists were reviewed to determine the percent of eligible countries, regional environmental and fisheries IGOs and global IGOs attending the meetings. The participant lists were also used to identify the number of regional and international environmental NGOs and private sector representatives attending the meetings.

3.5.2 Results

3.5.2.1 *Level of Engagement*

During the baseline period of the study, the level of engagement of countries and territories in the region with global pollution related agreements is shown in Figure 3.13. With the exception of the 2009 Hong Kong Convention regarding safe and environmentally-sound ship recycling (not a high priority issue in the region), most countries and territories in the region are engaged with global pollution-related conventions. However, there is still scope for improvement in this area.

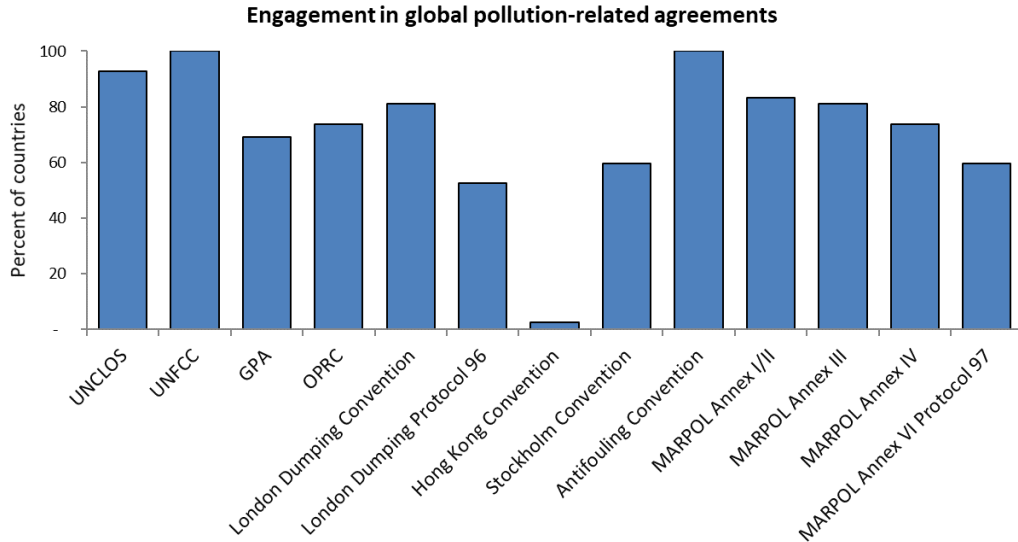


Figure 3.13. Percent engagement of countries and territories in global-level arrangements

In terms of with regional and subregional pollution-relevant arrangements, the level of engagement of countries and territories in the region was greatest at the subregional level (100%), followed closely by engagement with the Cartagena Convention and its Oil Spill Protocol at 93% and 88% respectively (Figure 3.14). Over 55% of eligible countries and territories in the region have engaged with the Port State Control (PSC-MoU) mechanisms for Latin America and the Caribbean. As can be seen in Figure 3.14, there are still 54% of eligible countries and territories that are not engaged with the LBS protocol of the Cartagena Convention, suggesting a need to better understand the factors that would encourage countries to adopt the protocol.

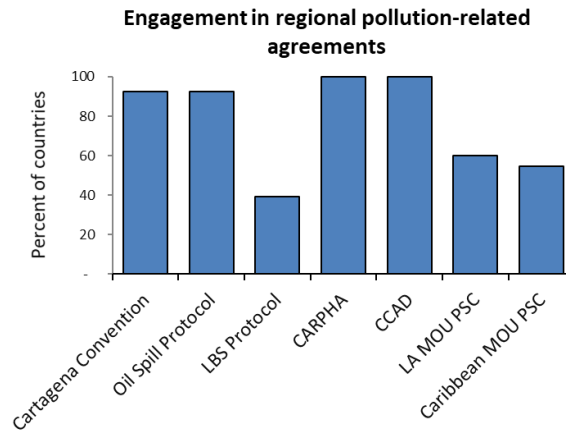


Figure 3.14. Percent engagement of countries and territories in regional-level arrangements

3.5.2.2 Stakeholder participation

Figure 3.15 illustrates the percent of eligible countries, regional environmental and fisheries IGOs attending regional pollution meetings during the baseline period.³ Overall, country participation was greatest at 97% for the sub-regional CCAD meetings which occur each year. This was followed by the Cartagena Convention (74%) while country participation in the LBS protocol COPs was 67%. This is lower percentage is likely a reflection of the number of countries that had still not signed on the protocol during the baseline period although participation was calculated on all countries attending, regardless of ratification.

In terms of attendance by other regional IGOs in regional pollution processes, none attended CCAD meetings. It is also evident from the results that no regional fisheries IGOs attended any of the meetings, despite the ecosystem-based connection between fisheries and pollution. However, some 50% and 25% of a listing of other regional environmental IGOs attended meetings of the Cartagena Convention and the LBS protocol COP during the baseline period.

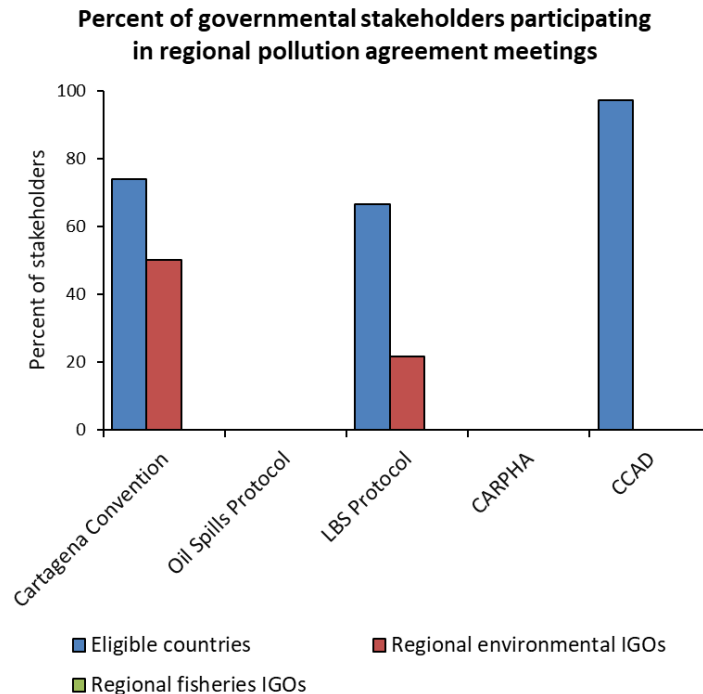


Figure 3.15. Percent engagement of governmental stakeholders participating in regional-level pollution meetings

The attendance by regional NGOs as well as private sector representatives is illustrated in Figure 3.16. Attendance was highest for these stakeholders at the LBS Protocol COPs with a total of 9 regional NGOs and 3 private sector representatives. For the meetings of the Cartagena Convention, the number in attendance was 6 regional NGOs and 2 private sector representatives. None of these categories of stakeholders attended CCAD meetings. Overall,

³ No participant lists were available specifically for the Oil Spill Protocol COP and CARPHA at the time of analysis.

given the increasing call for addressing pollution impacts within the region, there is considerable room for greater participation among all stakeholder categories.

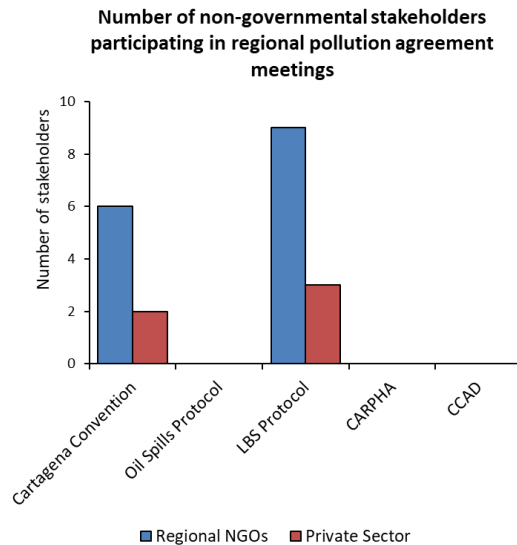


Figure 3.16. Number of NGO and private stakeholders participating in regional-level pollution meetings

3.6 Social justice

Indicators for the social justice category of the GEAF are necessary to assess the degree to which improvements in the marine environment take into account any negative effects on users of marine space and resources, particularly marginalized and disadvantaged groupings of stakeholders (e.g. indigenous peoples, women, youth). In response to the questions pertaining to social justice in Table 3.1, three indicators were determined useful to assess the attention paid to this issue during the baseline period (2011-2015).

- Presence of regional/subregional and national instruments for disadvantaged groups in pollution agreements
- Presence of socially just regional/subregional and national management measures to reduce the impact of pollution pressures on marginalized groupings
- Presence of regional/subregional and national measures allowing for recourse against pollution impacts

3.6.1 Method

Data and information for the social justice indicators were acquired as follows. IGOs and countries and territories were requested to indicate whether they had policies for disadvantaged groups in instruments relating to pollution as well as measures in place to reduce the impact of pollution pressures on marginalized groupings. They were also requested to indicate whether they had measures in place allowing for recourse against pollution impacts.

3.6.2 Results

The results of the three assessed social justice indicators as provided by relevant pollution-related regional and subregional IGOs and countries and territories in the region are presented below, grouped according to regional and subregional responses and national responses.

3.6.2.1 Regional and Subregional Policies, Measures and Recourse to Pollution Impacts

With regards to an assessment of social justice indicators in regional and subregional agreements addressing land-based and marine-based sources of pollution, none of the agreements addressed policies focusing on socially-just management measures to reduce the impacts of pollution pressures and only the CARPHA agreement addressed disadvantaged groups. However, three of the six regional and subregional agreements (Oil spill and LBS protocols and the IMO Caribbean MOU) indicated mechanisms in place that allowed for recourse against pollution impacts (Table 3.4).

Table 3.4. Presence of social justice indicators in regional and subregional pollution arrangements

Social justice issues	IGOs					
	Cartagena Convention	Oil Spill Protocol	LBS Protocol	CARPHA	CCAD	IMO
Disadvantaged groups				✓		
Socially just pollution management						
Recourse to pollution impacts		✓	✓			✓

3.6.2.2 National Policies, Measures and Recourse to Pollution Impacts

As illustrated in Figure 3.17, only 19% of the responding countries and territories had national level policies in place that specifically addressed disadvantaged group in instruments dealing with pollution. However, in terms of management, the results were relatively much better approximately 60% of responses indicating measures in place to reduce the impacts of pollution pressures on marginalized groups and 52% indicating these stakeholders having recourse to address any resulting pollution impacts. While the expected target would be to have all countries and territories in the region having measures in place to address social justice issues, the results from those responding suggest that efforts are beginning to be put in place at the national level. However, with only 50% of all countries and territories in the region providing responses, making any definitive conclusions about the region is not possible.

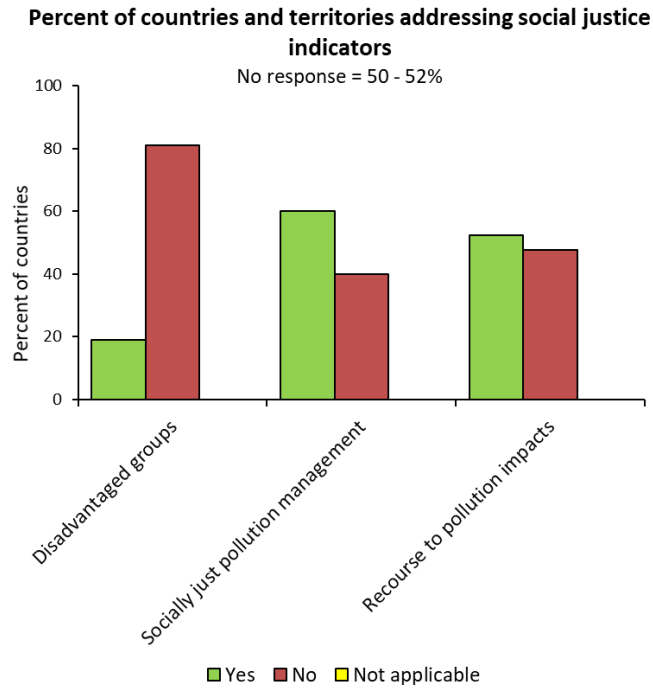


Figure 3.17. National level social justice indicators as a percent of responding countries and territories

3.7 Human well-being

The following questions were considered to be the key ones regarding human well-being and pollution:

- Have efforts to control, prevent and reduce pollution benefitted human health?
- Livelihoods increased/assured?
- Increase in amenity use and access?
- Loss of cultural/spiritual value reduced?

The category of human well-being will be treated together for fisheries, pollution and biodiversity/habitats in section 5, as there is considerable overlap in the indicators selected.

4 Habitat degradation and biodiversity

As with pollution in the CLME+ region, while the issue of habitat degradation and biodiversity can be seen throughout the region's coral reef and continental shelf subecosystem types and to a lesser extent in the pelagic subsystem, its impacts are typically more evident near the coast. Habitat degradation and biodiversity problems can be linked to both land-based and marine sources of pollution and activities: e.g. coastal development for residential, infrastructural and commercially-related projects, tourism, damaging fishing practices and exploration for oil and gas. Generally, there is a direct link between the often more localized problems of habitat degradation and biodiversity loss near the coast and the human activities occurring in these areas.

Based on the land-based and marine-based threats to habitat and biodiversity, this assessment identified a need to address arrangements in place for eight types of habitat and five types of areas specific for maintaining the biodiversity of important species and groups within the region:

- Beaches, mangroves, coastal wetlands and lagoons, seagrass beds, shallow reefs, deep slope reefs, offshore pelagic ecosystems and muddy bottom shelf
- spawning/breeding areas for finfish, breeding areas for seabirds, nesting/breeding areas for sea turtles, breeding areas for cetaceans and breeding /nursery areas for sharks.

The principal regional organisation addressing habitat and biodiversity in the region is UN Environment (UNE) (overseeing the SPAW protocol of the Cartagena Convention). At the subregional level, the principal organisation with some mandate for habitat and biodiversity protection is the Comisión Centroamericana de Ambiente y Desarrollo (CCAD).

As previously mentioned in Chapter 1, the identification of indicators to assess each of the seven categories of the GEAF with respect to regional, subregional and national efforts to address habitat degradation and biodiversity were guided by a suite of questions. These are presented in Table 4.1 below.

Table 4.1. GEAF habitat degradation and biodiversity guiding questions to be addressed by indicators

Architecture
Are there mechanisms for integrating regional/subregional habitat degradation/biodiversity policy cycles at the policy level?
Are arrangements in place to address habitat degradation/biodiversity governance at regional/subregional levels?
Are there mechanisms in place to ensure national-regional interaction?
Process
Is there regional/subregional policy in place for habitat degradation/biodiversity? (UNEP, CCAD)
Are there regional/subregional strategic plans in place for habitat degradation/biodiversity?
Are there regional/subregional management plans in place for habitat degradation/biodiversity?
Is there regional/subregional (harmonised) legislation in place for habitat degradation/biodiversity?

Table 4.1. GEAF habitat degradation and biodiversity guiding questions to be addressed by indicators

<p>Are there regional/subregional (harmonised) regulations in place for habitat degradation/biodiversity? Do countries have a policy, strategic plans, management plans, legislation and regulations in place for habitat degradation and biodiversity</p>
<p>Pressure</p> <p>Are spawning/breeding areas and other areas in need of conservation adequately protected at a regional/subregional level? Is representative coastal and marine habitat protected?</p>
<p>State</p> <p>Has beach loss been halted or reversed and has there been a change in habitat quality? Has mangrove loss been halted or reversed and has there been a change in habitat quality? Has coastal wetlands loss been halted or reversed and has there been a change in habitat quality?? Has seagrass loss been halted or reversed and has there been a change in habitat quality?? Has reef (shallow and deep slope) loss been halted or reversed and has there been a change in habitat quality?? Has any other coastal and marine habitat loss been halted or reversed and has there been a change in habitat quality??</p>
<p>Stakeholder Engagement</p> <p>Are habitat degradation and biodiversity agreements well subscribed to? Are habitat conservation and biodiversity stakeholders identified below participating in regional/subregional processes? Are country environmental agencies participating in regional/subregional habitat conservation processes? Are other regional IGOs (environmental and fisheries) participating in regional/subregional habitat conservation and biodiversity processes? Are regional NGOs participating in regional/subregional habitat degradation and biodiversity processes? Are private sector bodies participating in regional/subregional habitat degradation and biodiversity processes?</p>
<p>Social Justice</p> <p>Do regional/subregional and national habitat degradation/biodiversity governing instruments include specific reference to women? Do regional/subregional and national habitat degradation/biodiversity governing instruments include specific reference to other disadvantaged groups and minorities? Do regional/subregional and national habitat degradation/biodiversity governing instruments respect cultural traditions? Do regional/subregional and national habitat degradation/biodiversity instruments include specific reference to small scale fishers? Are the measures taken to reduce habitat degradation and biodiversity pressures socially just (differentially negatively impacting certain groups)</p>
<p>Human Well-Being</p> <p>Has habitat conservation/biodiversity protection benefitted human health? Has habitat conservation/biodiversity protection benefitted livelihoods? Has habitat conservation/biodiversity protection resulted in improved access to recreational amenity areas? Has loss of cultural identity with coastal ecosystems and resources been reduced?</p>

4.1 Architecture

In response to the questions pertaining to Architecture in Table 4.1, three indicators were determined useful to assess the current institutional structure in place to facilitate decision-making, planning and implementation affecting the identified habitat types.

- Presence of a mechanism to integrate regional policy cycles for habitat and biodiversity.
- Strength of arrangements in place for each type of habitat, where strength of arrangement is based on calculated completeness scores times percentage of countries in the arrangement.
- Status of National Intersectoral Committees (NICs) to facilitate bidirectional flow of cross-sectoral national input into regional and subregional decision making.

4.1.1 Method

For a detailed description of methods used, please see Appendix 3. Completeness is based on an assessment of each stage of the policy cycle for each agreement in place regionally and subregionally and the operational rules of the organisations responsible for implementing the agreement. The calculation of a completeness score is based on the methodology developed for the TWAP ABNJ assessment (Mahon et al. 2015). Coverage is based on the percentage of countries within the region that are in the arrangement. NICs assessment is based on a percentage of the presence of nine criteria among committees deemed to be active, planned for the near future, inactive and not present according to the method used by McConney et al. 2016.

4.1.2 Results

4.1.2.1 *Presence of integrating mechanism*

While the SPAW protocol of the Cartagena Convention can be said to address all eight types of habitats, there was no overarching mechanism in place that integrated all of the arrangements addressing habitat and biodiversity at the regional and subregional level during the baseline period (2011-2015).

4.1.2.2 *Strength of Arrangements*

With a maximum possible score of 1.0, the average strength of the arrangements addressing the eight types of coastal and marine habitat are shown in Figure 4.1, based on the individualised assessment for each of the regional and subregional organisations involved in these arrangements. With only the SPAW protocol and CCAD having arrangements at the regional and subregional level, the results showing a calculated strength of 0.3 clearly illustrate that there is considerable room for improvement through strengthening arrangements and developing fuller geographic coverage through MOUs among organisations or broadening country membership in organisations.

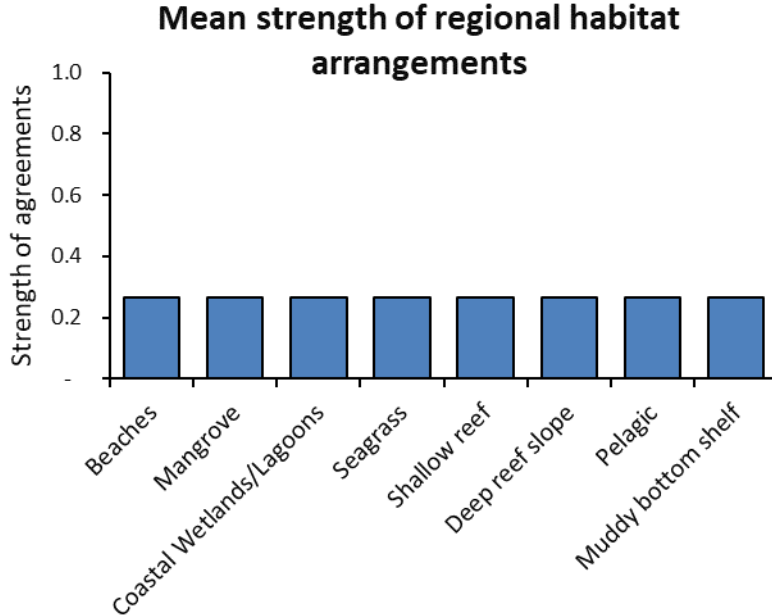


Figure 4.1. Average strength of all arrangements addressing land-based and marine-based sources of pollution

4.1.2.3 National Intersectoral Committee (NIC)

The assessment of the status of NICs in the countries or territories of the CLME+ area during the baseline period (2011-2015) is the same for all three transboundary issues. For the findings on NICs, please see section 2.1.2.3 of this report.

4.2 Process

Process indicators assess the degree to which the structure of the arrangement is actually being implemented, including mechanisms in place to ensure vertical (between national to regional) and lateral (across different sectors) interactions among the policy actors. In response to the questions pertaining to Process in Table 4.1, the following indicator was determined useful to assess the current processes in place to facilitate decision-making, planning and implementation for the eight types of habitat and five types of areas specific for maintaining the biodiversity of important species and groups within the region:

- Presence of regional/subregional and national governance instruments (policy, strategic plan, management plan, legislation, regulations)

4.2.1 Method

Data and information for the process indicators were acquired as follows. IGOs and countries and territories were requested to indicate the presence or absence of governance instruments (policy, strategic plan, management plan, legislation, regulations) addressing the different types of habitat being tracked for this baseline assessment expressed as a percentage of having all possible instruments.

4.2.2 Results

4.2.2.1 Presence of governance instruments

Figure 4.2 illustrates the overall percent of governance instruments (policies, strategic plans, management plans, legislation and regulations) in place to address the different habitat types based on all of the possible regional (UNE Cartagena Convention SPAW Protocol) and subregional (CCAD) arrangements that could be in place to address these pollution sources.

The results illustrated in Figure 4.2 relate only to responses from UNE (Cartagena Convention and SPAW Protocol) as no response was received from CCAD for the baseline period at the time of analysis. From the response received, it is clear that the region-wide agreement for habitat and biodiversity (the SPAW Protocol) focuses only on policy instruments, leaving considerable room for the development of other types of governing instruments to address habitat and biodiversity at a regional level. It is also noteworthy that there is no overarching mechanism in place at the CARICOM subregional level to address habitat and biodiversity concerns, comparable to CCAD, as CARPHA does not address these issues. This may be due to an expectation that member countries would address these issues using the SPAW Protocol. However, not all CARICOM countries have signed on to the SPAW Protocol.

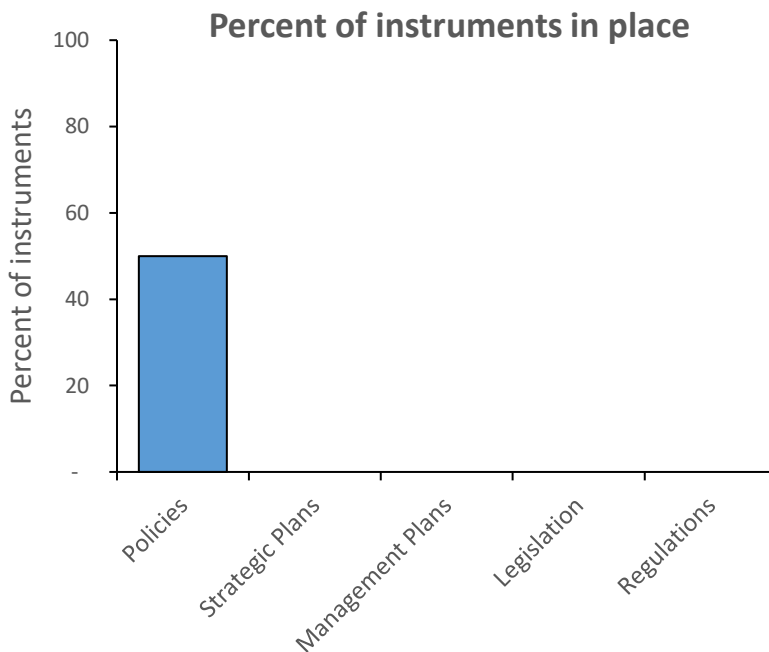


Figure 4.2. Overall percentage of governance instruments in place by regional and subregional organisations addressing habitat and biodiversity

National level governance instruments: Given the expectation that countries and territories would have some concern regarding the governance of habitat and biodiversity in their coastal and marine environment, data regarding the presence of governance instruments were also

solicited from the national level. Figure 4.3 illustrates the percentage of responding countries and territories having national level instruments for the following eight habitat types while Figure 4.4 shows the results from responding countries and territories for the following five types of areas specific for maintaining the biodiversity of important species and groups within the region:

- Habitat type: Beaches, mangroves, coastal wetlands and lagoons, seagrass beds, shallow reefs, deep slope reefs, offshore pelagic ecosystems and muddy bottom shelf
- Areas for priority species/groups: Spawning/breeding areas for finfish, breeding areas for seabirds, nesting/breeding areas for sea turtles, breeding areas for cetaceans and breeding /nursery areas for sharks.

Regarding coastal and marine habitat types (Figure 4.3), based on a response rate ranging from 55 – 60% of all countries and territories providing data, legislation and regulations appeared to be the preferred instruments of choice for all habitat types with strategic and management plans being the least preferred. Among habitat types, shallow reefs and mangroves had the highest level of response with some 74% of countries indicating the presence of legislation and regulations for the former and 75% and 71% respectively for the latter. Since many of the countries and territories in the region are small islands with few rivers and narrow continent shelves, it was not surprising that muddy bottom shelf habitat was reported to be “not applicable” by 40% of the responding countries. However, even for those countries where this habitat type was significant, the level of attention being given by countries to developing and implementing governing instruments was the lowest among all habitat types. Overall, from a process perspective, given the increasing need to conserve habitat types and reduce biodiversity loss in the region, more attention needs to be paid to implementing all five types of governing instruments, especially strategic and management plans.

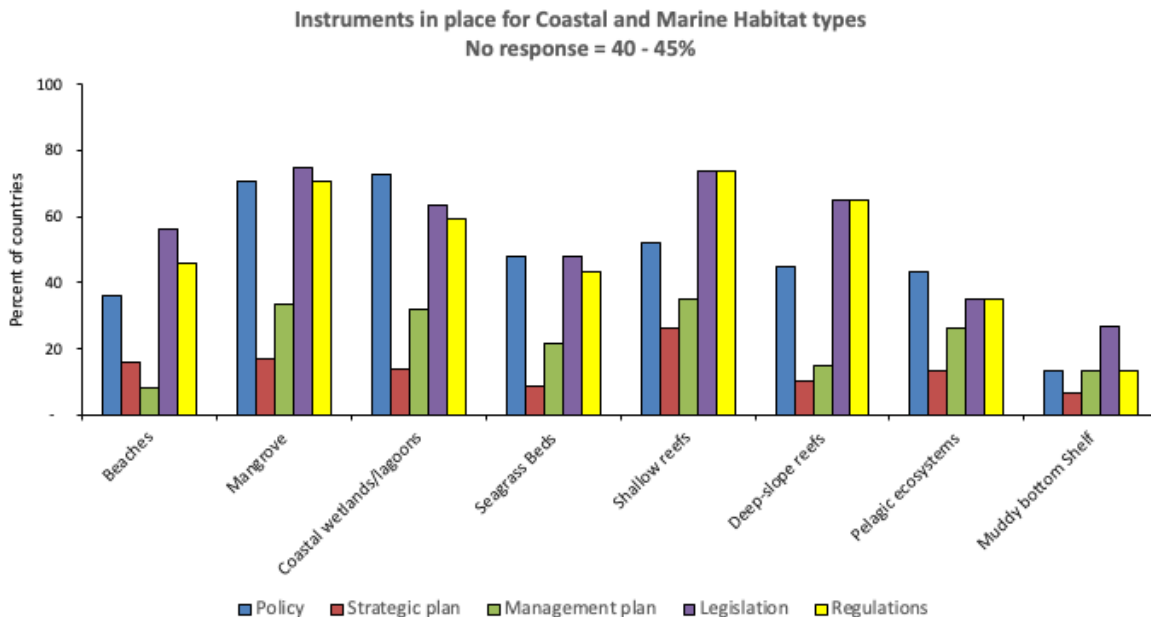


Figure 4.3. Percent of responding countries and territories having governance instruments in place for coastal and marine habitat types

As can be seen from Figure 4.4, the overall pattern to address areas for priority species/groups showed responding countries focusing similarly on legislation and regulations as the preferred governing instruments. This is likely due to their compliance with international biodiversity conventions and the SPAW Protocol. However, similar to the pattern observed for all habitat types, the ability to actually achieve policy objectives aimed at addressing habitat loss and biodiversity is significantly limited by the low number of countries having strategic and managements plans in place. A positive sign is the attention being paid to nesting and breeding areas for sea turtles where 42% of responding countries had both policies and management plans in place. Additionally, 75% indicated legislation was in place along with 67% having regulations to protect breeding and nesting habitat for sea turtles. It is also noteworthy that none of the responding countries and territories indicated this issue was “not applicable”, suggesting the increasing awareness and receptivity among policy makers across the region of its importance.

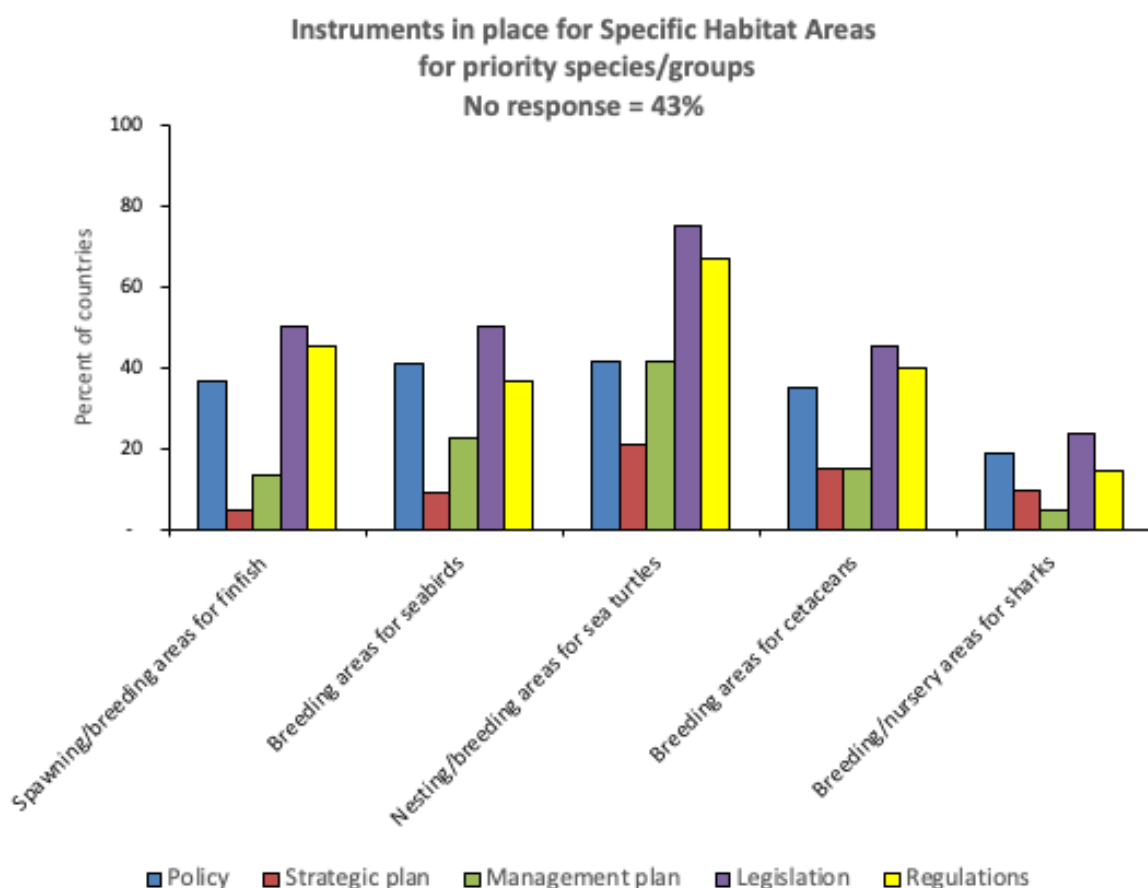


Figure 4.4. Percent of responding countries and territories having governance instruments in place for specific coastal and marine habitat areas for priority species/groups

4.3 Pressure indicators

The GEAF category focusing on pressure indicators attempts to address the stressors that humans (and the natural system) exert on the marine environment. Based on the questions highlighted in Table 4.1, one indicator addressing the level of protection for each habitat type and specific areas for priority species/groups was identified as useful to assess the current level of stress on the system.

4.3.1 Method

Data and information for the pressure indicator was acquired as follows. Regional organisations with a mandate for habitat and biodiversity (UNE and CCAD) and countries and territories were requested to indicate the level of protection in place for each habitat type and specific areas for priority species/groups based on the following qualitative scoring:

- No agreed level of protection;
- Protection lower than agreed level
- Protection at agreed level
- Protection better than agreed level
- Not applicable

4.3.2 Results

4.3.2.1 *Protection level in place to reduce the stress on habitat and biodiversity*

Figure 4.5 illustrates the assessment of the protection level for each of the eight habitat types and five types of specific areas identified for priority species/groups in regional agreements based on the responses received. As noted earlier, no response was received from CCAD at the time of the analysis of the 2011-2015 baseline period. It is clear from the results shown that for all habitats and specific areas needing protection, there is no agreed level designated in regional agreements. Understanding the rationale behind this and whether it should be changed to ensure a region-wide level of protection for these habitats is in place may be a topic for subsequent discussion at the relevant conference of the parties.

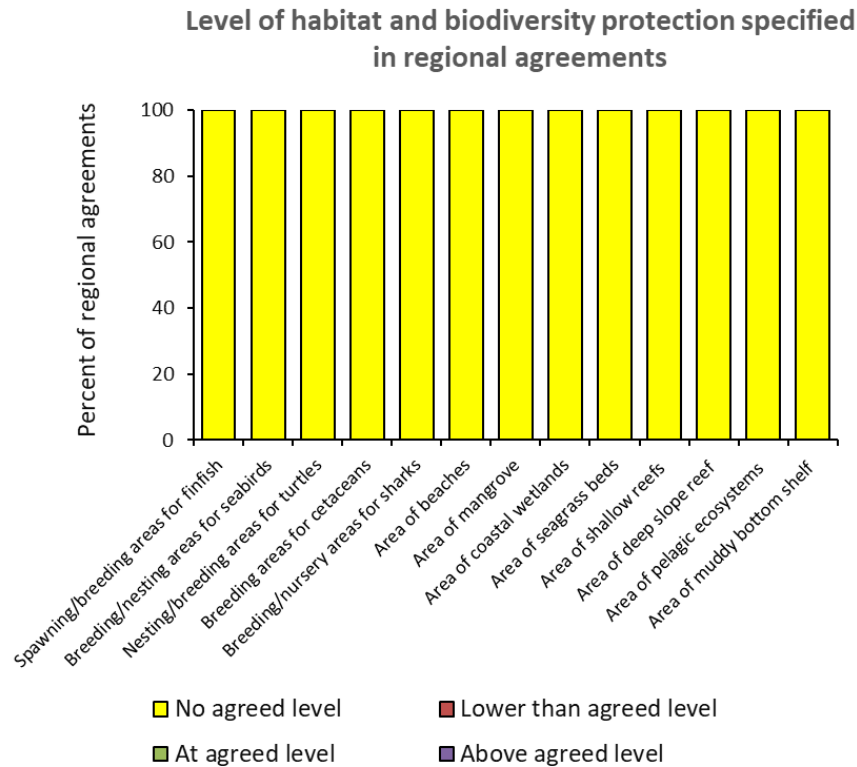


Figure 4.5. Level of habitat and biodiversity protection in place in regional agreements

The analysis of the data provided by countries and territories regarding the level of protection for these habitats are illustrated in Figure 4.6. While the target for stress reduction efforts would expectedly be to have all countries reporting “at agreed level” or “above agreed level”, the results show a somewhat inconsistent pattern across the responding countries and territories. Nonetheless, some likely trends can be identified. For example, it would appear that among all of the habitat types and areas for priority species/groups, shallow reefs had the best level of protection at 56% of respondents indicating protection was “at the agreed level”. This was followed closely by nesting/breeding areas for turtles at 50% at the agreed level. However, the percentage of countries and territories reporting “no agreed level” was ranked highest for the remaining four specific areas for priority species/groups as well as for seagrass beds, pelagic ecosystems and muddy bottom shelf. In terms of responses indicating “lower than agreed level”, mangrove habitat was assessed as having the highest response by 44% of countries and territories who provided data. Somewhat encouraging is evidence of at least a few responding countries (4% to 8%) reporting “above agreed level” for all of the habitat types except beaches and muddy bottom shelf. A similar range of percent was reported “above agreed level” for areas specific to seabirds, turtles and cetaceans. Overall, based on the data provided by countries and territories for the baseline period, the need to significantly improve arrangements to protect habitat and biodiversity in the region is evident.

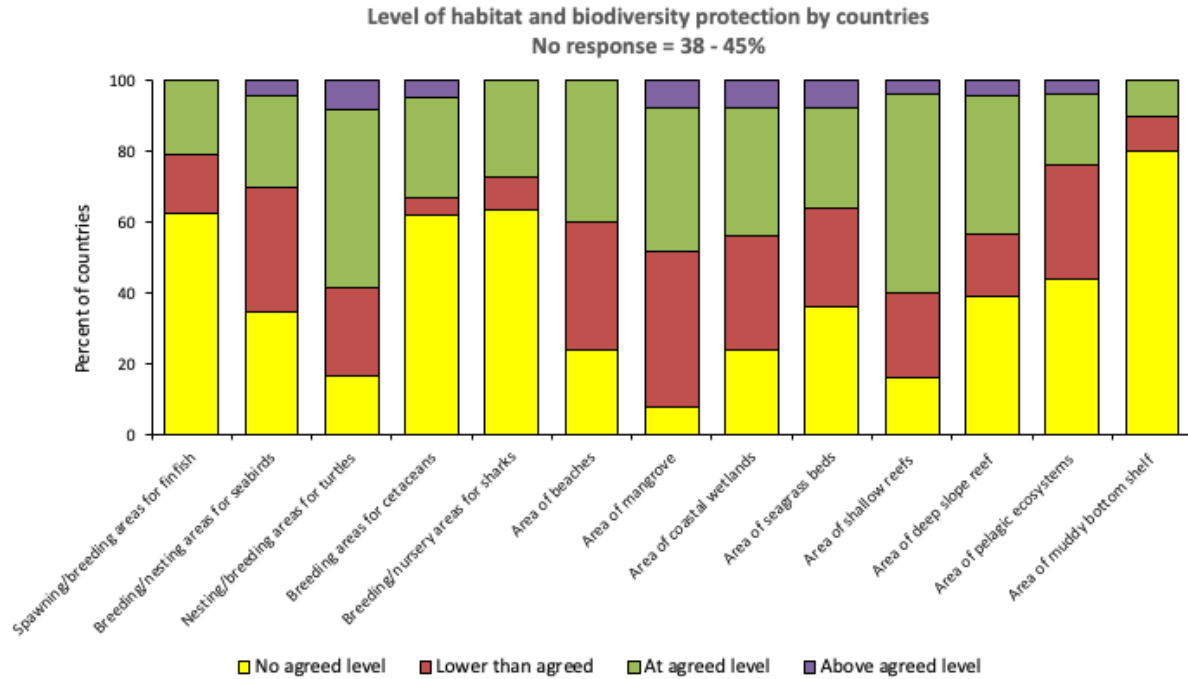


Figure 4.6. Level of habitat and biodiversity protection in place at the country and territory level

4.4 State

The fundamental purpose of assessing state indicators in the GEAF for the baseline period is to have an understanding of the current status of the marine environment and to subsequently determine whether interventions aimed at improving governance are in fact having the desired effect on the state of the marine environment. As such and as indicated in Table 4.1, this category of the GEAF focused on the following two indicators aimed at addressing this question:

- Areal change in habitat type
- Quality of habitat type

4.4.1 Method

Data and information for the state indicators were acquired as follows. Areal change in habitat type - Countries and territories were requested to indicate the status of each type of habitat and specific areas for priority species/groups based on the following qualitative scoring:

- 0 = Not monitored
- 1 = significant loss
- 2 = measurable loss
- 3 = no change
- 4 = measurable gain
- 5 = significant gain

Quality of habitat type - Countries and territories were requested to indicate the quality of each type of habitat and specific areas for priority species/groups based on the following qualitative scoring:

- 0 = Not monitored
- 1 = significantly degraded
- 2 = measurably degraded
- 3 = no change
- 4 = measurably improved
- 5 = significantly improved

4.4.2 Results

4.4.2.1 Areal change in habitat type

Figure 4.7 illustrates the percent of countries providing data on the status of seven habitat types⁴ while Figure 4.8 shows the results for the five specific areas for priority species/groups. The most striking observation from Figure 4.7 is the low percentage of countries and territories reporting any “measurable gain” in habitat (green) with only 4% of respondents indicating a “significant gain” (purple) in one habitat type, namely coastal wetlands/lagoons. Additionally, it is clear from Figure 4.7 that the majority of responding countries and territories assessed the seven habitat types to be “not monitored” (yellow) with deep slope reefs leading the habitat types at 84% followed by muddy bottom shelf at 78%. In contrast, mangroves, coastal wetlands and lagoons as well as shallow reefs appear to be better monitored by the countries and territories. Combining both “significant” (black) and “measurable” (red) loss, 40% of responding countries and territories reported this for beaches and seagrass beds, 44% for shallow reefs and 47% for mangroves.

This assessment suggests a concerning trend for the region given the importance of these habitats in providing valued ecosystem services to the people of the region. Overall, the results for changes in areal extent of general habitat types showed the majority of responding countries and territories assessed the habitat types to be “not monitored”, “significant loss” or “measurable loss”. The results are cause for concern when these three qualitative rankings are combined as they range from 100% for muddy bottom shelf, 96% for deep slope reefs, 92% for seagrasses, 88% for beaches to 67% for coastal wetlands/lagoons.

⁴ Given the nature of areal extent of the pelagic ecosystem habitat, assessing a change was deemed to be not relevant.

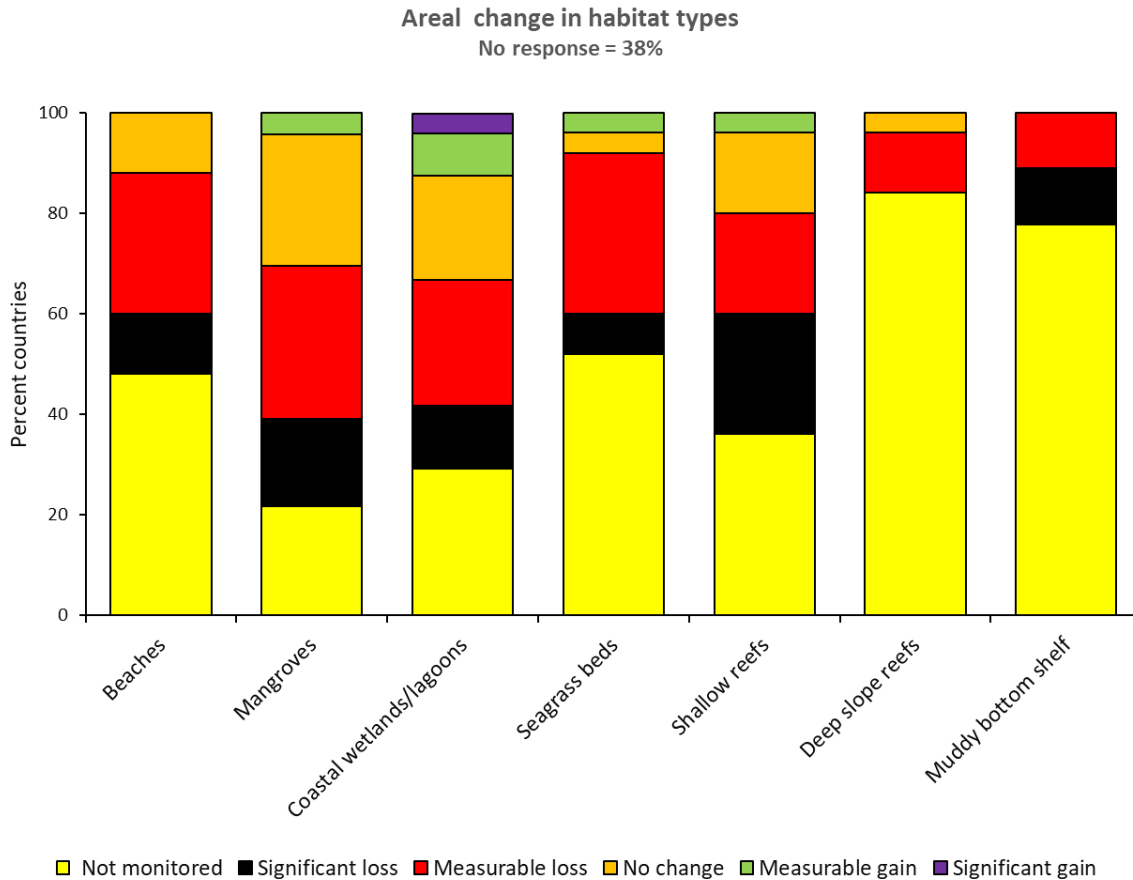


Figure 4.7. Areal change in habitat types across reporting countries and territories

In terms of the assessment for areal change in habitat specific to priority species/groups, Figure 4.8 illustrates the high percentage of responding countries and territories that did not monitor these areas (yellow), with the notable exception of nesting/breeding areas for sea turtles. The figure also clearly shows a consistency with the findings for the alleviation of pressure on this specific habitat discussed in section 4.3.2, as 16% of respondents indicated a measurable increase in this habitat type. This result provides strong evidence for the high correlation between the change in state and reduction in pressure for this habitat type as reported during the baseline period.

Overall, the results suggest that the countries and territories are doing a better job at conserving these special habitat areas deemed important for priority species/groups than the general habitat types, likely due to compliance with international biodiversity conventions and the SPAW protocol. However, given that there are missing data from some 16 of the 42 potential respondents, caution is required in generalizing across the region.

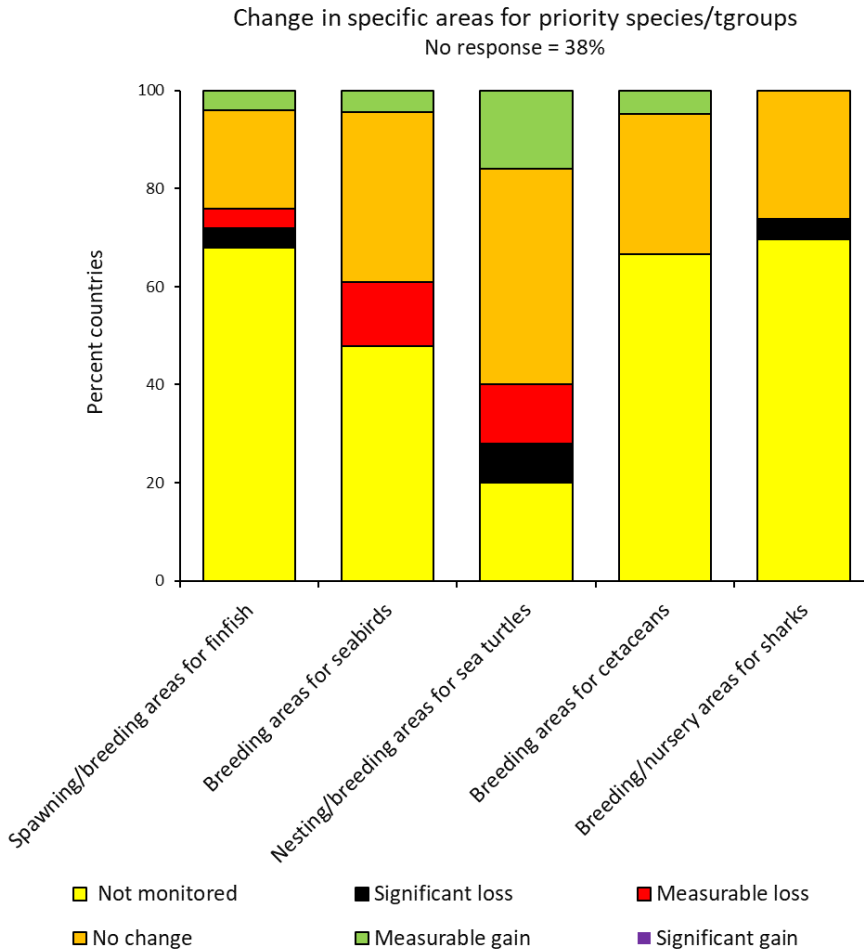


Figure 4.8. Areal change in specific coastal and marine habitat areas for priority species/groups

4.4.2.2 Change in quality of habitat type

Figure 4.9 illustrates the assessment from responding countries and territories of changes in the quality of the seven habitat types. Since a high percentage of the respondents indicated the areal extent of many of these habitats are not monitored (Figure 4.7), it is not surprising that a change in quality of the different habitats is also reported as “not monitored” (yellow). However, for those respondents who did provide an assessment of habitat quality, the results indicate that the majority of respondents assessed the habitat types as mostly significantly degraded (black) and measurably degraded (red).

Focusing on seagrass beds, the results indicate cause for concern with 56% of this habitat type being reported as “not monitored” and the remainder as significantly (black) and measurably (red) degraded. For those countries assessing muddy bottom shelf habitat, the quality of this habitat is assessed as either “not monitored” (80%) or “significantly degraded” (20%). On a somewhat positive note, in addition to reporting “no change” (orange), a small percentage of respondents indicated beaches (4%), mangroves (12%) and coastal wetlands and lagoons (4%)

as measurably improved (green) along with 8% reporting shallow reefs and 4% reporting beaches as significantly improved (purple).

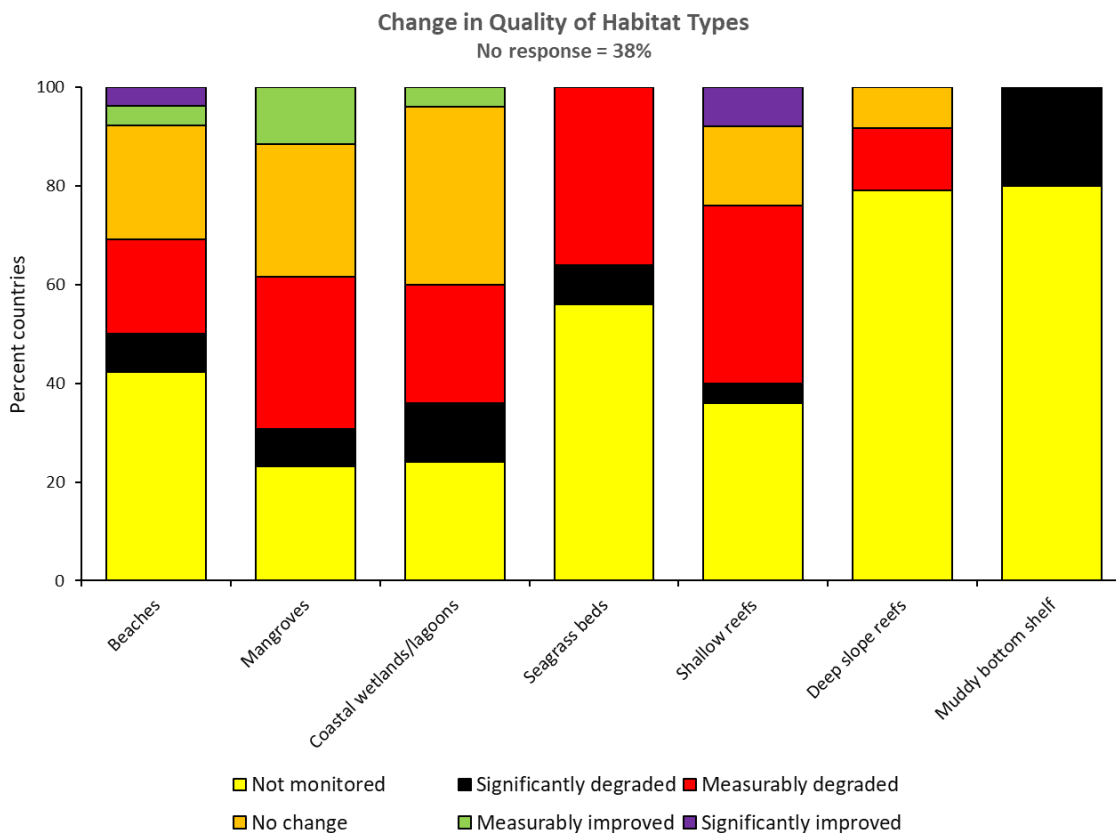


Figure 4.9. Change in quality of habitat type

4.5 Stakeholder engagement

Indicators for stakeholder engagement focus on good governance principles of inclusiveness and transparency and are tracked to assess the degree to which processes may be deemed effective, transparent and legitimate by stakeholders. In response to the questions pertaining to stakeholder engagement in Table 4.1, the following two indicators were determined useful to assess during the baseline period (2011-2015).

- Level of engagement by countries in relevant global and regional habitat/biodiversity agreements
- Level of stakeholder participation in regional habitat/biodiversity processes:
 - Countries engaged in regional habitat/biodiversity processes
 - Regional environmental and fisheries IGOs engaged in regional habitat/biodiversity processes
 - Regional environmental NGOs engaged in regional habitat/biodiversity processes
 - Private sector organisations engaged in regional habitat/biodiversity processes

4.5.1 Method

Data and information for the two stakeholder engagement indicators were acquired as follows. Engagement in subregional and regional agreements - A desktop review of the engagement of countries and territories in relevant global and regional agreements addressing habitat and biodiversity was conducted and the level of their engagement in each relevant agreement was calculated as a percentage of the total that are eligible to be engaged.

Stakeholders participation in habitat/biodiversity processes – Regional and subregional organizations with a mandate addressing habitat and biodiversity were requested to provide copies of meeting reports of the conference of the parties taking place during the baseline period. Additionally, every effort was made to search the internet for meeting reports. Participant lists were reviewed to determine the percent of eligible countries, regional environmental and fisheries IGOs attending the meetings. The participant lists were also used to identify the number of regional environmental NGOs and private sector representatives attending the meetings.

4.5.2 Results

4.5.2.1 Level of Engagement

In terms of global biodiversity and habitat-relevant agreements, Figure 4.10 shows the level of engagement with these instruments by the countries and territories in the CLME+ area during the baseline period. As might be expected, the most subscribed global conventions are CITES, CBD, UNFCC and UNCLOS, with the lowest engagement being the 2001 Agreement on the Conservation of Albatrosses and Petrels (ACAP). With participation in the Convention on Migratory Species (CMS) and its MOU for sharks at 50% and 38% respectively and the IMO Ballast Water Convention at 50% engagement, opportunity exists to enhance the level of engagement in these agreements within the region.

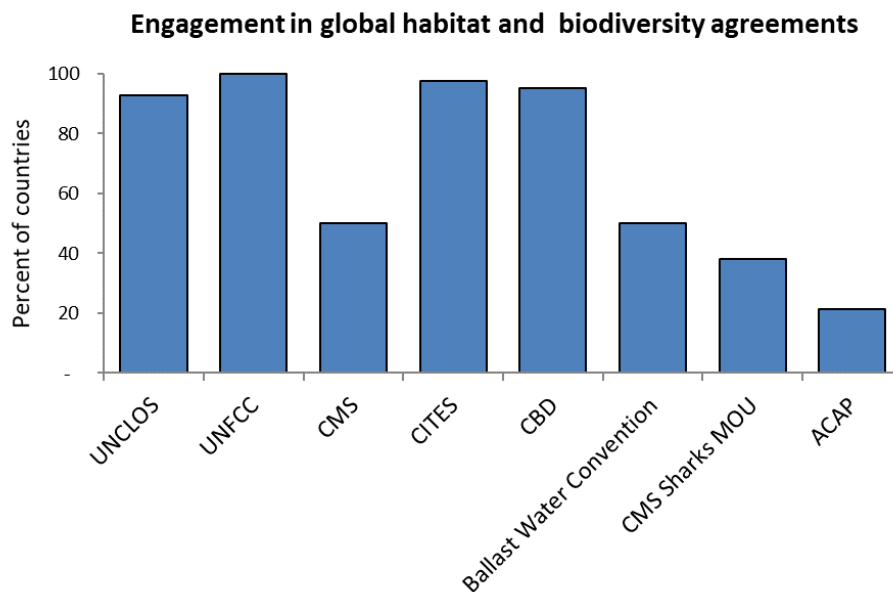


Figure 4.10. Percent engagement of countries and territories in global-level arrangements

During the baseline period of the study, the level of engagement of countries and territories in the region with regional and subregional arrangements was greatest at the subregional level for CCAD (100%), followed closely by engagement with the Cartagena Convention (93%) and to a lesser extent its SPAW protocol (61%), suggesting a need to better understand the factors that would encourage countries to adopt the protocol (Figure 4.11).

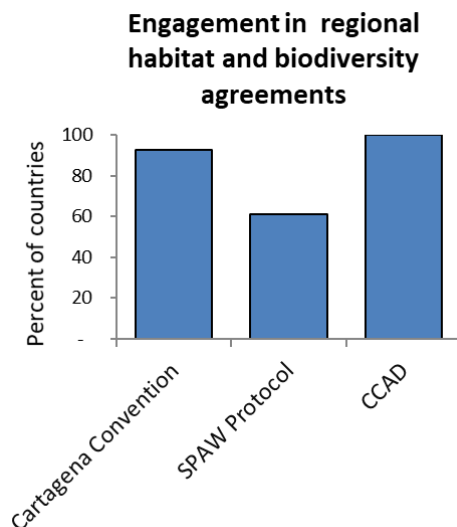


Figure 4.11. Percent engagement of countries and territories in regional-level arrangements

4.5.2.2 Stakeholder participation

Figure 4.12 illustrates the percent of eligible countries, regional environmental and fisheries IGOs attending regional habitat and biodiversity meetings during the baseline period.⁵ Overall, country participation was greatest at 97% for the sub-regional CCAD meetings which occur each year. This was followed by the Cartagena Convention (74%) while country participation in the 2014 SPAW Protocol COPs was 52%. As with the pollution LBS Protocol, this lower percentage is likely a reflection of the number of countries that had still not signed on to the protocol during the baseline period although participation was calculated on all countries attending, regardless of ratification.

In terms of attendance by other regional IGOs in regional habitat and biodiversity processes, none attended CCAD meetings. It is also evident from the results that no regional fisheries IGOs attended any of the meetings, despite the ecosystem-based connection between fisheries and habitat and biodiversity. However, some 50% and 13% of a listing of other regional environmental IGOs attended meetings of the Cartagena Convention and the SPAW protocol COP respectively during the baseline period.

⁵ No participant list was available for the 2012 SPAW Protocol COP.

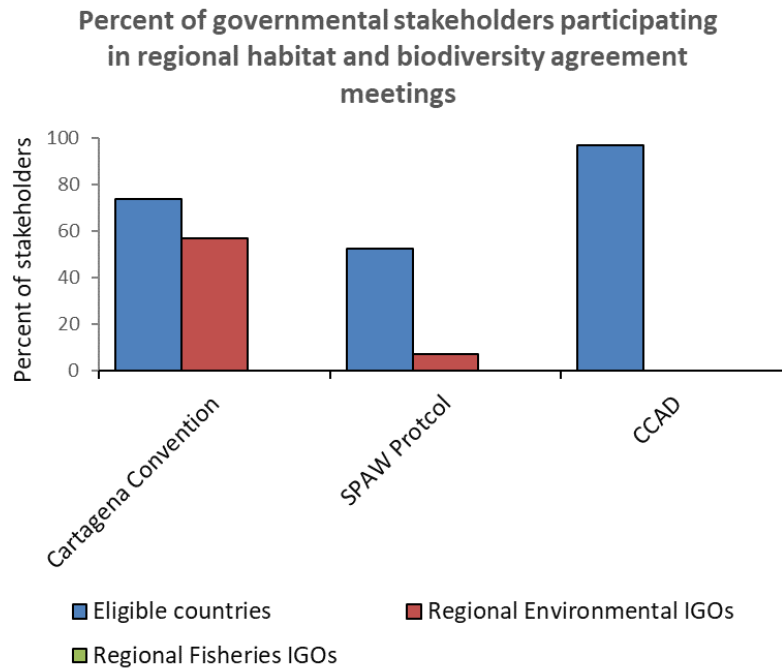


Figure 4.12. Percent engagement of governmental stakeholders participating in regional-level habitat and biodiversity meetings

In contrast to the attendance by governmental stakeholders, meetings of the regional habitat and biodiversity agreements highlighted the low level of participation by regional NGOs as well as private sector representatives (Figure 4.13). Attendance at the 2014 SPAW Protocol COP showed 3 regional NGO and 2 private sector representatives. For the meetings of the Cartagena Convention, the number in attendance was 5 regional NGOs and 2 private sector representatives. None of these categories of stakeholders attended CCAD meetings. Overall, given the increasing call for addressing habitat and biodiversity issues within the region, there is considerable room for greater participation among all stakeholder categories.

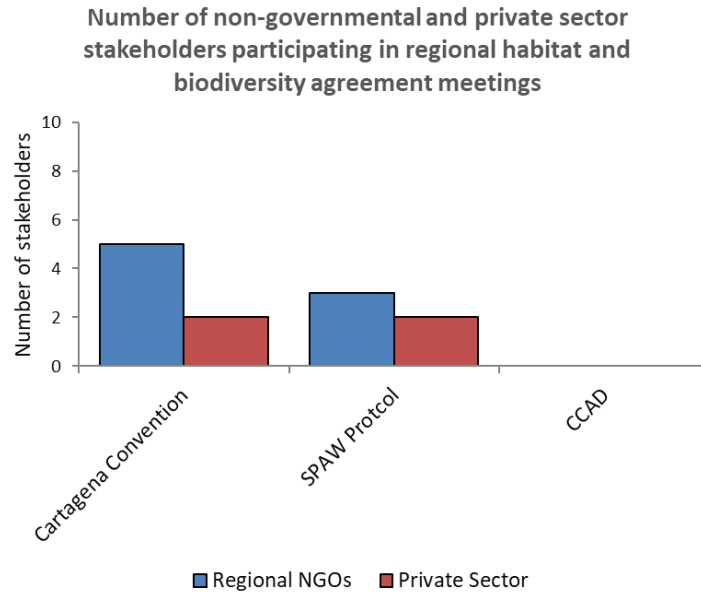


Figure 4.13. Number of NGO and private stakeholders participating in regional-level habitat and biodiversity meetings

4.6 Social justice

Indicators for the social justice category of the GEAF are necessary to assess the degree to which improvements in the marine environment take into account any negative effects on users of marine space and resources, particularly women and other marginalized and disadvantaged groupings of stakeholders (e.g. indigenous peoples, youth). In response to the questions pertaining to stakeholder justice in Table 4.1, five indicators were determined useful to assess the attention paid to this issue during the baseline period (2011-2015).

- Presence of policies that do not disadvantage women in regional and national habitat degradation/biodiversity governing instruments
- Presence of policies that do not disadvantage minorities in regional /subregional and national habitat degradation/biodiversity governing instruments
- Presence of policies that respect cultural traditions in regional/subregional and national habitat degradation/biodiversity governing instruments
- Presence of policies that do not disadvantage small-scale fishers in regional/subregional and national habitat degradation/biodiversity governing instruments
- Presence of mechanisms in place to give recourse to socially unjust habitat/biodiversity conservation measures

4.6.1 Method

Data and information for the social justice indicators were acquired as follows. IGOs and countries and territories were requested to indicate whether they had policies for the five above referenced social justice indicators in governing instruments relating to habitat/biodiversity.

4.6.2 Results

The results of the five assessed social justice indicators as provided by relevant habitat/biodiversity-related regional and subregional IGOs and countries and territories in the region are presented below, grouped according to regional and subregional responses and national responses.

4.6.2.1 Regional and Subregional Policies and Recourse to Habitat and Biodiversity Impacts

With regards to an assessment of social justice indicators in regional and subregional agreements addressing habitat/biodiversity conservation measures, none of the agreements indicated having mechanisms in place that allowed for recourse against these issues (Table 4.2). However, the SPAW Protocol did provide for addressing the remaining four social justice indicators.

Table 4.2. Presence of social justice indicators in regional and subregional habitat and biodiversity arrangements

Social justice issues	IGOs		
	Cartagena Convention	SPAW Protocol	CCAD
Address disadvantages to women		✓	
Address disadvantaged groups/minorities generally		✓	
Respect cultural traditions		✓	
Address small scale fishers		✓	
Mechanisms to address habitat/species conservation socially just			

4.6.2.2 National Social Justice Policies and Recourse to Habitat/Biodiversity Conservation Measures

As illustrated in Figure 4.14, among the five social justice indicators, policies to respect cultural traditions were in place for 62% of the responding countries and territories followed by 42% indicating the presence of mechanisms in place providing recourse to challenge habitat/biodiversity conservation measures that were deemed by stakeholders to be socially unjust. The remaining three indicators were present in less than 40% of respondents. For an unexplained reason, one of the respondents indicated four of the five indicators were not applicable to that country. This may be due to the thinking that the presence of the fifth indicator (mechanisms in place for stakeholders to challenge socially unjust conservation measures) was sufficient to address the other indicators. However, such an approach can be time-consuming and costly for both a challenging stakeholder and the country. While the expected target would be to have all countries and territories in the region having measures in place to address social justice issues, the results from those responding suggest that efforts are beginning to be put in place at the national level. However, with only 62% of all countries and

territories in the region providing responses, making any definitive conclusions about the region is cautioned.

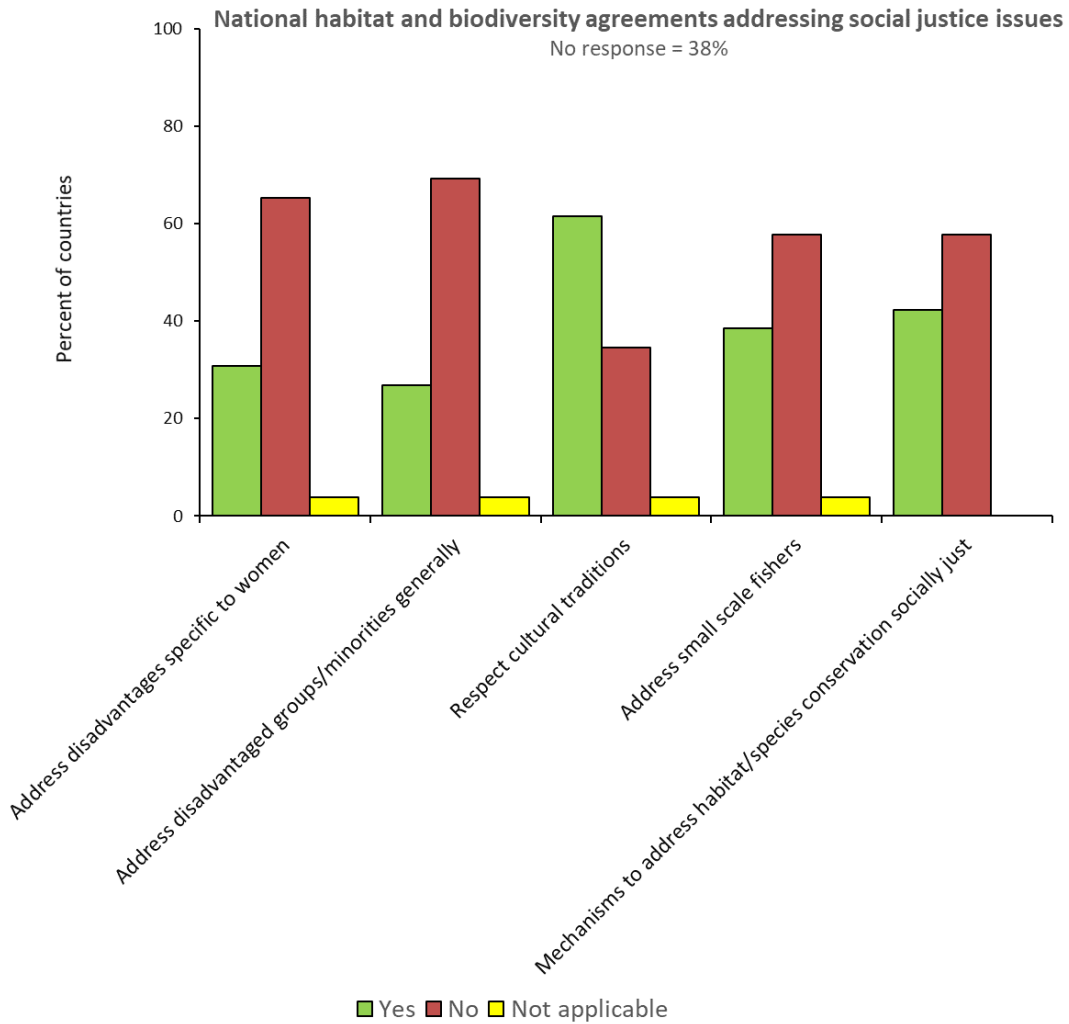


Figure 4.14. National habitat and biodiversity governing instruments addressing social justice issues.

4.7 Human well-being

The following questions were considered to be the key ones regarding human well-being and pollution:

- Has biodiversity protection/habitat conservation benefitted human health?
- Has biodiversity protection/habitat conservation benefitted livelihoods?
- Has biodiversity protection/habitat conservation improved access to recreational amenity?
- Has loss of cultural identity with coastal ecosystems and resources been reduced?

The category of human well-being will be treated together for fisheries, pollution and biodiversity/habitats in section 5, as there is considerable overlap in the indicators selected.

5 Human well-being

The workshop on the GEAF indicators (January 30-31, 2018, Cartagena, Colombia) reflected on the best approach to obtaining well-being indicators. The approach used for social justice indicators was considered. That would have involved questions in the questionnaire on the extent to which well-being indicators were reflected in the policies of IGOs and countries. It was thought that given the novelty of the use of such indicators, it would be useful to seek more detailed numerically based indicators than could be acquired with the questionnaire approach. It was further thought that it would be more useful to explore the availability of numerically based indicators from global databases. In that light, the sets of indicators shown in Table 5.1 were developed and explored.

A review of the human well-being indicators proposed for the three issues (fisheries, pollution, biodiversity/habitat degradation) indicated that there was considerable overlap among them in terms of potentially relevant indicators for assessing human well-being. The possible indicators and target for the three issues are compared and combined in Table 5.1. Four human well-being questions were related to only one issue, five were related to two issues and two to all three issues; hence the decision to treat well-being as a single crosscutting topic in this section.

Notwithstanding the importance of monitoring human well-being as the ultimate goal of efforts to address the three issues, data and information required to quantify the indicators in Table 5.1 were generally lacking. The practical and conceptual problems associated with acquiring such data are discussed for each case below.

5.1 Single issue indicators

5.1.1 Habitat and biodiversity efforts reduce risk to natural disasters? (habitat/biodiversity)

In this case, the indicator chosen was ‘change in coastal protection by mangrove/other vegetation’, which could be determined by measuring the ‘amount of coastal vegetation in critical areas’. In particular, mangroves were considered to be important due to their role in protecting coastal areas from inundation and wave action (Blankenspoor, et al., 2017). They have also been heavily impacted around the world (Lucas et al. 2017). However, seagrasses and reefs are also important for coastal protection and changes in mangrove extent will only apply in those countries where the conditions for mangroves exist.

Several studies have mapped global distribution of mangroves. The UNEP World Conservation Monitoring Center supports a global atlas of mangrove distribution for 1975-2005 based on Giri et al., (2011). Data are downloadable at the national level. Lucas et al. (2017) examined changes in mangrove extent globally for 1996–2010 using Japanese Earth Resources Satellite data for 1' x 1' tiles (spatial units). They found significant loss in the North America/Caribbean and South America regions that would encompass the CLME+ Region, but they did not present data disaggregated by tiles that would allow a regional picture to be developed. Similarly using data from the joint NASA-US Geological Survey Landsat program, researchers created a map of the causes of change in global mangrove habitats between 2000 and 2016 (Merzdorf, 2020).

However, these results are very recent (August 2020) and are not disaggregated by country or region.

Clearly, the data from the last study mentioned above would be most applicable to the CLME+ SAP Baseline period of 2011-2015. However, it is not known if the study will be repeated for the 2016-2020 period. If the intention will be to rely on global datasets, the periodicity of the review may have to match that of the source data. The alternative of using national data gives more control over review periodicity but also burdens countries with collecting and managing data.

5.1.2 Fisher safety at sea (fisheries)

A recent review of fisher safety at sea reported that “It is not standard practice to collect data from marine accidents and collate it in order to put together statistics and conduct follow-up activities. This fact demonstrates that safety at sea is not given great consideration by governments, because the magnitude of the problem is not even known” (Remolà and Gudmundsson, 2018). This is in spite of the fact that there is a considerable body of material on best practices for avoiding accidents at seas by organisations such as FAO and Seafarers Rights⁶. This is consistent with the difficulty encountered in this study with finding global or regional databases with national level data on safety at sea for the CLME+ region.

It does not appear as if there are appropriate global data for safety at sea. Therefore, if countries want to monitor safety at sea there will be the need to establish national level monitoring systems so that countries will be in a position to answer questions such as:

- Is fisher safety at sea addressed in national fisheries policy?
- Is there a programme to improve fisher safety at sea?
- Is there a programme to monitor accidents at sea?
- If so, are data compiled and reported on?
- Has safety at sea been improving, deteriorating or not changing?, or
- What are the quantitative changes in accidents at sea/on vessels over time?

⁶ <http://www.fao.org/3/x9656e/X9656E.htm>
<https://seafarersrights.org/seafarers-subjects/fishers-and-plunders/accident-statistics/>

Table 5.1. CLME+ GEAF monitoring of the SAP. Human well-being indicators for the three issues (fisheries, pollution, biodiversity).

Fisheries	Pollution	Habitat/Biodiversity	Indicator	Measured variable	Target	Possible source
		Habitat and biodiversity efforts reduce risk to natural disasters?	Change in coastal protection by mangrove/other vegetation	Amount of coastal vegetation in critical areas	100%	WCMC
Measures for fisher safety at sea			Change in fishing related death and injury	Per capita fishing related deaths and injuries among fishers	0%	FAO
Food security been improved/assured?			Assurance of future supply of fish for consumption	Percentage of stocks optimally managed	100%	FAO
			Fisher's access to resources		100%	FAO
Fish loss/waste reduced to minimum			Amount of waste	Percentage of fish lost/wasted nationally	0%	FAO
Malnutrition in fishing communities decreased?		Malnutrition decreased	Measure of malnutrition in fishing communities ⁷	Protein deficiency?	0	FAO
	Aesthetics improved	Aesthetics improved	Garbage on beaches and in the sea Visible effluents in the sea	Unmanaged solid waste nationally	0	UNE
	Increase in amenity area quality	Biodiversity protection/habitat conservation improved recreational amenity?	Quantity of protected areas	Number and area of protected areas	% of marine area	
			Water quality relative to standards	Water quality in recreational areas within standards (section 3)	standard	
			Garbage in recreational areas	Unmanaged solid waste nationally	0	
	Efforts to control, prevent and reduce pollution benefitted human health?	Efforts to control, prevent and reduce habitat degradation/biodiversity benefitted human health?	Illness due to contamination or vector borne diseases	Per capita incidence of water related illness/disease	0%	ECLAC, PAHO

⁷ UNHCR Manual for Measuring and Interpreting Mortality

Table 5.1. CLME+ GEAF monitoring of the SAP. Human well-being indicators for the three issues (fisheries, pollution, biodiversity).

Fisheries	Pollution	Habitat/Biodiversity	Indicator	Measured variable	Target	Possible source
Fisher folk incomes increased	Nature-based livelihoods increased/assured	Biodiversity conservation benefitted nature-based livelihoods	Income	Income relative to per capita or poverty levels	Above levels	ECLAC
Loss of cultural identity reduced?	Loss of cultural/spiritual value reduced?	Loss of cultural identity reduced?	Narrative	Perception of retention or loss of significance of fish, fishing, marine ecosystems as part of culture	0% loss Possible gain ⁸	

⁸ Pollnac 1998

5.1.3 Food security improved/assured? (fisheries)

Two indicators were proposed in relation to food security:

- Assurance of future supply of fish for consumption, to be measured by the percentage of stocks optimally managed; and
- Fisher's access to resources, to be treated by a categorical survey or as a narrative .

Several indicators in section 2 relate to the optimal management of fisheries:

- Catch/fishing effort relative to agreed levels (Figures 2.8 to 2.11);
- Extent of destructive fishing (Figures 2.12 to 2.15);
- Status of IUU fishing (Figures 2.16 to 2.19); and
- Status of stocks (Figure 2.20).

The general picture presented is similar across these indicators and can be illustrated by the overall catch/fishing effort relative to agreed levels which shows that only around 12% of stocks can be considered to be optimally managed (Figure 5.1). It should be noted that the data in Figure 5.1 are for the major indicator stocks, and that there are many smaller stocks that are also important, most of which are unlikely to be optimally managed.

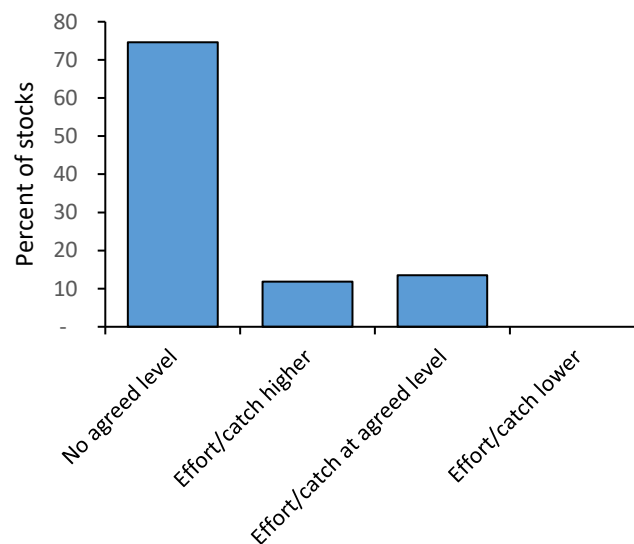


Figure 5.1. Overall catch/fishing effort relative to agreed levels

Fisher's access to resources was considered to be a key component of food security both at the community and national level. Small-scale fisher access to fishing areas and resources is a complex and multifaceted one (FAO, 2012). Consequently, there are numerous aspects that could be monitored in order to determine whether access is changing. FAO (2012) suggests that monitoring and evaluation should be pursued by states. It was thought by the workshop to be most appropriately addressed as a narrative, but could also be addressed through a survey. Ideally the survey would include fishers to determine if the policies, processes and measures were working, rather than being only on paper. The following are some of the broad questions

that could be put to countries to answer on a ordinal scale such as: not considered, under consideration, partly in place, mostly in place, fully in place.

- Is there a national policy regarding SSF access rights to fishing areas and resources?
- Are policy processes in place to ensure SSF access rights?
- Are measures in place to ensure SSF access rights?
- Are there provisions for marine space tenure to be allocated to groups/communities of fishers?
- Do fishers consider access to be secure?

5.1.4 Fish loss/waste reduced to minimum (fisheries)

Fish loss and waste is a pervasive problem which can occur at every stage of the value chain:

- Harvesting
- Post harvesting
- Processing
- Distribution
- Consumption.

The problem is not just one of loss of fish but also of deterioration of quality and thus nutritional value (FAO, 2019). Consequently, estimating fish loss/waste is a complex and multifaceted activity (Kruijssen et al., 2020). Several authors have noted that data for fish loss/waste are difficult to obtain and compare, most having been derived secondarily from a diversity of methodologies (Xiu et al., 2017; Kruijssen et al., 2020). Perhaps the best known aspect of fish loss and waste is marine fishery discards, for which there have now been three assessments (Pérez Roda, et al., 2019). However, in that case the information is primarily for commercial scale fisheries. While discarding is considered to be much less of a problem in SSF, where most of the catch is used, than in commercial fisheries, it can be significant when regulations prohibit the landing of certain sizes and types of fish (Pérez Roda, et al., 2019).

Despite its recognition of the importance of this problem, FAO does not maintain databases on fish loss and waste⁹. No other comprehensive sources of data could be found. Consequently, if this is considered to be an indicator that is important to CLME+ countries, there will be the need to include appropriate monitoring in national level data collection systems.

5.2 Indicators across two issues

5.2.1 Malnutrition in communities decreased? (fisheries and habitat/biodiversity)

Alleviation of malnutrition was identified as a well-being outcome for both fisheries and habitats/biodiversity. The indicator identified was to be a measure of malnutrition, using protein deficiency as an appropriate indicator. A review of global databases indicates that there are many different kinds of indicators relating to malnutrition in general and protein deficiency in particular (Development Initiatives, 2020, WHO Global Database on Child Growth and

⁹ In lit., Stefania Vannuccini, Senior Fishery Officer (Statistics) and Carola Fabi, Senior Statistician Statistics Division. Food and Agriculture Organization of the United Nations, October 2020

Malnutrition¹⁰). However, data are seldom disaggregated below the national level making it difficult to extract indicators for coastal communities. A recent effort to compile subnational indicators for child growth failure shows the level of effort required in acquiring national data (Kinyoki et al. 2020). These considerations suggest that if CLME+ countries wish to have indicators that relate specifically to coastal communities, collection of data for these will have to be initiated nationally and be at the community level.

5.2.2 Aesthetics improved (pollution and habitat/biodiversity)

Two indicators were identified for this question, beach garbage and water quality aesthetics (garbage and visible effluents). Information on unmanaged plastic waste was considered to be the best available proxy for the garbage aspect of this indicator. It is based on the assumption that the majority of unmanaged plastic waste generated in the coastal zone ends up in the ocean. Information on numbers of coastal inhabitants by country in the CLME+ region, total weight of waste generated per person, percentage of waste that is plastic, and percentage that is unmanaged were used to calculate the total weight (metric tons) of plastic waste per country that is estimated to be entering the sea (see Appendix 3 for full details). The total estimated quantity for 2015 is 1,283,354 metric tonnes. Details by country can be found in Appendix 4.

The distribution of percentage unmanaged waste among countries is shown in Figure 5.2. Forty-five percent of countries have relatively low amounts of unmanaged plastic waste in the 0-10% category. However, there are still several countries for which unmanaged plastic waste is high. Therefore, there is considerable potential for improvement in waste management. A second way of looking at this problem is to examine the actual quantity of unmanaged plastic waste generated per person (Figure 5.3). Here again there is a huge spread among countries with considerable room for improvement in most.

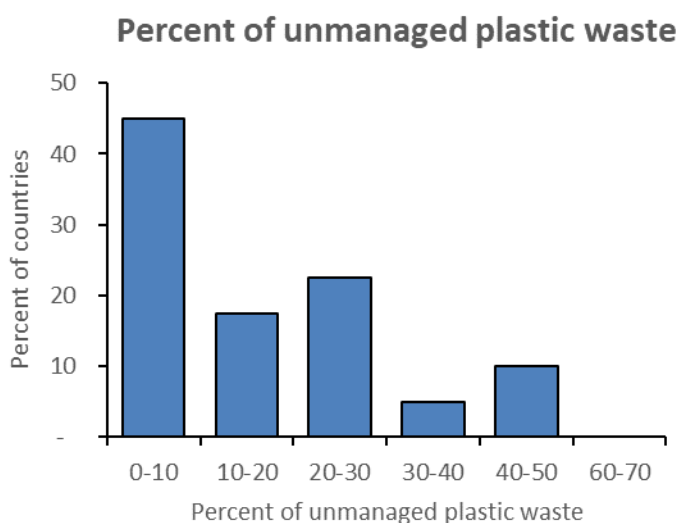


Figure 5.2. The distribution of percent of unmanaged plastic waste among 40 countries/territories of the CLME+ Region in 2015.

¹⁰ <https://www.who.int/nutgrowthdb/en/>

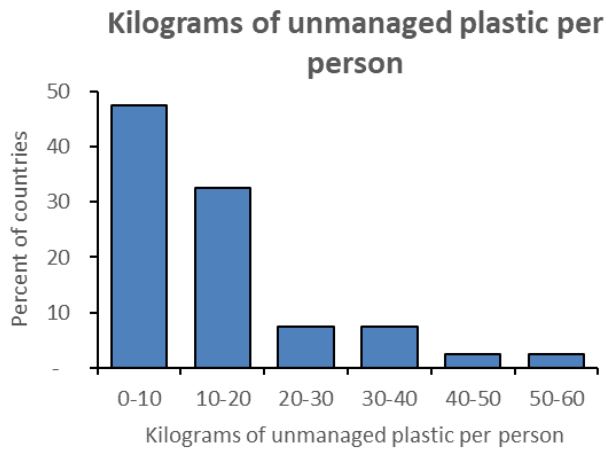


Figure 5.3. The distribution of kilograms of unmanaged plastic per person living in the coastal zone among 40 countries/territories of the CLME+ Region in 2015.

Two caveats are worth noting here. The first is that some plastics degrade on land and so end up in the ocean as microplastics, which although a serious health concern do not degrade aesthetics. The second point is that plastic waste in the ocean is a transboundary problem. Consequently, a considerable proportion of the plastic waste that is seen in the nearshore and on beaches is generated from both land-based and marine-based sources in other countries; often outside the CLME+ region. Consequently, changes in this indicator, while reflecting an actual improvement in land-based practices in the region, may not be reflected in what is actually seen on beaches and in the water.

5.2.3 Increase in amenity area quantity (pollution and habitat/biodiversity)

The quantity of protected areas in terms of both number and area were considered to be appropriate indicators for this question. This is notwithstanding the recognition that MPAs vary widely in coverage of critical habitats and in whether they are effective (Gombos et al., 2012). At the global level, MPAs have been mapped through the joint efforts of the United Nations Environment Programme’s World Conservation Monitoring Centre (UNEP-WCMC) and the IUCN, which compiles global protected area information in the World Database on Protected Areas (WDPA). A history of MPA inventory and database compilation for the Caribbean region up to 2015 is provided by Knowles et al. (2015). Their analysis was offered as a baseline for insular Caribbean MPAs and provides considerable information on coverage of habitats and temporal trends.

If these indicators are to be of ongoing value in monitoring and evaluating the SAP, the regional databases will have to be expanded to include the entire CLME+ area and reports produced at regular intervals (at least every five years).

5.2.4 Amenity area quality (pollution and habitat/biodiversity)

Two indicators were considered to address this question:

- Water quality relative to standards
- Garbage in recreational areas

The status of water quality relative to standards can be seen in Figure 3.11. Among countries that responded (57-60%), the majority had no standard for water quality across the 10 parameters for which information was sought. For those countries that did have standards for the parameters, most reported that the parameters were within the standards. In about 5-10% of countries the parameters were worse than the standards.

Data for the second indicator, garbage in recreational areas, are from the same source as the indicator for beach garbage in the previous section on aesthetics.

5.2.5 Human health benefitted (pollution and habitat/biodiversity)

The incidence of diarrhea due to waterborne pathogens is the closest indicator for human health that could be found¹¹. However, the database does not differentiate between incidence in freshwater or coastal and marine areas. This limits its usefulness as an indicator for the CLME+ SAP.

5.3 Indicators across all three issues

5.3.1 Incomes increased

The purpose of this indicator is to track changes in the incomes of fisher folk and persons in communities involved in managing coastal and marine protected areas. The aim was to compare these incomes with global and national poverty criteria to determine trends in the incidence of poverty among these persons. However, information on incomes is not available on a region-wide scale in regional or global databases that would allow the development of a regional picture.

Regarding fisheries, the closest proxy would be the national value of fisheries. Following the methodology of Dyck and Sumaila (2010) for value-added multipliers to be applied to fishery landings and data on reconstructed landings from the Sea Around Us Project, national levels of landed value, overall value added, and value added that accrues to fisher folk can be estimated (see Appendix 3 for methodology). While these national level estimates can be apportioned among four fishing groups: subsistence, artisanal, industrial and recreational, getting to individual incomes would require considerably more information on numbers of persons engaged in each group and how fishing revenues are apportioned among them.

As shown in Figure 5.4, and as already well known for the CLME+ Region fisheries are predominantly artisanal contributing between 50 and 80% of catch in most countries. Subsistence fisheries typical contribute between 5 and 30% of catch while industrial fisheries

¹¹ https://www.who.int/gho/phe/water_sanitation/burden/en/

seldom contribute more than 30%. Recreational fisheries are shown as contributing very little, but it is also well known that these fisheries are not well monitored and are underestimated in most countries. The high proportion of catch from artisanal and subsistence fishing contributes to the difficulty of obtaining accurate information on catch and its value.

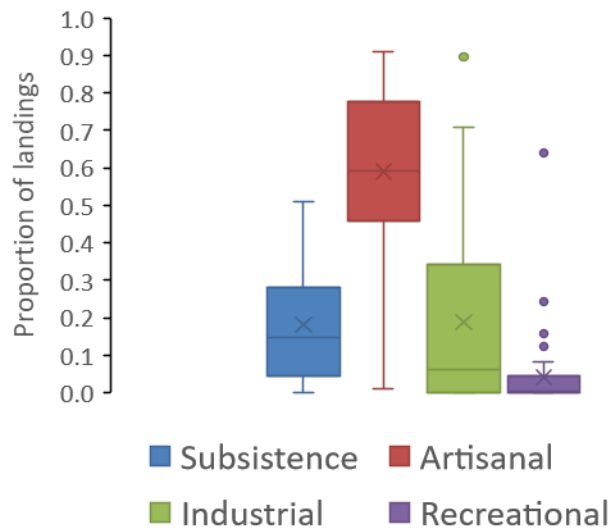


Figure 5.4. Box and whisker plot of the proportional distribution of landings among countries in the CLME+ Region

It should be noted that while income is still considered to be an important aspect of poverty assessment, there has been a reorientation of poverty analysis to include Multidimensional Poverty Indicators (MPIs) which take other aspects of poverty, such as health, education and standard of living, into consideration (Thiry et al., 2018; Alkire and Jahan 2018; FAO 2019; UNDP-OPHI, 2020). The FAO is currently involved in developing and testing MPIs for Caribbean fisheries and this work should be considered in taking the assessment of income and poverty in coastal communities forward.

Once again, the analysis carried out leads to the conclusion that getting information on individual incomes will require national level surveys. These could be targeted, stand-alone surveys or built in to national censuses, in which case the results would only be available every 10 years. Creating linkages with ongoing programmes such as the Caribbean Development Bank (CDB) partnership with the Organisation of Eastern Caribbean States (OECS) Commission in the implementation of Enhanced Country Poverty Assessments (eCPAs) would be another way to pursue this type of well-being indicator for fishers and other persons who depends on coastal resources for their livelihoods. For example, surveys such as the 2016 survey for the Saint Lucia national report of living conditions (Kairi Consultants, 2018) could seek livelihoods information that would allow disaggregation of the data on that dimension.

5.3.2 Loss of cultural identity

Cultural identity derives from cultural heritage which can take several forms. Tangible cultural heritage comprises movable items such as art, artifacts and documents, immovable items such

as monuments and archeological sites which may be underwater. Intangible cultural heritage comprises traditions, performing arts, rituals, etc. In Caribbean countries much cultural heritage is associated with the coast and sea. This may be associated with iconic species such as flyingfish in Barbados (Cumberbatch and Hinds, 2013), traditional fishing lifestyles, arts and crafts inspired by the sea, etc.

Loss of cultural identity is of concern as species are depleted or migrate due to climate change and as coastal communities are eliminated by climate change or modern development. Management measures associated with the three ecosystem issues can be developed with the aim of minimizing loss of cultural identity. However, it may be difficult to develop quantitative indicators for loss of cultural identity, especially intangible culture. In this case it may be most appropriate to take a narrative approach to this question by asking countries to provide instances where loss of cultural identity associated with the coast and sea has either taken place or been prevented.

5.4 Conclusion

The development and application of human well-being indicators is a relatively new endeavor (King et al., 2014; Summers et al., 2019; OECD 2020). A major step forward was taken when the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP), generally referred to as the Stiglitz-Sen-Fitoussi Commission after the surnames of its leaders, was created by the French Government in 2008 (OECD, 2020). The final report of the CMEPSP was published in September 2009 (Stiglitz et al., 2009). Recently the authors published a 10-year retrospective that provides a wide range of well-being indicators. The majority of these are national level, and do not focus at the level of specific sectors or ecosystems.

The challenges with acquiring the needed information at an appropriate geographical scale and specifically for the issues in question indicate the need to initiate collection and/or compilation of these data at the national level. A follow-on initiative to compare the first assessment period for the CLME+ SAP (2016-2020) with the baseline period should take a country level approach to determining availability of these data in a comparable format. Alternatively, a nominal scale system of assessment, such as was used for several other GEAF categories (pressure, state) could be developed. At the very least, this would indicate the extent to which such information was available in national statistical systems.

The problem of selecting appropriate well-being indicators at a local scale has been noted by others. Loveridge et al. (2020) identify three interrelated challenges associated with developing well-being indicators: addressing trade-offs between complexity and simplicity; integrating top-down and bottom-up approaches; and ensuring cost-effective and flexible approaches that are tailored to different policy contexts. They present a step-by-step Well-being Indicator Selection Protocol (WISP) for measuring wellbeing. This or a similar structured approach could be pursued for the CLME+ Region, so that the indicator set to be used into the future is carefully developed to meet the policy needs of future SAPs.

6 Overall baseline assessment of regional ocean governance in the Wider Caribbean Region

Table 6.1. Guiding questions for review of regional ocean governance
Architecture
Are arrangements in place to address overall ocean governance at regional/subregional levels?
Is there a mechanism for overall integration of regional/subregional policy cycles at the policy level?
Are there mechanisms in place to ensure national coordination and national-regional interaction?
Process
Is there regional/subregional policy in place for oceans?
Are there regional/subregional strategic plans in place for oceans?
Are there regional/subregional management plans in place for oceans?
Pressure
Have human pressures on coastal and marine ecosystems been reduced for the three issues
State
Has the health of coastal and marine ecosystems improved
Stakeholder Engagement
Are agreements well subscribed to?
Are stakeholders engaged in regional agreements
Has capacity to engage been assessed and built for NGOs and private sector fisheries, habitat, pollution, biodiversity?
Is information available and accessible for stakeholders to participate? fisheries, habitat, pollution, biodiversity?
Social Justice
Do regional oceans agreements include specific reference to disadvantaged groups and minorities?
Human Well-Being
Are marine-based livelihoods assured, jobs increased?
Has the contribution of shared living marine resources to national blue economy/total economy increased?
Has human health in coastal communities improved?
Has loss of cultural identity with coastal ecosystems and resources been reduced?

6.1 A crosscutting perspective

An Ecosystem Approach to Fisheries/Ecosystem Based Management (EAF/EBM) requires consideration and integration of all the various factors affecting sustainable use of ecosystems, including human activities and implications for human well-being. In the previous sections of this report the sustainability issues of fisheries, pollution and biodiversity/habitat degradation have been treated separately. This section looks at some of the commonalities and differences among the three issues. Clearly, there are interrelations among them, for example: pollution impacts fish populations, as does nursery habitat destruction; fishing impacts biodiversity and, at extreme levels of exploitation, can become a biodiversity issue as for conch and sharks. At the human level, habitat destruction and pollution can both affect fishing communities and

thence food security from fishing. This report provides baseline information that can inform discussions about these interactions and what needs to be done to make progress in critical areas of all three issues.

6.1.1 Architecture

Governance arrangements for coordination among regional bodies with a mandate for ocean related issues are a focus of the CLME+ SAP. Ultimately, the CLME+ ICM, which was established in 2015 at the end of the baseline period provides a temporary coordination mechanism for all three issues. Of the three, only fisheries is supported by its own fisheries ICM which can be considered a sub-mechanism of the overall ICM and is also temporary.

The strength of the regional arrangements for the three issues was often characterized as weak. This was partly due to a mismatch between geographical coverage of the issue and the arrangement addressing it. It was also partly due to incompleteness in many of the policy processes associated with the several IGOs that are responsible for the three issues, where connectivity with higher level policy and decision making bodies is often weak. This is least so in the case of SICA where its fisheries (OSPESCA) and environmental (CCAD) IGOs have direct access to ministerial level decision-making in SICA itself. It is most so in the case of the UN IGOs for fisheries (WECAFC) and environment (UNEP CEP) where advice is generated for uptake by countries rather than a collective decision-making body. The situation regarding coordination for the three issues is more fully discussed in the governance TDA (Mahon et al. 2013).

National Intersectoral Committees (NICs) cut across the three issue areas at the national level. They are intended to integrate all ocean related sectors and facilitate coordinated national engagement with regional and global processes. More than half the countries were found to have no discernable NIC. For those that did, the mode was 60-80% of functions in place. This leaves considerable scope for establishing NICs and for strengthening those that exist. While there is room for improvement regarding all functions that NICs can serve, the prominently weak area is in fulfilling the role of linking national and regional processes.

6.1.2 Process

In terms of governing instruments in place across the three issues, policies were found to be the preferred choice at the regional level, although there was considerable variation among the level of attention paid to different fisheries species groups. Other types of governing instruments (management plans, strategic plans, legislation and regulations) were rarely used at the regional and subregional level to address habitat and biodiversity and pollution. Given the connectivity between fisheries, habitat and biodiversity and pollution, the results suggest room for greater regional collaboration when developing issue-specific policies that can potentially affect the achievement of policy objectives for the other issues. Additionally, at the regional level, expanding the collaborative development and implementation of governing instruments other than policies could lead to fostering a more consistent approach to addressing these interconnected issues.

At the national level, the preferred instruments focused on legislation and regulations with limited attention being paid to policies, strategic plans and management plans as a way to address pollution, habitat and biodiversity and fisheries issues. For habitat types, shallow reefs, mangroves and turtle nesting sites were the main areas for legislation and regulations while for fisheries, the focus for legislation and regulations was on shallow shelf and deep slope reefs, along with management plans in place for conch, likely due to a response for being listed in CITES Appendix 2. For pollution, domestic waste-water was governed with legislation and regulations in 95% of the responding countries and overall, land-based sources of pollution appear to better governed nationally than marine-based sources, despite countries signing on to global and regional marine-based pollution agreements. Furthermore, while 80% of responding countries indicated having standards in place for key pollutants in effluents entering the marine environment, just over half followed through with having a monitoring program in place. This mismatch suggests limited available information to accurately assess the stressors being exerted on the marine environment from these land-based sources and as such, the resulting impact on habitat and biodiversity, including key fish stocks.

6.1.3 Pressure

To assess the level of stress on the marine environment across the three issues, indicators were scored as “no agreed level”, “lower than agreed level”, “at agreed level” or “higher than agreed level”. Although different indicators were required to assess the pressure arising from each issue, regardless of indicator and issue, the overwhelming response at both the regional and national level was an absence of any limits or levels set and even when an agreed level was set, due to a lack of monitoring, it was difficult to know if it was being met. The exception to this was mostly found in the fisheries where an agreed level was set for flyingfish and due to the rules imposed for conch, it was deemed at an agreed level. The baseline results clearly indicate the need for a concerted effort to determine what stressors should be tracked across the three issue areas that could supply the information needed to better inform SAP decision-making.

6.1.4 State

In terms of having a good understanding of the current state of the marine environment using habitat and biodiversity measures, marine water quality indicators and the status of different fish stocks, very little actual information is available. Not surprising, there is considerable variability among fish stocks but overall, the response at the regional and subregional as well as national level is that the status of most stocks is largely unknown or over-exploited. Where some degree of effort has been expended on research and management, stocks such as flyingfish, lobster and conch are deemed to be fully exploited. For pollution, standards and monitoring for marine water quality were present in less than half of the responding 19 countries, with a range of 22% - 39% of the countries indicating the pollutants that were being monitored were “within the standard”, suggesting considerable room for improvement at both the regional and national level. For habitat and biodiversity, indicators showed key habitat types and areas for priority species/groups were either not monitored or were showing signs of measurable to significant loss for quantity and for quality, measurably or significantly degraded.

6.1.5 Stakeholder engagement

Across the three issues, engagement with both global and regional arrangements was good but there is scope to improve at both levels. There is the tendency for uptake of the most recent arrangements such as the FAO Compliance, FAO Port State and the IMO Ports State MOUs, to be slow. In particular there is the need for countries to engage with the SPAW and LBS protocols both in terms of signing and participating in meetings.

NGOs and private sector participation in the meetings of IGOs was low for all three issues. This may be due to the lack of structured arrangements for NGOs and private sector (e.g. shipping, oil and gas) that would facilitate their engagement with the work of the IGOs for the three issues.

6.1.6 Social justice

Social justice issues are fairly well reflected in regional arrangements for fisheries, but less well so in those for pollution and biodiversity/habitat degradation. Notably absent in all arrangements except WECAFC is the direct need to ensure that management measures (whether for fisheries, pollution or biodiversity/habitats) take social justice issues into account. At the national level, social justice issues were reflected in policies in about 40-60% of responding countries for all three ecosystem issues. This is an area in which there is a need to review and update policy to align with current norms.

6.1.7 Human well-being

The development and application of human well-being indicators is clearly a crosscutting matter and is also a relatively new endeavor globally. Significant challenges were experienced with acquiring the needed information at an appropriate geographical scale and specifically for the issues in question. These challenges indicate the need to initiate collection and/or compilation of these data at the national level. A follow-on initiative to compare the first assessment period for the CLME+ SAP (2016-2020) with the baseline period should take a country level approach to determining availability of these data in a comparable format. Alternatively, a nominal scale system of assessment, such as was used for several other GEAF categories (pressure, state) could be developed. At the least this would indicate the extent to which such information was available in national statistical systems.

6.2 Lessons learned

6.2.1 Responses to questionnaires

The response rate to the questionnaires was relatively low and many contacts by email, phone and in person were required in order to achieve the level of response shown in Table 1.3. It should be noted that many countries that responded were not part of the CLME+ Project, but saw the value of having a regional perspective on the status of the three issues. In contrast there were several CLME+ Project countries that did not respond despite many communications. Consequently, the picture presented in this report is only a partial one. This has significant implications for monitoring the implementation of the SAP and for revising it for the next SAP period. The current initiative was designed to be as low impact as possible for

countries, recognising their low capacity to respond to the numerous regional initiatives of which they are part. Considerable thought would have to be given as to whether reducing the number of indicators used in the current effort would still provide the information needed to support the SAP review and revision process envisioned in the SAP M and E Framework report.

6.2.2 Data forms and a database approach

Some respondents to the questionnaires observed that they would have liked to complete the questionnaire on line. Going forward this facility is recommended. The fillable forms could be linked to a database from which retrieval of the data could be preprogrammed for regular reporting.

6.3 Other related monitoring and evaluation activities

There are several indicator based monitoring and evaluation initiatives within the CLME+ region that relate to the indicators covered in this report, and to which these indicators may be able to contribute. Most prominent is the initiative entitled 'Metrics for Policies for Well-being and Sustainable Development in Latin America and the Caribbean¹²'. The European Commission, OECD and its Development Centre and UN ECLAC together with countries in Latin America and the Caribbean are collaborating to identify the most policy-relevant metrics for achieving the Sustainable Development Goals (SDGs), improving well-being, and leaving no-one behind. This initiative provides a platform, over three years (2018-2021), for political and technical dialogue with statisticians, planning ministries, development cooperation agencies and other policy actors from across the region and the world, aiming to identify top-level indicators and best practice for informing national policy and international cooperation strategies. Countries and IGOs can review the set of GEAF indicators in this report to determine whether they may be useful in meeting national reporting requirements.

6.4 Conclusion and recommendations

The relatively low response rate by countries indicates that the results presented here should be viewed cautiously. It is hoped that what has been provided in this report will illustrate the value of such a high level region-wide approach for strategic planning. This could lead to more comprehensive responses in the future and even retrospectively for this baseline.

During the baseline period of 2011-2015, the findings indicate minimal integration across the three issues. In terms of Architecture, the strength of regional arrangements was generally found to be weak and lacking formal connectivity across the issues. Regarding Process indicators, regional arrangements focused on developing policies as the main form of governing instrument while countries gave attention to legislation and regulations, likely in an effort to meet their ratification requirements. In terms of Pressure and State, the consistent finding for each issue was either no agreed level or below agreed level, highlighting the significant effort needed to be put in place to minimize stresses on the marine environment and maintain a healthy state that supports ecosystems services. From an Engagement perspective, countries

¹² <https://www.oecd.org/statistics/lac-well-being-metrics.htm>

demonstrate significant engagement with global and regional agreements but very little involvement with NGOs and the private sector was noted. At the regional and national level, the need to address social justice issues was being recognized, albeit more so for fisheries than pollution and habitat and biodiversity. As an overall conclusion, there is much room for improvement across all categories of the GEAF framework and moving towards an ecosystem based approach to the sustainable management of the CLME+ region.

It is important to note that this report is part of what should be an institutionally-based iterative policy level Strategic Action Programme (SAP) planning process. This report is the monitoring aspect of the monitoring and evaluation component of that process which is described in a separate document (Mahon and Fanning 2021). As such the only recommendations to be included here are those for improving the monitoring component as outlined in lessons learned in the previous section. Recommendations for policy and management interventions will come from the evaluation stage of the process. At the time of writing the SAP planning process is envisaged as being institutionalized in the regional Coordination Mechanism that is being developed by the CLME+ Project (CLME+ Project, 2020).

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