CONTRIBUTION 3.1

Implementing a Monitoring and Evaluation Plan to Inform Fisheries Governance in the Wider Caribbean

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Abstract

Recognizing the complexity associated with the governance of fisheries in the Wider Caribbean, considerable effort and progress has been made over the past decade towards implementing a regional approach to effectively manage fisheries in the region. Given the proximity of the 45 countries and territories, coupled with the inherent transboundary nature of many of the key species found in the region, the effective management and governance of fisheries necessitates close collaboration among countries. Key to that collaboration is the need to optimize scarce human and financial resources through the collection and sharing of fisheries relevant data and information to better inform decision making at multiple levels. To assist with this task, 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. The SAP specified the development of a Monitoring and Evaluation (M&E) Plan to track the progress towards achieving the SAP objectives and to facilitate adaptive management. Using the Governance Effectiveness Assessment Framework (GEAF) comprising seven categories of indicators aimed at assessing whether good governance arrangements are in place and whether they are achieving the intended objectives, this paper provides an assessment of the seven categories of the GEAF for the baseline period of the SAP (2011-2015). Fisheries data used in the assessment were provided primarily by countries in the CLME+ Region and by the relevant intergovernmental organisations. In some cases, data and information from third party sources were used. The expectation was that comparable M & E assessments would continue over sequential five-year intervals to track progress and inform multi-level decision making.

KEYWORDS: Fisheries management and governance, monitoring and evaluation framework, CLME+ region, baseline fisheries assessment 2011-2015

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1. INTRODUCTION

The Caribbean and North Brazil Shelf Large Marine Ecosystems (jointly referred to as CLME+) and their associated living resources are key to the region's economies (Clegg et al. 2020). However, given the complex socio-cultural and geo-political factors at play historically and currently within the region, highly variable progress exists regarding ocean and living marine resources governance (Fanning et al. 2021, Mahon et al. 2010). Capacities for living marine resources management vary considerably at national, sub-regional and regional levels (Mahon et al. 2014). Additionally, the proximity of the countries and territories, coupled with the inherent transboundary nature of many of the key species found in the region, necessitate close collaboration among countries if the effective management and governance of fisheries is to be realized (Figure 1). Key to that collaboration is the need to optimize scarce human and financial resources through the collection and sharing of fisheries relevant data and information to better inform decision making at multiple levels.

Figure 1. Map of countries and territories of the CLME+ region

In 2013, countries bordering and/or located within the Caribbean and North Brazil Shelf Large Marine Ecosystems adopted a 10-year Strategic Action Programme for the Sustainable Management of the Shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems, the "CLME+ SAP." (Debels et al 2017). The 10-year CLME+ SAP aimed to contribute to the achievement of the regionally adopted long-term vision for the CLME+: "healthy marine ecosystems that are adequately valued and protected through robust, integrative and inclusive governance arrangements at regional, sub-regional, national and local levels, which in turn effectively enable adaptive management that maximizes, in a sustainable manner, the provision of goods and services in support of enhanced livelihoods and human well-being" (Fanning et al. 2011, p. 371). The 5-year UNDP/GEF CLME+ Project (GEF ID

5542; 2015-2020) aimed to "Catalyse the Implementation of the SAP for the Sustainable Management of shared Living Marine Resources in the CLME+ region". The SAP specified the development of a Monitoring and Evaluation (M&E) Plan to track the progress towards achieving the SAP objectives and to facilitate adaptive management. Key among the objectives was the need to address threats around the unsustainable use of fisheries resources which were negatively impacting the societal benefits obtained from the CLME+ and its living resources. Consequently, in order to understand the level of unsustainability that was taking place across the region, it was first necessary for countries and intergovernmental organizations (IGOs) with a fisheries governance and management mandate to share fisheries relevant data and information to facilitate informed governance decisions aimed at minimizing these threats.

2. METHODS

2.1 Data Collection

Using the CLME+ approved Governance Effectiveness Assessment Framework (GEAF) (*Figure 2*) described by Mahon et al (2017), surveys containing questions relating to the seven GEAF indicator categories were emailed over a two-year period (2018-2020) to country and territorial representatives with responsibility for fisheries in the language of their choice. Survey questionnaires were also sent to relevant IGOs in the region including the United Nations Food and Agriculture Organisation (FAO), Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA) and the Caribbean Regional Fisheries Mechanism (CRFM). In all cases, data and information were requested for the 2011-2015 baseline period of the SAP. Telephone calls, assistance from the CLME+ Project Coordinating

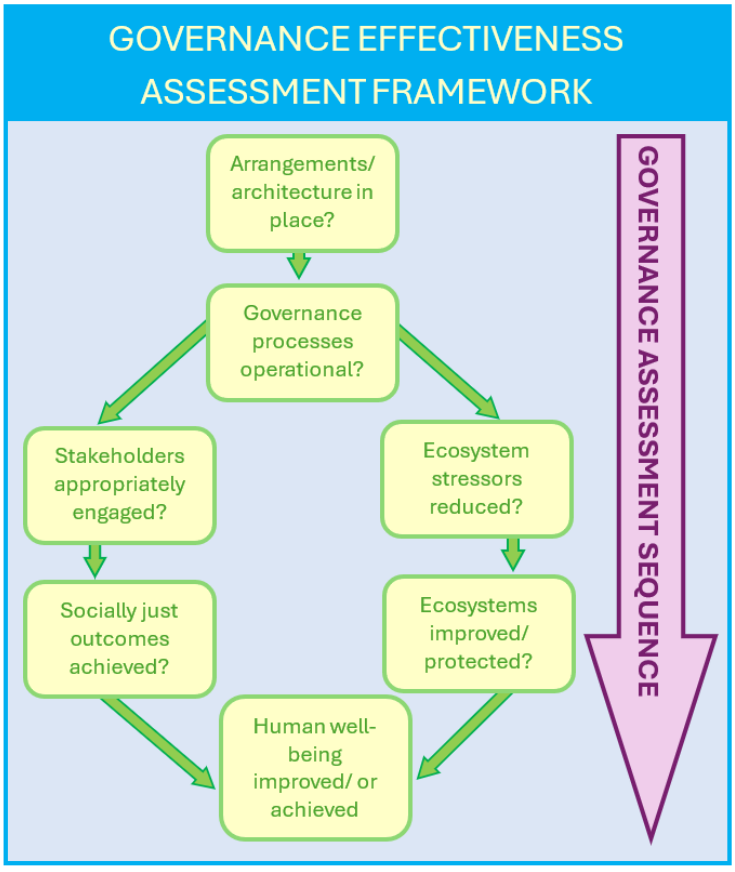

Figure 2. The GEAF indicator categories showing the temporal sequence for assessing governance

Unit and other contacts, and follow-up emails were sent to countries and IGOs to encourage them to provide the requested data. A summary of the guiding questions used in the survey for each category is provided in Appendix 1. For each question, indicators are proposed that show the direction of change, or if a target has been set, the status in relation to the target. For several indicators, specific responses were sought by species or species group (pelagic, groundfish and coral reef). The data provided by responding countries, territories and IGOs were entered in Excel workbooks for analysis. In some instances, third party data were used to supplement gaps.

The indicator categories shown in Figure 2 form a graduated assessment sequence (UNEP/GPA, 2006). It is assumed that 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. For additional details on the method used to solicit and compare fisheries relevant data from countries, territories and IGOs for the 2011-2015 baseline period, please refer to Fanning and Mahon (2021).

3. RESULTS AND DISCUSSION

3.1 Country responses

While we received a 100 percent response from the three IGOs that were contacted, we were only successful in getting a 71 percent response rate from the individual countries and territories, despite numerous attempts and effort to garner data over a two-year period (Table 1). Given the importance of fisheries to the countries in the region and their commitment to addressing the shared threat of unsustainable fisheries by approving the SAP, having close to one-third not responding to the request for information was disappointing. Additionally, while some might consider this level of response adequate, caution must be exercised in reaching any definitive overall conclusions regarding the findings presented below for this first 2011-2015 baseline assessment as the level of response varied across the different GEAF indicator categories, ranging from 48% to 60%.

Table 1. Country and Territories responding to surveys

Country	Fisheries
Anguilla	
Antigua and Barbuda	
Aruba	x
Bahamas	x
Barbados	x
Belize	x
Bonaire	x
Brazil	x
British Virgin Islands	
Cayman	x
Colombia	x
Costa Rica	
Cuba	
Curacao	x
Dominica	
Dominican Republic	
French Guiana	x
Grenada	x
Guadeloupe	
Guatemala	x
Guyana	x
Haiti	x
Honduras	x
Jamaica	x
Martinique	
Mexico	x
Montserrat	x
Nicaragua	x
Panama	x
Saba	x
Saint Eustatius	x
Saint Maarten	x
Saint Kitts and Nevis	x
Saint Lucia	x
Saint Vincent and the Grenadines	x
Suriname	x
Turks and Caicos Islands	x
Trinidad and Tobago	x
USA Puerto Rico/Virgin Islands	x
USA	
Venezuela	
Total responses	30
Percent responses	71

3.2 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 a Memorandum of Understanding among the three fisheries organizations was the overarching regional integrating mechanism addressing fisheries.

- Strength of arrangements - 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 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 the International Commission for the Conservation of Atlantic Tunas (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 - National Intersectoral Committees play a crucial role in linking local and national stakeholders to regional processes needed for transboundary governance. 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. The survey of NICs and best practices for NICs are discussed by McConney et al. (2016) and Compton et al. (2020).

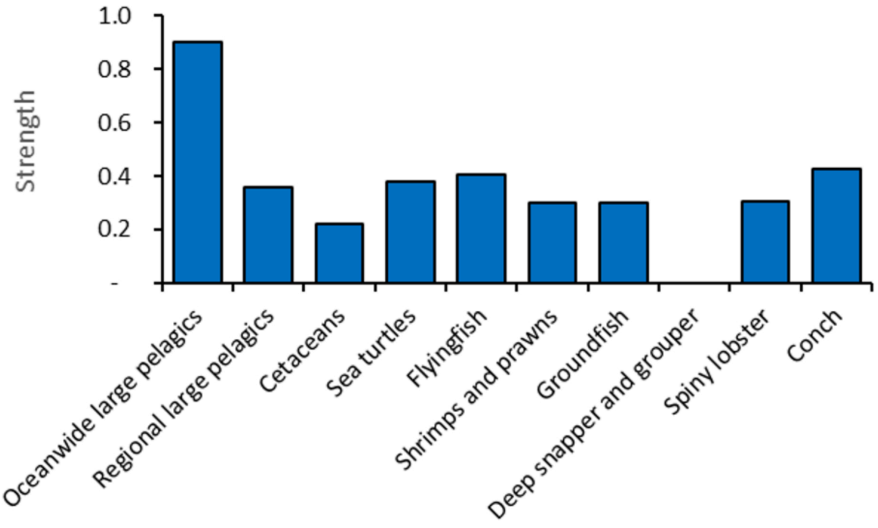

Figure 3. The strength of fisheries arrangements in the Wider Caribbean Region

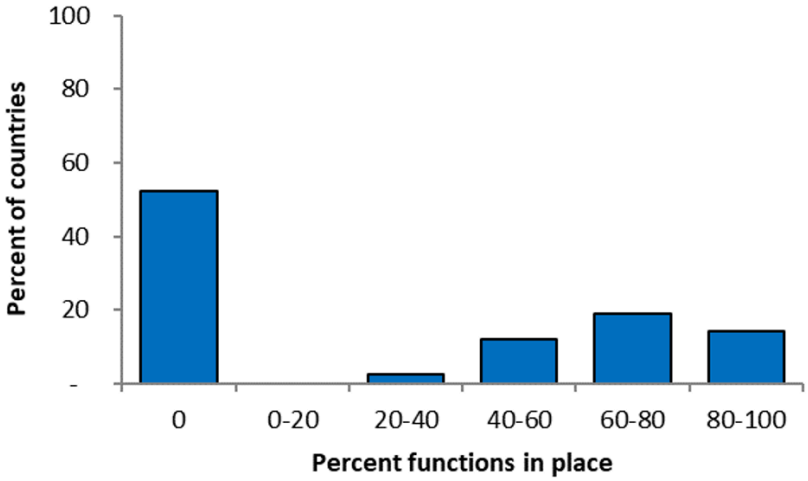

Figure 4. Percentage of countries in each level of NIC development

3.3 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.

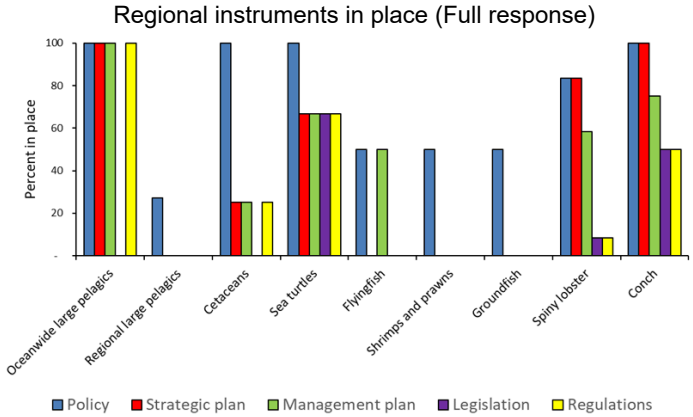

Figure 5. The extent of regional instruments in place for shared stocks as indicators of governance processes taking place

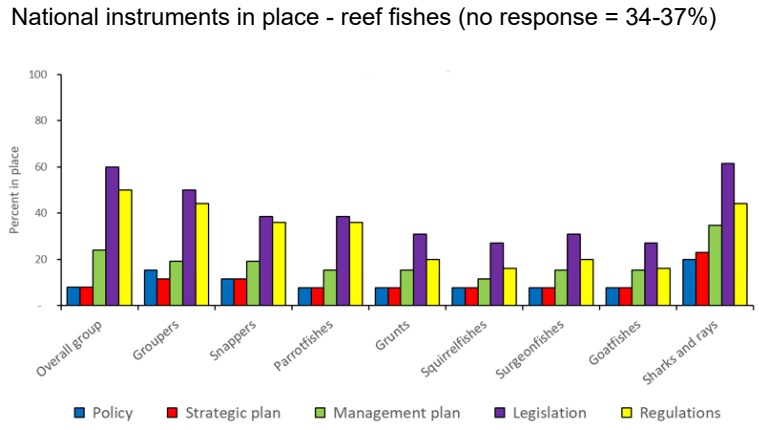

Figure 6. The extent of national instruments in place for shallow reef fish stocks as indicators of governance processes taking place

3.4 Pressure

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.

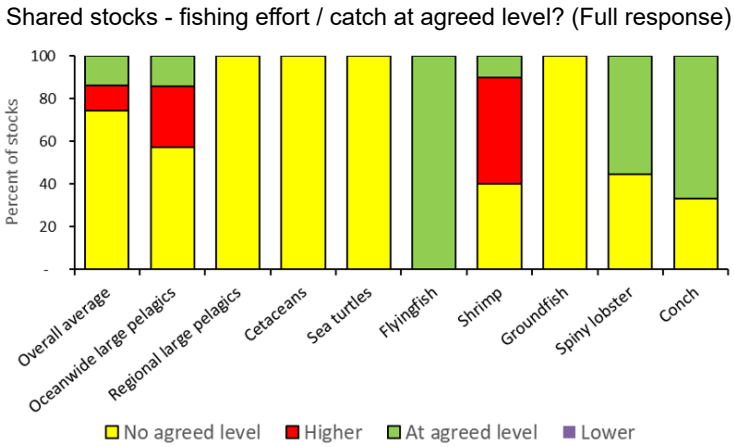

Figure 7. The extent to which fishing effort or catch was at an agreed level for groupings of shared stocks

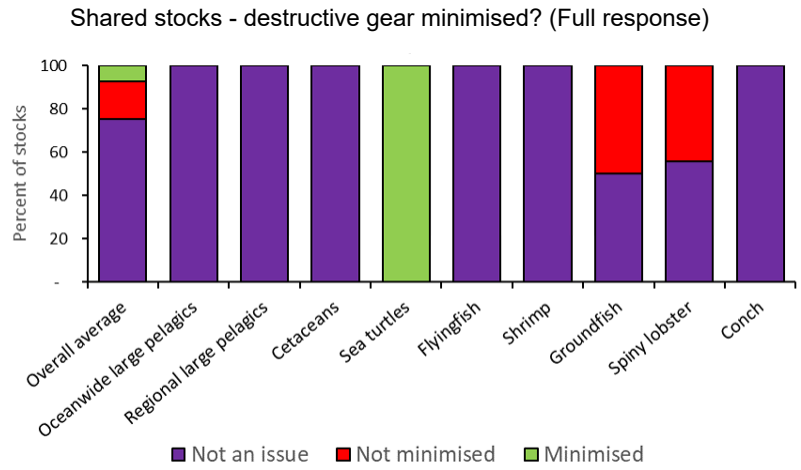

Figure 8. The extent to which destructive fishing was minimised for groupings of shared stocks

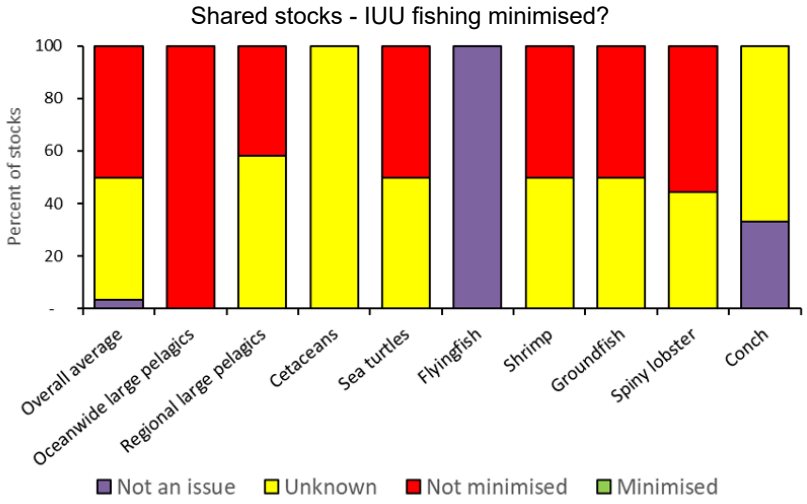

Figure 9. The extent to which IUU fishing was minimised for groupings of shared stocks

3.5 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.

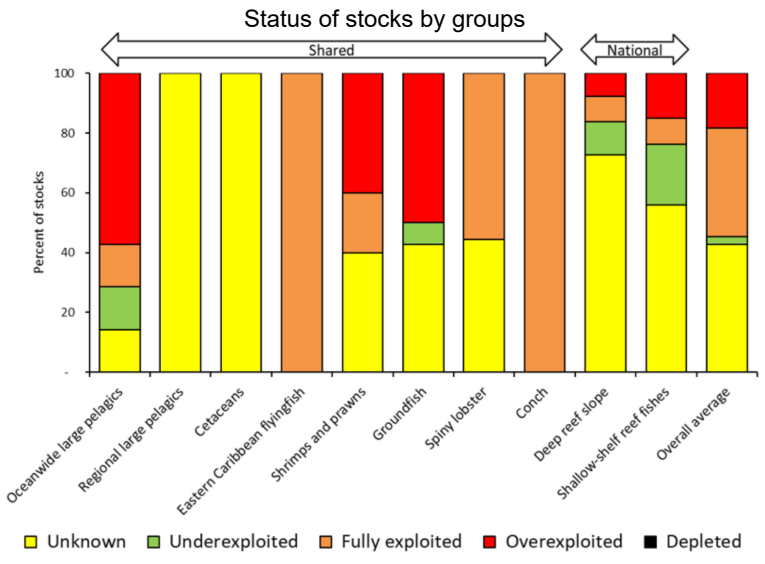

Figure 10. Overall summary of the status of stocks according to responses from IGOs for shared stocks and from countries for national stocks

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. 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 (88%) and OSPESCA (96%) and somewhat lower for the FAO's Western Central Atlantic Fisheries Commission (WECAFC) at 58%.

- 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 participating in the meetings of these fisheries bodies (6-13%).

- Non-governmental stakeholder participation in fisheries agreements meetings – The number of NGOs and private sector representatives attending fisheries arrangement meetings was 4-5 NGOs and 2 private sector bodies.

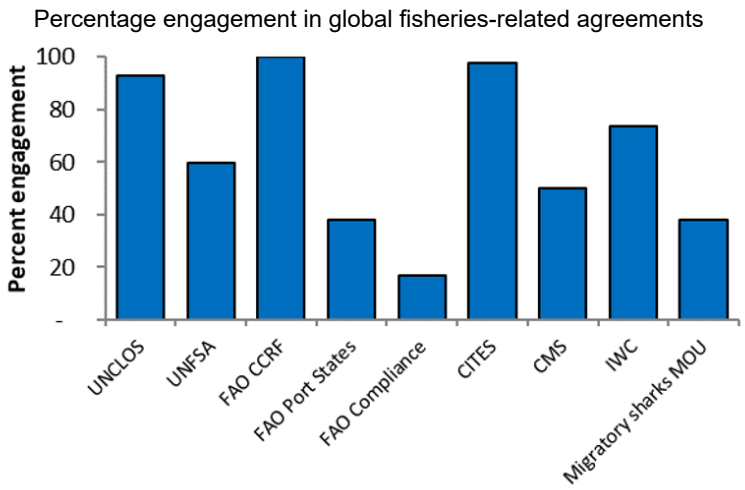

Figure 11. Country engagement in global fisheries-related agreements (From left to right - United Nations Convention on the Law of the Sea, United Nations Fish Stocks Agreement, FAO Code of Conduct for Responsible Fisheries, FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, 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)

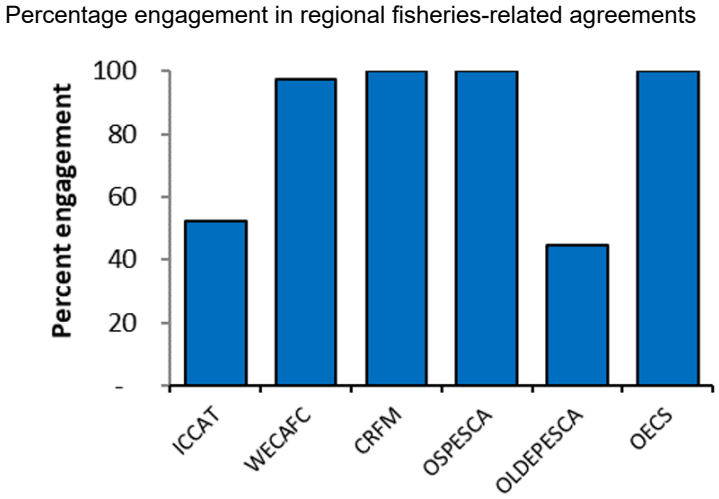

Figure 12. Country engagement in regional fisheries-related agreements (from left to right – International Convention on the Conservation of Atlantic Tunas, FAO Western Central Atlantic Fisheries Commission, Caribbean Regional Fisheries Mechanism, Central America Fisheries and Aquaculture Organization, Latin American Organization for Fisheries Development, Organisation of Eastern Caribbean States).

3.7 Social justice

Seven social justice indicators (participation of women, preservation of cultural values, inclusion of disadvantaged groups, equitable resource access, distribution between small and large scale fisheries, labour rights and socially-just measures for reducing fishing pressures) 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 with labour rights and socially-just measure for reducing fishing pressures absent and CRFM missing participation of women, preservation of cultural values and socially-just measure for reducing fishing pressures.

- 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 small-scale fisheries (SSF)-large-scale fisheries (LSF) distribution to 54% for preserving cultural traditions.

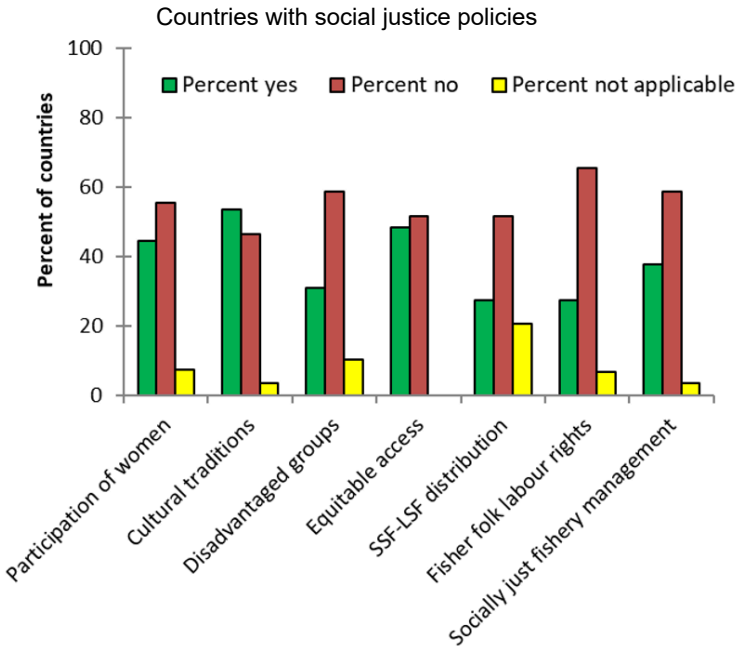

Figure 13. The extent to which social justice issues are addressed in national fisheries policies

3.8 Human well-being

The development and application of human well-being indicators is a relatively new endeavor. Nonetheless, six variables with associated indicators and potential targets were identified as informing on progress towards human well-being in the CLME+ region (Table 2). Significant challenges were experienced with acquiring the needed information at an appropriate geographical scale for fisheries-related indicators. For example, 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). Similarly, fishers' 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. Regarding fish loss/waste and deterioration of fish quality and nutritional value/malnutrition , no comprehensive sources of data could be found. Consequently, if these are considered to be important indicators to CLME+ countries, there will be the need to include appropriate monitoring in national level data collection systems. Likewise, while tracking changes in fisher folk income might be feasible using the proxy of the national value of fisheries, apportioning it among subsistence, artisanal, commercial and recreational fishers would require considerably more information on numbers of persons engaged in each group and how fishing revenues are apportioned among them.

These challenges indicate the need to set priority on what indicators countries in the region might find most useful and feasible (Loveridge et al. 2020) and once decided, to initiate collection and/or compilation of these data at the local level.

Table 2. Potential indicators for assessing progress towards human well-being

Fisheries	Indicator	Measured variable	Target
Measures for fisher safety at sea	Change in fishing related death and injury	Per capita fishing related deaths and injuries among fishers	0%
Food security been improved/assured?	Assurance of future supply of fish for consumption	Percentage of stocks optimally managed	100%
	Fishers' access to resources		100%
Fish loss/waste reduced to minimum	Amount of waste	Percentage of fish lost/ wasted nationally	0%
Malnutrition in fishing communities decreased?	Measure of malnutrition in fishing communities	Protein deficiency?	0
Fisher folk incomes increased	Income	Income relative to per capita or poverty levels	Above levels
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

4. CONCLUSION

The need to track progress on the achievement of the SAP objectives is a critical requirement if countries in the CLME+ region hope to achieve the ambitious vision of securing healthy marine ecosystems that sustainably provide the goods and services essential for all the countries. While much progress has been made in addressing the challenges confronting the region (Fanning et al. 2021), much remains to be done. This study focused on acquiring and sharing fisheries data and information over the 2011-2015 baseline period. At the time of initiating the study, its explicit purpose and value was to acquire a better understanding of factors affecting good fisheries governance in the CLME+ region and through targeted interventions of the SAP, to compare these initial findings with those obtained over subsequent 5-year periods.

Despite the relatively low response rate, many countries that responded were not part of the CLME+ Project but saw the value of having a regional perspective on the status of fisheries. In contrast there were several CLME+ Project countries that did not respond despite many communications. Consequently, the picture presented in this study 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 what new indicators might be needed to gain a better picture of fisheries sustainability over changing times, particularly in light of growing threats from climate change (Monnereau et al. 2021).

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Table 1. Country and Territories responding to surveys
Table 2. Potential indicators for assessing progress towards human well-being.

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Figure 13. The extent to which social justice issues are addressed in national fisheries policies

Appendix 1. Fisheries guiding questions for GEAF indicator categories

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
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?