

CLME⁺ Sub-Project # 1:
EAF for the Caribbean Spiny Lobster

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Abbreviations/Acronyms

A&A	Analysis and advice
ANAM	Environment National Authority (Panama)
APESCA	Caribbean Fisheries Association (Honduras)
APICAH	Association of Industrial Fishing Caribbean (Honduras)
BAU	Business as usual
CAPENIC	Nicaraguan Fisheries Chamber
CARICOM	Caribbean Community Common Market
CATHALAC	Water Center for the Humid Tropics of Latin America and the Caribbean
CBMAP	Mesoamerican Biological Corridor of Panama
CCAD	Central America Environment and Development Commission
CENDAH	Human and Environment Development Centre (Panama)
CEP	Caribbean Environment Programme
CERMES	Centre for Resource Management y Environmental Studies
CECOCERNA	Pollutants Study and Control Centre (Honduras)
CICA	Environmental Pollution Research Centre
CFMC	Caribbean Fishery Management Council
CLME ⁺	Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME Project)
CNFO	Caribbean Network of Fisheries Organization
CONFEPESCA	Central America Small Scale Fishers Confederation
CRFM	Caribbean Regional Fisheries Mechanism
CRI	Coral Reef Initiative
DAPVSICF	Forest Conservation and Development, Wildlife and Protected Areas Institute (Honduras)
D&I	Data and information
DIPESCA	Fisheries and Aquaculture Department (Guatemala)
DPNDIBIO	Planning and Biodiversity Department (Nicaragua)
DPSIR	Driver pressure status impact response
DSS	Decision support system
EAF	Ecosystem approach to fisheries
EBM	Ecosystem based management

FAO	United Nations Food and Agriculture Organization
FIPS	Fisheries Improvement Projects
FIRMS	Fishery Resources Monitoring System
GCFI	Gulf and Caribbean Fishery Institute
GEAF	Governance Effectiveness Assessment Framework
GEF	Global Environment Facility
IDF	Institutional Development Fund
IOCARIBE	IOC UNESCO Sub-commission for the Caribbean Sea y Adjacent Regions
IUU	Illegal, Unreported and Unregulated fishing
LBS	Protocol concerning Pollution from Land-Based Sources y Activities (Cartagena Convention)
MAREA	Management of Aquatic Resources and Economic Alternatives Project
MAR2R	Ridge-to-Reef Management of the Mesoamerican Reef
MASPLESCA	Subregional Management of the Caribbean Spiny Lobster Fisheries Project
MCS	Monitoring, Control and Surveillance
MINAET	Ministry of the Environment, Energy and Seas (Costa Rica)
MOU	Memorandum of Understanding
NOAA	National Oceanic and Atmospheric Administration
OECAP	Central America Fisheries Businessman Organization
OECS	Organization of Eastern Caribbean States
OIRSA	Agriculture Health Regional International Organization
OSPESCA	Central America Fisheries and Aquaculture Organization
PPG	Project Preparation Grant (GEF)
PROARCA	Central American Regional Environmental Program
PRODOC	Project document (CLME)
R&E	Review and evaluation
RFMO	Regional Fisheries Management Organization
SAP	Strategic Action Programme (CLME Project)
SERNADIBIO	Biodiversity Department of the Secretary of Energy, Natural Resources and Mines (Honduras)
SICA	Central America Integration System
SMART	specific, measurable, achievable, relevant and time-bound

SPAW	Specially Protected Areas and Wildlife protocol
STRI	Smithsonian Tropical Research Institute
TBD	To be determined
TNC	The Nature Conservancy
TORS	Terms of Reference
TWAP	GEF Transboundary Water Assessment Program
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USA	United States of America
UWI	University of West Indies
WECAFC	Western Central Atlantic Fisheries Commission
WWF	World Wildlife Fund

1. Situation Analysis

1.1. General Context

Importance of Caribbean spiny lobster in the CLME⁺ region

The Caribbean spiny lobster, *Panulirus argus*, is widely distributed in the Western Central Atlantic Ocean, occurring from North Carolina south to Brazil, including Bermuda and the Antilles islands. The greatest stock abundances are observed within the CLME⁺ region¹, more specifically in the Western Caribbean and Brazil (Ehrhardt et al., unpub.).

Caribbean spiny lobsters play an important role in the marine ecosystem, where they act both as predators, and as a food source for other predators. At the same time, the spiny lobster fishery is the most valuable single species fishery in the Caribbean.

The main spiny lobster resources are predominantly found on and around reef ecosystems located on the larger continental shelf areas, although the different life stages have different distribution, e.g. juveniles occur on macroalgae-dominated hard-bottom habitat and also sea grass beds (Behringer et al., 2009), and larvae are pelagic and drift for extended periods of time (6-8 months or longer) in the ocean (Butler et al., 2009). Thus, within the CLME⁺ region the shelves of northern Brazil, Honduras-Nicaragua, Belize-Mexico, Florida, Bahamas and south of Cuba are areas where main fisheries are located (Ehrhardt N., 2001).

Fishing methods/gear types are quite varied, even within the same country (Chavez, 2001). They include: SCUBA diving, drop nets, trammel nets, spears, hooks, nooses, Z-traps, bamboo traps, wooden lath traps, shades, casitas, Caribbean traps and collection by hand. Casitas are rectangular structures consisting of a wooden frame to which a sheet of zinc is nailed; the traps are placed on the seafloor, providing a shelter that mimics the crevices where lobsters typically hide (WWF & PROARCA, 2004). No single country uses all gear types (Gittens & Haughton, unpub; CRFM, 2011).

For a large number of CLME⁺ countries, the Caribbean spiny lobster - which is known to be highly migratory; particularly during its larval stage- is an economically important fishery. The species generates an estimated USD 456 million to fishers per year (Ehrhardt, 2005). It has been estimated that annual global production of Caribbean spiny lobster averages about 54 percent of all spiny lobster production and about 17 percent of global production of all lobster (CFMC et al, 2008). The lobster chain, from harvest to distribution, is wide-ranging throughout the Caribbean. Apart from retailers and restaurants, the principal chain actors are the importers (esp. in the USA), the processors/exporters located in the Caribbean, various types of intermediaries, and fishers (Monneraeu et al., 2010). Lobsters (whole or tails) are sold to intermediaries or directly to processing plants by fishers and the plants then process, weigh, pack and export frozen lobster to its final market (Monneraeu et al., 2010). Recently, some countries have expressed interest in exporting live lobster, which would add value to the product.

Approximately 50,000 lobster fishers are estimated to be active in the Caribbean region, with an additional 200,000 people working in positions related to the lobster fishery (CRFM, 2011). Among the countries that harvested Caribbean spiny lobster from 1996 through 2005 and reported those landings to the FAO, the Bahamas had the largest average annual landings, followed by Cuba, Brazil, Nicaragua, and the United States of America (USA) (CFMC et al., 2008). Globally, the USA is the major

¹region covered by the Caribbean and North Brazil Shelf Large Marine Ecosystems

importer of *P. argus*: in a single decade, over 88,000 tons of the species had been imported, worth a value of approximately \$2.27 billion (CFMC et al, 2008). The USA receives 90% of the exports from most of the Central and South American countries and spiny lobster is considered an important product for major dealers and distributors (Kimmel and Rueter, 2007). With the exception of the SICA countries, there are no standardized management measures specific to the Caribbean spiny lobster fishery at a regional level within the Caribbean; rather, management of the resource is unilaterally attempted in most countries. This is despite the fact that the transboundary nature of the resource, the mobile fishing fleets, and the international aspects of the lobster trade closely link the fisheries throughout the region (CRFM, 2011).

Caribbean spiny lobster stocks

There has been considerable difficulty in defining discrete units of stock, due to the lengthy planktonic lifespan of the larvae. A Pan-Caribbean theory of spiny lobster population structure has been hypothesized where, given the prevailing oceanic currents in the region, many localities probably depend on recruitment from other areas, frequently other countries (Cochrane & Chakalall, 2001; Kough et al., 2013). Despite a lack of conclusive statements on the existence of discrete stocks, a major decision at the 2006 WECAFC Scientific Workshop divided the stocks in the Western Central Atlantic (FAO Fishing Area 31) into four groups, based on the biogeography and knowledge of the prevailing currents in the region:

- Southern Stock (Brazil, Venezuela, Dominican Republic, Lesser Antilles)
- South-Central Stock (Colombia, Nicaragua, Honduras, Jamaica)
- North-Central Stock (Mexico, Belize, southern Cuba)
- Northern Stock (northern Cuba, USA, Bahamas, Turks and Caicos, Bermuda)

In any case, the connectivity of *P. argus* stocks, by the drift of their pelagic larvae, creates a strong ecological link among countries in the region and emphasizes the need for close cooperation in the responsible management, and effective use, of the resource (Claro et al., 2001). Also, common international markets are increasing their regulations, so that identical measures are becoming applicable to all exporting countries. The latter constitutes an important additional reason for transboundary cooperation among lobster fishing countries in the CLME⁺ region, e.g. in order to improve the implementation of joint Monitoring, Control and Surveillance (MCS) to combat IUU fishing, and ensure better fisheries management.

The most recent information on the status of *P. argus* across the Caribbean region indicate that it is being fully or overexploited throughout most of its range, although the status could not be reliably estimated in some areas due to a lack of data (WECAFC, 2007).

Caribbean spiny lobster and the CLME⁺ Strategic Action Programme (SAP)

Due to the socio-economic and ecological importance of the Caribbean spiny lobster to the CLME⁺ region, a specific sub-strategy relating to spiny lobster fisheries was included under Strategy 4² of the CLME⁺ Strategic Action Programme (SAP). Sub-Strategy 4A of the SAP aims to enhance the governance arrangements to facilitate the implementation of an ecosystem approach for the spiny lobster fisheries in the CLME⁺ region. Under this sub-strategy, a number of short-term (0-5yrs) and medium-term (6-10) actions were agreed upon and politically endorsed:

² CLME⁺ SAP Strategy 4: "Enhance the governance arrangements for ecosystem-based management for reefs and associated ecosystems"

- 4A.1. *[Short]* Establish, strengthen and coordinate arrangements between the FAO-WECAFC, OSPESCA, UNEP-SPAW and CRFM to harmonize the spiny lobster fishery governance and management throughout the CLME⁺ region
- 4A.2. *[Short]* Evaluate and expand, as applicable, the geographic scope of the governance arrangement operated by OSPESCA, taking into consideration both the perspectives of species range (ecosystem approach) and of common markets
- 4A.3. *[Medium]* Strengthen and achieve full implementation of policy cycles under the existing sub-regional governance arrangements for the management of the spiny lobster fisheries, including linkages with organisations working on the environmental protection of reefs and associated ecosystems
- 4A.4. *[Medium]* Operationalise and strengthen a DSS for the spiny lobster fisheries (including linkages to the DSS for the protection and sustainable management of reefs and associated living marine resources)

1.2. Baseline analysis (problems, gaps and opportunities)

Opportunities, environmental, socio-economic problems and concerns, and governance challenges

At the same time that the Caribbean spiny lobster plays an important role in the marine ecosystem, spiny lobster stocks are of very high importance for livelihoods, human well-being and socio-economic development in the CLME⁺ region. Regionally, the Caribbean spiny lobster fishery constitutes the most valuable single species fishery. More locally, and in the absence of well-defined viable or comparable (legal) income generating alternatives, the spiny lobster fishery may constitute one of the major, or even the main source of income for many coastal communities.

Provided the activity is conducted in a sustainable way, fishing for spiny lobster - whether at the industrial or artisanal scales, or as part of basic subsistence activities – can substantially contribute to reducing the pressure on other marine resources. In the context of the CLME⁺ SAP, it can even be claimed that a well-managed spiny lobster fishery in the CLME⁺ can, and must be part of the comprehensive package of solutions needed to ensure the adequate overall protection of the marine environment in the region.

Notwithstanding the well-recognized above facts, in the current context it is generally acknowledged that within the CLME⁺ region the Caribbean spiny lobster is fully or overexploited throughout most of its range, and that in the absence of better planning & management, the sector may be facing major challenges within the next decade. A WECAFC Scientific Workshop (2007) concluded that, in all countries, fishing mortality had a major impact on stocks.

However, it is also recognized that the reliability of status estimates is questionable due to issues relating to stock data, incl. data quality and consistency, data access & exchange issues, and data gaps. Therefore, it is currently still difficult to accurately assess the real magnitude of the threats to the sector.

Without having been well quantified, the illegal fishing and trade is considered a major threat to the sustainability of the fishery and a source of conflict among fishers, stakeholders and states. At the sub-

regional level (Central America), the perpetuation of a scuba diving-based lobster fishing industry in a few countries (despite a SICA regulation that called for its ban by 2013) is reflective of the challenges associated with the implementation of viable economic alternatives for a current practice with severe local impacts on human health, which have alarmed international public opinion and key markets³ (an average number of 120 dive accidents per year, leading to on average around 20 fatalities for Honduran lobster scuba-diving communities alone, have been cited in this context).

Furthermore, the lobster fishery is significant throughout the wider Caribbean in that it is regional and transboundary by virtue of planktonic dispersal, but with important local and national or sub-regional components in terms of its implementation, governance and management. The fact that products from the fishery are traded extensively within the region and beyond further calls for a regional approach to management (Fanning, 2012).

The importance of the lobster fisheries in the Caribbean and of the need for improved, transboundary management has been widely recognized by major regional organizations and their constituencies, e.g.: the Gulf and Caribbean Fishery Institute (GCFI), the Western Central Atlantic Fisheries Commission of the United Nations Food and Agriculture Organization (FAO-WECAFC), the Caribbean Regional Fisheries Mechanism (CRFM), the Organization of the Fisheries and Aquaculture Sector of the Central-American Isthmus (OSPESCA), the Caribbean Fishery Management Council (CFMC; Puerto Rico/USA), and the National Oceanic and Atmospheric Administration (NOAA; USA).

Despite this recognition, currently, with the exception of SICA countries, there are no standardized management measures specific to the *P. argus* fishery at a regional level. Rather, management of the resource is unilaterally attempted in most countries.

Regulations on minimum size, spawning season closures and no-take of berried females are among the most popular management actions implemented in Caribbean spiny lobster fisheries (Ehrhardt, 2005). However, the minimum size adopted in these fisheries often varies from one country to another, which in many cases, does not correspond with the minimum size required for 50% maturity and can lead to growth overfishing (Cochrane & Chakalall, 2001; IOCARIBE, 2007). In order to avoid this problem and since most of the exports from the Caribbean goes to the US market, USA authorities developed - based on the standardization of capture and market size limits in SICA countries - spiny lobster import prohibitions by standardizing one size limit to all imports from countries other than Puerto Rico and the US Virgin Islands.

OSPESCA Member States have endorsed a sub-regional binding agreement that outlines management measures for the spiny lobster. Examples include a shared closed season for the lobster fishery. This has been in place from 2009 and Colombia, a non-OSPESCA country, has expressed an interest in joining the efforts of OSPESCA Member States; however, to date, formal agreements for such are not yet in place.

Martinez et al. (2007) identify numerous problems associated with the sustainable management of the regional fishery, including: the open-access nature of the fishery and failure to control fishing effort; poor enforcement of existing regulations, reflected in (a.o.) the large-scale landings of juvenile lobster and berried females; diving accidents of lobster divers; large-scale illegal, unregulated and unreported (IUU) fishing; lack of monitoring, control and surveillance; lack of harmonization amongst fisheries regulations of the countries involved; insufficient financial resources and human capacity in

³ <http://www.lobsterpledge.com/>

government institutions; and lack of capacity (organizational, human, financial and technical) among fishers and others involved in the fishery to engage meaningfully in its management.

Despite an increasing interest to implement a traceability system for Caribbean spiny lobster products, to date national lobster production data will often not specify the origin (source/fishing method) of the lobster product.

In addition to this, inaccuracies in data sets appear to be prevalent and can be associated with a variety of acknowledged and/or potential causes:

- weak data collection protocols (fisheries departments), with no or limited verification, consequently impacting the quality of collected data sets
- lack of internal data security or back-up, leading to potential errors and limited guarantees for long-term data integrity
- absence of working mechanisms to (independently) verify the data sent to fisheries departments by (e.g.) packing plants
- absence of systematic data consistency checks and subsequent mitigation actions in case of inconsistencies (e.g. documented inconsistencies among data sets from industry, national fisheries departments, FAO, and national or (sub-)regional export and important controlling/regulating bodies)

The entire data system is consequently highly vulnerable to: data fraud, entry error, intentional or accidental loss or alteration of part of the data, and even total loss of national data sets. Change in data collection & management methods associated with changes in administration at the national fisheries departments can further impact the usability of data sets for analytical purposes.

There is consequently great room, and a recognized need for improvement in data collection & exchange systems. Development of effective data collection and analysis systems for use in management may be facilitated by the fact that good progress does indeed exist in certain administrations across the region, and as excellent data sets may often already exist within the industry itself.

Other issues affecting lobster stocks and fisheries include:

- **Disease:** Discovery and research on a pathogenic and lethal viral disease (PaV1) that infects *P. argus*, suggests that the disease is a major source of mortality (primarily for juveniles) and may be widespread in the Caribbean (Butler IV et al., 2008; Behringer et al., 2008). Ehrhardt et al. (unpub) estimate that in Florida and Mexico, at least 25% of the benthic juveniles die from the disease per year (which is equivalent to a mortality rate of 1.39 – four times higher than the natural mortality rate assumed for the recruited age classes) (Ehrhardt et al., unpub.).
- **Climate Change:** rising sea temperatures have resulted in considerable loss of critical coral habitat throughout the Caribbean region, particularly after the significant bleaching events of 1998 and 2005 (Ehrhardt et al., unpub.). Another important consideration regarding decreasing trends in post-larval recruitment is the close association of the coral reef habitat to spiny lobster population dynamics.
- **Limitations to the implementation of self-regulations or co-management:** Spiny lobster fisheries in many countries are open access small scale fisheries or *de facto* open access industrial fisheries with no real limits on catches, nominal fishing effort or fishing capacity; as long as there is resource availability at sea, fishers have little incentives for self-regulatory measures such as effort induced self-regulation. However, in some particular cases, e.g.

indigenous communities in Panama, there are examples of self-regulations agreed among the members according to their local government rules.

- **Habitat Degradation:** ecological studies carried out on spiny lobster habitat recognize that several fundamental environmental conditions (i.e. outside the fishing sector) are impacting lobster habitat, including:
 - incidence of major and more frequent hurricanes and tropical storms impacting habitat structure (Ehrhardt et al., unpub.; WECAFC, 2007)
 - significant coastal zone development, including highways, that impact inshore-offshore water exchange (Ehrhardt et al., unpub.; WECAFC, 2007)
 - lobster mortality as a result of red tides (WECAFC, 2007)
 - coastal zone pollution and eutrophication (WECAFC, 2007)

Additionally, experimental studies in Florida confirm the negative effects of siltation, extreme salinity and the loss of physical structure on post-larval and juvenile lobster survival (Ehrhardt et al., unpub.).

- **Management issues - data gaps:** In view of significant gaps in data and information, a precautionary approach is warranted. Improved data collection and monitoring is required to ensure sustainable use of this and other fishery resources. It is therefore appropriate to establish a multi-annual sub-regional plan with the objective of ensuring that the stock will be exploited under sustainable biological, economic, environmental and social conditions.

An assessment of the governance arrangement of the spiny lobster fisheries in the OSPESCA countries (Fanning et al., 2012) highlighted three major issues:

The first is that there is a significant disconnect, both vertically and horizontally, between the arrangements for issues relating to fisheries (i.e. overfishing, illegal fishing and MCS) and those that relate to habitat degradation, biodiversity protection and land-based and marine-based pollution. This is not a surprising finding given the bureaucratic structures in place for most modern nation states but it does present a significant challenge in shifting from a sectoral approach to management to one that is ecosystem based.

The second observation specific for the Central American lobster fisheries system is the relatively well developed meta-level policy advice and policy decision making that is provided for by SICA/OSPESCA, which is less developed in other regions or countries. The ability for SICA/OSPESCA to formulate and make decisions on a sub-regional level that would be implementable by all member countries provides the opportunity for a common suite of principles and policy objectives to be achieved for the fisheries system, thereby contributing to an effective governance regime. Areas for improvement include the lack of involvement in issues not directly fisheries-related but which could have a significant impact on the fisheries, such as habitat degradation, biodiversity protection and pollution of the marine environment, whether the source be land-based or marine-based. There is an opportunity for SICA to ensure greater connectivity between its two subunits, OSPESCA and CCAD.

The third observation that could potentially have the most significant impact on the likelihood of implementing an effective governance regime for the lobster fisheries, within the Central American subregion or even regionally, is the variation in the attention being given to the identified issues by

the different countries. Given the shared nature of the resource, this pattern could serve to undermine the efforts made by some countries to enhance governance arrangements and performance for the lobster fisheries in the sub-region.

A review of the current management situation in one Central American country carried out by Box (2013), which may well be applicable in many of its aspects to other countries as well, showed that lobster fisheries do not have an established management plan. Despite the existence of fisheries regulations there is no framework in place to link these regulations to goals or objectives specifying what these regulations are trying to achieve. In addition there is no system to measure if these regulations are having any effect on ensuring the long-term sustainable use of the country's fisheries. Improving the strategic and operational management of the fisheries themselves and the resources on which they depend is a central goal to ensure both ecological and economic sustainability in the coastal zone that can also support the improvement of marine protected area management that can directly enhance the fisheries potential in a country.

In addition to the above, another aspect that influences on the success of fisheries management and the role of the fisheries authorities is how fisheries management is being financed. Most institutions depend on national budgets allocated through the Ministries of Finance, with disregard to the value of the natural resources to be managed and the financial needs of a sound fisheries management scheme. Fisheries research, management and monitoring, control and surveillance are not perceived as a provision of services that need to be paid for by the users.

Progress towards the implementation of EAF

Political commitments

- the *CLME+ Strategic Action Programme (SAP) for the Sustainable Management of the shared Living Marine Resources of the Caribbean and North Brazil Shelf Large Marine Ecosystems* was politically endorsed by over 20 countries from the CLME+ region in 2013; one of the sub-strategies of the CLME+ SAP specifically aims at enhancing the governance arrangements for the Caribbean spiny lobster fisheries
- Governments in the region are including in the national legal frameworks the EAF approach and are incorporating it within their national plan of actions; several dissemination and training activities have been carried out, with the support of a variety of organizations.
- At the Central-American level governments have agreed binding regulations and tools supporting the implementation of the EAF

Putting governance arrangements in place

- Although no Regional Fisheries Management Organization (RFMO) exists in the CLME+ region, three (sub)-Regional Fisheries Bodies (RFBs) have been established over the past decades. All three support, up to different degrees and with different, fully or partially overlapping geographic scopes, a transboundary/coordinated approach to fisheries governance and management in the CLME+. The geographic scope and mandated role of the above organizations in the fisheries policy cycles^{4, 5} in the CLME+ are:

⁴ The components of a typical policy cycle are: **(1)** Analysis and Advice (A&A); **(2)** Decision-Making (DM); **(3)** Implementation (I); **(4)** Review and Evaluation (R&E); **(5)** Data & Information (D&I)

⁵ For more details, see Annex 1: The policy cycle and mandates of key regional and sub-regional organizations

- o FAO-WECAFC covers all CLME⁺ countries; its formal current mandate includes the collection, management and provision of data & information; and the provision of analysis & advice (*policy cycle components: **D&I**, and **A&A***). Globally and also regionally, FAO is recognized as a strong advocate of the ecosystem approach to fisheries (EAF).
 - o OSPESCA covers the SICA countries; its formal mandate covers all components of the policy cycle (***all 5 policy cycle components***)
 - o CRFM covers the CARICOM countries; its formal mandate covers all components of the policy cycle (***all 5 policy cycle components***)
 - o OECS covers 9 countries of the Lesser Antilles and the Secretariat has instituted a Sustainable Oceans Governance (SOG) programme with the overall objective of promoting regional economic development through the sustainable management of the use of ocean resources and the protection of the marine environment
- An important observation is that the mandated geographic scope of the sub-regional organizations has been set from a geopolitical perspective (existing sub-regional political integration mechanisms, SICA and CARICOM) and that, although such facilitates transboundary coordination and harmonization of fisheries policies and regulations and thus constitutes an important step in the direction of the ecosystem-approach, the geographic scope of each single organization does not necessarily encompass the full ecosystem or spatial range of the concerned spiny lobster stocks. Enhanced collaboration among OSPESCA and CRFM, and between CRFM and OSPESCA and selected non-OSPESCA/CRFM member states remains an important aim in the context of EAF for Caribbean spiny lobster stocks.
- A *Joint OSPESCA/WECAFC/CRFM/CFMC Working Group on Spiny Lobster* was established originally in 1997, and re-established again by the WECAFC in 2012 at its 14th Session. The Joint Spiny Lobster Working Group works to develop methodologies for the assessment and monitoring of spiny lobster stocks, as well as to provide management advice to countries and regional organisations (*policy cycle components: **R&E**, **D&I**, and **A&A***) (*the Terms of Reference of this working group are contained in Annex X*).
- The Gulf and Caribbean Fisheries Institute (GCFI) is a well-established regional NGO with acknowledged (potential) contributions to the spiny lobster fisheries policy cycle, as it provides a forum for exchange among the scientific community internally, and among scientists and managers/decision-makers (policy cycle components: **D&I**, and **A&A**).
- Sub-regional stakeholders organizations have also been established and are in place, including CONFEPESCA and OECAP (SICA), and CNFO (CARICOM). However, these organizations remain currently largely disconnected to address issues of common interest.
- Collaboration among the above organizations and the Caribbean Environment Programme (UNEP CEP), especially in the context of (a.o.) the *Specially Protected Areas and Wildlife (SPAW) Protocol*, established under the *Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region ("Cartagena Convention")*, can further help ensure sound management and/or protection of the marine habitats that are key to the life cycle of the spiny lobster resource. Planned mutual participation of the WECAFC and UNEP CEP Secretariats at their respective Inter-Governmental Meetings constitutes an additional important step forward in the direction of EBM/EAF.

- Sub-regionally, in 2009 through OSPESCA Regulation OSP-02-09 Member States have adopted binding agreements that outline management measures for the spiny lobster, including the definition of a (largely) simultaneous closed season across the Central American fisheries (and including the Dominican Republic). This shared closed season has been in effect from 2009. OSPESCA States also have harmonized minimum size and weight for harvest and trade of spiny lobster.
- In 2012, during the course of the CLME Project (GEF ID 1032), a Memorandum of Understanding and Joint Action Plan were agreed upon and signed between OSPESCA and CRFM Member States. The Joint Plan details a number of actions including:
 - the application of OSPESCA Regulation OSP-02-09 in the SICA countries for the Caribbean spiny lobster and the CRFM Ministerial Directive to develop a similar regulation for CRFM States in order to harmonize and have a common management approach
 - an inventory and corresponding database of the salient work already completed and documented, or under implementation in the areas of competence of each organization, will be prepared; the relevant documentation will be made available to CRFM and OSPESCA states via the websites of each organization, with the aim of these sites serving as information exchange web portals
 - Taking into account the information generated by the inventory, as well as the proposed interventions contained in Strategic Action Programme (SAP) developed for the region by the Caribbean Large Marine Ecosystem (CLME) Project, CRFM and OSPESCA will work towards the development of a broader regional agreement on the management of the Caribbean spiny lobster. This regional agreement would address all aspects from harmonization of statistical systems and collaboration in research to conservation and management measures that serve to: promote an ecosystem approach to management and a precautionary approach, deter, reduce and eliminate illegal, unreported and unregulated fishing activities, protect juvenile, berried and fecund lobsters. The regional agreement will also strive to guarantee internationally respected market and trade operations.
- Also in 2012, a Memorandum of Understanding for enhanced collaboration was signed between OSPESCA and CCAD, the fisheries and environmental & sustainable development subsidiary bodies under SICA
- As part of the CLME Project, a proposal for a Sub-Regional Management Plan for the Lobster Fishery for Central American Lobster was drafted. The Draft Lobster Plan seeks to promote the sustainable exploitation of the resource whilst at the same time ensuring social and economic benefits for stakeholders. It is envisaged that once adopted, the plan will aim to: (a) strengthen the effective implementation of the OSP-02-09 Regulation; (b) manage and coordinate in a participatory manner and with regional scope the different phases of the lobster fishery in the context of the SICA governance system; (c) promote the adequate organization of the stakeholders for their institutionalized participation in the management of this fishery; and (d) promote conditions to enable the Plan to be adopted and implemented by other countries of the Caribbean.

Despite the substantial progress obtained in the region in recent years, assessments of governance architecture and effectiveness at the (sub-) regional level(s) and in selected SICA spiny lobster fishing countries, conducted by CERMES (UWI) under the CLME Project, highlighted several important remaining gaps in architecture, and weaknesses in operationalization. Detailed results from these studies are described in Mahon et al. (2013) and Fanning et al. (2012), and constitute a part of the baseline for the further development of the present CLME⁺ Spiny lobster Sub-Project.

Making governance processes operational

- In 2012 the first joint high-level OSPESCA-CRFM Ministerial Meeting took place where an MoU and plan of action was agreed and is a tangible demonstration of the political will for joint actions
- At the technical level there are joint participation in several working groups under the framework of the WECAFC which will be enhanced by the CLME⁺ project and other initiatives

Implementation of stress reduction measures

- To date, a substantial number of CLME⁺ countries have implemented an annual closed seasons for Caribbean spiny lobster fisheries. The implementation of a (nearly fully) synchronized annual closed season for SICA countries has been in place since 2009 (see

- Annex 4: Spiny lobster fisheries closed seasons in ^{the} CLME+ region: current status)
- Additional measures (incl. catch restrictions such as minimum size, berried females, etc.) have been put in place in SICA countries through OSPESCA Regulation OSP-02-09

Enhanced ecosystem/stock conditions, social justice and human well-being

- Scuba diving for spiny lobster is an issue in some countries due to serious health implications among fisherfolk for not abiding to safe diving practices. With this respect, in Central America scuba diving for spiny lobster has been prohibited and attempts are being made in order to provide alternative livelihoods within and outside the fisheries sector. One of the alternatives being a pilot for the utilization of shelters for capturing spiny lobster and also training of divers has been implemented.
- Stock conditions seem to be favoured by the implementation of the sub-regional closed season: no further declining trends in overall landings of spiny lobster in Central America show up for the past 5 years in the NOAA imports database

Business-as-Usual (“BaU”) versus the Alternative Scenario

The critical need for an ecosystem approach to the management of the spiny lobster resource

The tremendous importance of sound fisheries management practices *-embedded within a broader context of marine ecosystem management-* is becoming increasingly recognized worldwide. In a context of progressively rapid societal, and now also climatic change, such sound management practices have become absolutely essential to achieve and maintain *-by means of socially just solutions-* sustainable fisheries and associated socio-economic and environmental benefits.

However, the move from business-as-usual (BaU) towards such sound fisheries management systems, especially at the transboundary level, is not an easy one. The initial transition from BaU to EAF will often be costly, and not too many governments may have the autonomous possibility to finance it in a proper way. Developing countries in general, and SIDS in particular, will mostly fall in this group. With some national economies on the verge of bankruptcy and higher priorities in other areas such as health and education, it often results difficult for developing countries to allocate the required resources to the fisheries sector. But such resources are highly needed to achieve critically important improvements in the sector, in terms of: *enhanced governance architecture and effectiveness, science-based management, and participatory development and effective implementation of management plans.*

Fisheries regulations are not always developed under a management scheme that responds to clear, regionally harmonized management plans with operational objectives and sustainability criteria (*e.g. current versus desired stock status/trends, and current versus desired associated human benefits*), and associated, measurable indicators.

In the above context and in the particular case of the Caribbean spiny lobster fisheries, during the past years the region has however seen a series of important steps forward towards regionally integrated, enhanced management of the Caribbean spiny lobster resource: (a) the region-wide high-level political endorsement of the CLME⁺ SAP, including a specific strategy on the lobster fishery; (b) the MoU between OSPESCA and the CRFM, and the associated, joint CRFM-OSPESCA Action Plan; (c)

OSPESCA's draft sub-regional management plan for the spiny lobster, and (d) the reactivation of the WECAFC Spiny Lobster Working Group.

With this regard, through the GEF intervention and support, the CLME⁺ Project and associated spiny lobster Sub-Project will be crucially important in supporting the countries' and regional organizations' aim to implement approaches that do not perpetuate "business as usual" but rather pursue the *alternative scenario* (EAF) described further below.

However, the absence of transitory GEF financial support (which will help pursuing the alternative scenario described under this proposal) will almost certainly result in a continuation of the "*business as usual*" scheme. Under such scheme, disconnected governance arrangements and isolated management initiatives which would take place mostly at the national or even local level, and which would mostly try to address punctual issues, would have limited scope and effectiveness from a stock or ecosystem perspective, and from a regional or long-term sustainability point-of-view. The region would not have the capacity to move away from the current status (in terms of lobster stocks, and associated human benefits), or even worse, to avoid further downward trends. Gaps in governance arrangements and weaknesses in policy cycle implementation (incl. weak data management and ineffective implementation of policies, regulations and management plans) would mostly remain unresolved, and the highly needed expansion of transboundary and cross-sectorial coordination and collaboration would remain a distant reality.

2. Project Strategy

2.1. Rationale

This Sub-Project aims at delivering Output 3.1. (O3.1.) under COMPONENT 3 of the main CLME⁺ Project Document: “*Transition to an ecosystem approach for the Caribbean spiny lobster fisheries at the (sub-) regional level*”. It has been developed in response to the corresponding calls for action under **(a)** the **OSPESCA-CRFM Memorandum of Understanding (MoU)** and **Joint Action Plan**, signed at the first joint OSPESCA-CRFM High-Level Ministerial Meeting (Belize, 2012), and **(b)** the **CLME⁺ Strategic Action Programme (SAP)**, politically endorsed at the regional level in 2013.

More specifically, in the case of the CLME⁺ SAP, the CLME⁺ Spiny Lobster Sub-Project can be linked to SAP Sub-Strategy 4A (and Strategy 4):

- **Sub-Strategy 4A: enhance the governance arrangements for implementing an ecosystem approach for spiny lobster fisheries**
- *Strategy 4: enhance the governance arrangements for ecosystem-based management of reefs and associated habitats (e.g. seagrass beds, mangroves, reef slopes and coastal lagoons)*

In addition to this, Actions under SAP Strategies 1, 2 and 3, and under CLME⁺ Project COMPONENTS 1, 2, 4 and 5 will further facilitate the implementation of this Sub-Project, as they help building the support base for its activities, and for the continuation of efforts beyond the demo’s lifespan.

Sub-Project activities will build upon:

- the concept of **interactive governance**, defined as *the whole of interactions among public, civil and private actors taken to solve societal problems and to create societal opportunities; including the formulation & application of principles guiding those interactions and care for institutions that enable and control them*
- the findings from the **governance assessments**, conducted under the CLME Project (GEF ID 1032)
- the progress and results obtained from the “**MASPLESCA**” Spiny Lobster Pilot Project (2011-2012), also executed under the CLME Project
- progress and results from **other related regional and national-level efforts**

It is broadly recognized that the ultimate, over-arching goal of the implementation of the EAF approach for Caribbean spiny lobster fisheries –i.e. **maximized, sustainable contributions from the resource to human well-being in the region**– may only be achievable in the medium- (6-10 year time frame) to long term (10-20 years). Even so, this over-arching goal constitutes a critically important primary reference for the shaping of the CLME⁺ Sub-Project’s objectives, outcomes, outputs and activities.

Giving due consideration to the above, the project strategy and logical framework for the Spiny Lobster Sub-Project have been shaped around the different components of the **Governance Effectiveness Assessment Framework (GEAF; TWAP Project, GEF ID 4489; Figure 1)**.

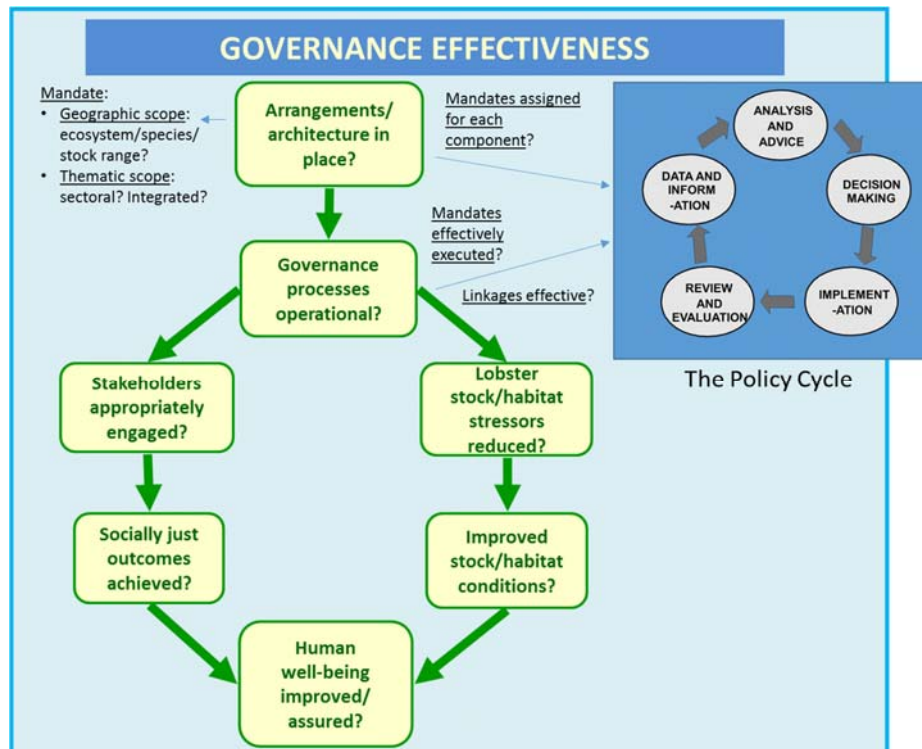


Figure 1. the “Governance Effectiveness Assessment” (GEAF) framework developed under the “TWAP” Project (adapted here for the case of EAF in lobster fisheries) links improved socio-economic and ecosystem conditions back to enhanced governance arrangements and more effective policy cycle implementation

Bearing the over-arching goal of enhanced human well-being in mind, and with an implementation time span limited to max. 4 years, the GEF-supported Sub-Project activities will put a strong focus on the following components of this framework:

1. Establishment and operationalization of the transboundary governance architecture/arrangements and processes, beyond the current baseline situation⁶
2. Ensuring adequate stakeholder involvement
3. Implementation of enhanced, socially just stock management/stress reduction measures

Reference is made in the context of Item 1 above - *the operationalization of governance processes* - to the 5 components of the policy cycle (see the inset in the upper-right corner of Figure 1):

The strengthening of the data & information collection, management and exchange capacity, within and among the relevant institutional arrangements, will indeed be of great importance to facilitate **(a)** a better description and quantification of the baseline situation and **(b)** to define common medium- and long-term targets, for (especially) the following components of the GEAF Framework:

4. Current versus desired ecosystem/lobster stock status
5. Aspects of human well-being associated/linkable with the current and desired status of spiny lobster stocks and fisheries

⁶ Progress in transboundary cooperation for lobster management already achieved under the CLME Project (GEF ID 1032) has been described under Section 1.2.

During the project, and following a participatory approach, more specific targets regarding desired stock status and associated socio-economic benefits will need to be defined and validated, as existing gaps in available data sets are gradually being addressed.

The participatory approach will further need to ensure that a broader array of key stakeholders are involved than what has been possible during the preparatory phase. It is precisely through the operationalization of the enhanced governance arrangements that the processes of more comprehensive stakeholder involvement, and of enhanced target setting/revision will be facilitated.

Under an adaptive management approach, baseline values and targets (e.g. current and desired stock status (see Figure 2. The Driver-Pressure-Status-Impact-Response (DPSIR) framework as a tool to support the implementation of the Spiny Lobster Sub-Project can then be periodically reviewed and (where applicable) revised. This process will assist the different stakeholder groups (governments, civil society stakeholders and private sector) in the identification, further fine-tuning and implementation of the combined set of responses that will be required from the broader stakeholder community to achieve the agreed upon targets.

Restricted by the currently limited available resources, the geographic scope of the activities under this Sub-Project will be variable and will depend on the specific activity. It is expected to range from: **(a)** the SICA countries plus Colombia, Jamaica and the Bahamas (direct, GEF-eligible participants), USA [and Europe] (key market[s]) for direct demonstration activities, to: **(b)** all CLME⁺ States with a stake in the Spiny lobster fisheries, for those activities related to the development of the regional management plan, and for the dissemination of best practices & lessons learnt.

Work under the Sub-Project is expected to occur in coordination with the MAR2R Project (GEF/WWF/CCAD; currently in PPG phase and which will promote the Ridge-to-Reef approach for the Mesoamerican Barrier Reef), and with efforts of other organizations working on enhanced fisheries and fisherfolk livelihoods (e.g. Spiny Lobster Fisheries Improvement Projects (FIPS) in Brasil, Honduras, Nicaragua and Yucatan (Mexico), the TNC-supported certification of spiny lobster fisheries in the Bahamas, etc.).

DPSIR FRAMEWORK

(Driver-Pressure-State-Impact-Response)

(slightly modified version – CLME)

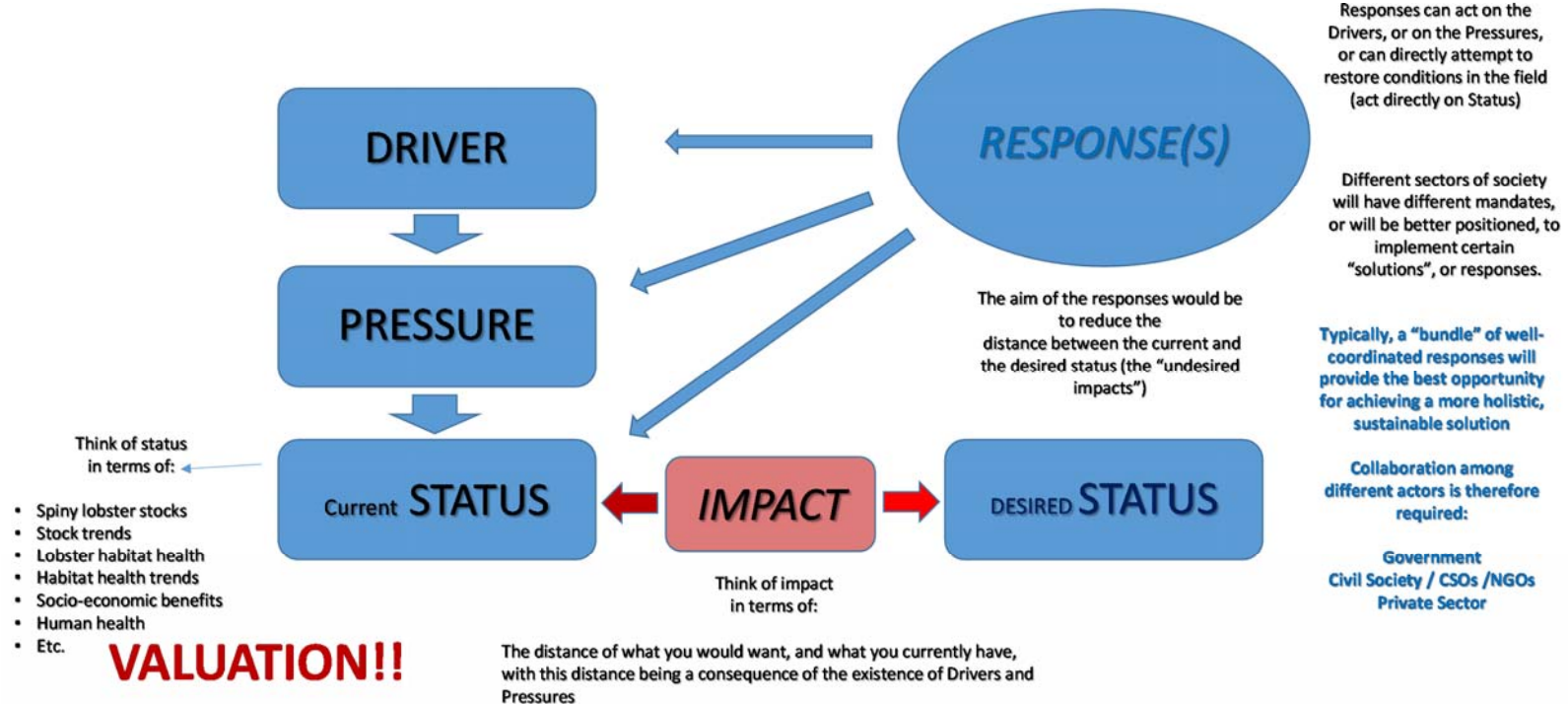


Figure 2. The Driver-Pressure-State-Impact-Response (DPSIR) framework as a tool to support the implementation of the Spiny Lobster Sub-Project

2.2. Incremental reasoning

The GEF (co-)funded Sub-Project activities will put special emphasis on addressing root causes and barriers to the implementation of EAF for Caribbean spiny lobster fisheries. It will demonstrate practical management measures “on-the-ground” within a meaningful geographic sub-region of the CLME⁺. It will also catalyse more region-wide adoption and implementation of EBM/EAF, by consolidating cooperation and coordination mechanisms, and by fostering the replication and up-scaling of Sub-Project results.

The move from BaU to EAF will however involve additional costs which at this stage cannot be fully covered by the countries or (sub-)regional organizations themselves. These constitute the incremental costs of the move towards EAF, part of which will be financed from the GEF contribution to the CLME⁺ Project.

More specifically, incremental cost funding from the GEF will be of critical importance to: catalyze the shift from the current geographic focus of lobster management (i.e. in the worst cases, a national-level approach, and, in the best case, a sub-regional approach conditioned by current geopolitical constellations rather than by ecosystem/management⁷ considerations); enhance stakeholder participation (stronger involvement of civil society and private sector); enhance data collection, management and exchange in support of improved, transboundary decision-making; and to kick-start the coordinated implementation of compatible/harmonized management and stress reduction measures, and the monitoring and evaluation of progress and (preliminary) results.

⁷ Stock range, and facilitation of management measures relating to common markets & ensuring of compliance with regulations

2.3. Objectives, outcomes and outputs

Objectives and geographic scope

The **over-arching goal**, to which the Spiny Lobster Sub-Project will contribute, is to maximize in a sustainable way the contributions of the spiny lobster resource to human well-being and socio-economic development in the CLME⁺ region, while conserving the structure, diversity and functioning of the ecosystems that host this species.

In the above context, the following **objectives** have been set for the Sub-Project itself:

1. Enhance the transboundary and cross-sectorial coordination arrangements for the sustainable management of Caribbean spiny lobster stocks, aiming at the long-term human well-being of direct and indirect stakeholders
2. Enhance the capacity of (sub-)regional and national-level stakeholders to effectively implement full policy/decision-making cycles for Caribbean spiny lobster fisheries governance and management
3. On-the-ground implementation of enhanced spiny lobster fisheries management/stress reduction actions
4. Track progress towards EAF, and capture and disseminate best practices and lessons learnt, to facilitate replication and up-scaling to other countries and other fisheries in the CLME⁺

The Sub-Project will initially seek to achieve objectives (1) - (3) within a sub-set of CLME⁺ countries. Care is therefore taken in project design to ensure that the **geographic scope** of the proposed activities (i) is meaningful from an EAF and sustainable resources management perspective, and (ii) will bolster or maximize its demonstration potential/catalytic capacity.

The results obtained from these activities will then be used to facilitate expansion of the EAF approach: the future implementation of the Regional Spiny Lobster Management Plan⁸, and dissemination of lessons learnt and best management practices across the wider CLME⁺ region (objective (4)).

The geographic scope of the activities under this Sub-Project will thus be variable and will depend on the specific activity. It is expected to range from: **(a)** the SICA countries plus Colombia, Jamaica and the Bahamas (direct, GEF-eligible participants), USA [and Europe] (key market[s]) for direct demonstration activities, to: **(b)** all CLME⁺ States with a stake in the Spiny lobster fisheries, for those activities related to the development of the regional management plan, and for the dissemination of best practices & lessons learnt.

⁸ to be developed under CLME⁺ Project Component 2

Outcomes, outputs and activities

3.3.2.1 OUTCOME 1: Expanded and enhanced, interactive and cross-sectorial governance arrangements facilitate full policy cycle implementation, with EAF focus, at (sub-) regional and national levels

Outputs under this OUTCOME

Output 1.1. (O1.1.) Expanded and enhanced transboundary governance architecture

Target(s):

- architecture covers all relevant WECAFC member countries, with a focus on at least all SICA countries plus Colombia, Jamaica and Bahamas;
- clear mandates for all policy cycle components;
- arrangements in place that facilitate participation of civil society and private sector actors in transboundary policy cycle implementation;
- arrangements in place that facilitate cross-sectorial policy coordination (EAF approach); by end of Year 2 of the Sub-Project

Output 1.2. (O2.2.) enhanced national-level governance architecture for EAF approach to spiny lobster fisheries management at the demo scale (selected CLME+ countries)

Target(s):

- At least 5 CLME+ spiny lobster fishing countries with enhanced national-level architecture that:
 - Enables full policy cycle implementation
 - Facilitates cross-sectorial coordination
 - Facilitates interactive governance; by Sub-Project end.

3.3.2.1 OUTCOME 2: Enhanced capacity for knowledge/data-based management of the Caribbean spiny lobster resource

Outputs under this outcome

Output 2.1. (O2.1.) Regional management plan for Caribbean spiny lobster fisheries

Target(s):

- transboundary management plan with geographic scope that is meaningful from scientific (stock sustainability & optimized socio-economic benefits) and implementation (management/compliance measures) point-of-view;
- plan adopted by all range states for the spiny lobster stock, within the OSPESCA, CRFM and WECAFC frameworks by at the latest end of Sub-Project year 2⁹ and

⁹ implementation of selected elements of the plan to be supported through other Sub-Project activities during the remaining Sub-Project timeframe, see also Outcomes 2, 3 and 4

- plans adopted and integrated at national level in at least 5 CLME countries by the end of project year 3;

Output 2.2. (O2.2.) Enhanced capacity for data collection, management, analysis, reporting & exchange across the regional, sub-regional and national levels (*linked to O3.3. under Outcome 3*)

Target(s):

- specifications for regional- and national-level data infrastructure by end of demo year 1;
- landings, effort and biological, socio-economic and trade data formats agreed and harmonized/compatible for at least SICA countries + Jamaica + Colombia/range states of 1 spiny lobster stock, by end of year 2 (through linkage with FIRMS);
- data exchange mechanisms/protocols agreed upon & adopted
- training provided to relevant stakeholders (full chain of custody) from range countries for at least 1 lobster stock

Output 2.3. (O2.3.) enhanced capacity for Monitoring, Control and Surveillance (MCS)

Target(s):

- inter-linked regional and national-level vessel register in place and operating in at the least OSPESCA countries + Colombia, Jamaica and the Bahamas, by Sub-Project year 3
- training on MCS provided for enforcement officers/bodies, by end of project year 3 (potential use of Port State Measures Agreement follow-up under overarching logframe and its activities related to IUU fishing)

Output 2.4. (O2.4.) Enhanced stock assessment capacity

Target(s):

- common stock assessment model developed and agreed upon, by end of year 2
- stock assessment carried out by year 3, for at least the south-central stock
- training on common stock assessment model provided, by end of project year 2

3.3.2.3 *OUTCOME 3: Socially just management/stress reduction measures implemented*

Outputs under this COMPONENT:

Output 3.1. (O3.1.) regionally coordinated implementation of annual closed season for Caribbean spiny lobster fisheries

Target(s):

- continued implementation of the simultaneous closed season in OSPESCA (SICA) member states throughout the Sub-Project Period;

- OSPESCA-CRFM agreement, in the context of the Joint Action Plan, on geographic expansion of coordinated closed season implementation; to be approved at the second high-level OSPESCA-CRFM Ministerial Meeting;
- subsequent implementation of the OSPESCA-CRFM agreement;
- coordination of closed season implementation with additional relevant lobster stock range countries, as a minimum during the last Sub-Project year
- bundled set of compliance support measures identified and agreed upon by end of Sub-Project year 1; measures combine at least enforcement and awareness building measures, and target the broader stakeholder range (full value chain, consumers, general public);
- multi-lingual and stakeholder-tailored, printed and electronic awareness building materials; with basic set of materials available at the latest at the onset of Sub-Project year 2;
- implementation of innovative compliance/enforcement measures supported by the Sub-Project (incl. use of metrics for evaluation of compliance levels, as feasible) during at least 2 closed seasons, in at least 5 CLME⁺ countries
- Experimental effectiveness evaluation methodology defined and agreed upon by year 2, and tested during at least 3 closed seasons at at least 4 pilot sites

Output 3.2. (O3.2.) enhanced/coordinated implementation of measures against IUU, tailored to the lobster fishery

Target(s):

- bundled set of measures against IUU including Monitoring, Control and Surveillance (MCS), awareness building, and identification of viable income alternatives, agreed upon among south central stock range countries, at the latest by end of Sub-Project year 2;
- measures implemented at demo scale (range of south central stock) during second half of Sub-Project, and best practices/lessons learnt captured/documentated by Sub-Project end

Output 3.3. (O3.3.) implementation & promotion of traceability system for Caribbean spiny lobster fishery products

Target(s):

- standardized approach towards traceability of Caribbean spiny lobster fisheries agreed upon among at least the OSPESCA member states, by end of Sub-Project year 2;
- at least 8 countries from the CLME⁺ subset adopt and implement a lobster traceability system in their fisheries by end of Sub-Project year 4

Output 3.4. (O3.4.) alternative spiny lobster fishing methods tested at the pilot level and potential for replication and up-scaling evaluated

Target(s):

- pilot initiative under implementation to test and evaluate the use of artificial shelters as alternative sustainable fishing method in (at least) 5 fishing communities, including some communities affected by the scuba diving ban; by the end of Sub-Project year 1
- technical and economic feasibility evaluated by end of year 3 of the Sub-Project
- potential for replication and up-scaling analysed and quantified, linked to socio-economic target indicators, and documented by end of Sub-Project year 3

3.3.2.3 OUTCOME 4: Mechanism in place to track progress towards EAF and to facilitate replication/up-scaling, and strategy to ensure continuity of efforts beyond the Sub-Project lifespan

Outputs under this COMPONENT:

Output 4.1. (O4.1.) System to track and evaluate progress towards EAF and to facilitate strategic/adaptive decision-making, adopted and operational (incl. participatory definition of EAF-related environmental and socio-economic targets)

Targets:

- M&E framework consisting of process (incl. governance architecture & functionality), stress reduction, stock & ecosystem/habitat status, and socio-economic status indicators agreed upon at [sub]regional level by year 2;
- baseline values for at least 40% of indicators under the M&E framework identified by year 2;
- baseline values for at least 70% of indicators identified by Sub-Project end; **(c)** target values for key stock/socio-economic indicators under the M&E framework agreed upon in the relevant spiny lobster fisheries countries by year 2;
- permanent M&E mechanism in place and associated, clear institutional mandates agreed upon; M&E mechanism is linked to the advisory and decision-making components of the relevant policy cycles, by Sub-Project end

Output 4.2. (O4.2.) Lessons learnt and best practices from the demo activities documented and disseminated among interested CLME+ states and other stakeholders

Target(s):

- experience notes documenting best practices/lessons learnt and covering at least the following 3 topics, available in English and Spanish by Sub-Project end:
 - o IUU and MCS;
 - o stock assessment, data management & exchange, and target setting;
 - o certification, traceability of catch and exports
- best practices & lessons learnt disseminated and/or made permanently available, through - as a minimum- the following means:
 - o websites of relevant members of the CLME+ partnership;
 - o electronic and/or printed materials, disseminated among all CLME+ countries and stakeholder groups with an interest in spiny lobster fisheries;
 - o at least 1 regional workshop, targeting at least 60% of CLME+ countries with spiny lobster fisheries/markets (may be in association with established events such as recurrent meetings of GCFI, OSPESCA, CRFM and WECAFC.)

Output 4.3. (O4.3.) Additional co-financing leveraged for Sub-Project implementation, and formally adopted Sub-Project after-life plan

Target(s):

- additionally mobilized resources match the GEF contribution to the CLME+ spiny lobster Sub-Project by end of project year 3 (possible mobilization scenarios: 50% OSPESCA, 30% CRFM, 20% WECAFC and/or individual CLME+ countries)
- Sub-Project after-life plan approved by relevant bodies of FAO-WECAFC, CARICOM-CRFM and SICA-OSPESCA, by project end;
- after-life plan describes the agreed upon, permanent institutional/organizational mandates;
- resource mobilization strategy for after-life plan developed and available by end of Sub-Project Year 3

2.4. Project indicators and impact monitoring

For the CLME⁺ Sub-Projects, the conceptual approach to project impact monitoring will be similar to the one adopted for the main UNDP/GEF CLME⁺ Project. This approach is reflected in the structure and content of the Results Framework contained under Section 3 of this document. It is based on the GEF indicator categories for project monitoring & evaluation (M&E) (Figure 3), and enriched with additional categories stemming from the work developed under the TWAP Project (GEF ID 4489, see also Figure 4). Under the project's M&E framework, (draft) SMART¹⁰ targets have been associated with the different project outputs.

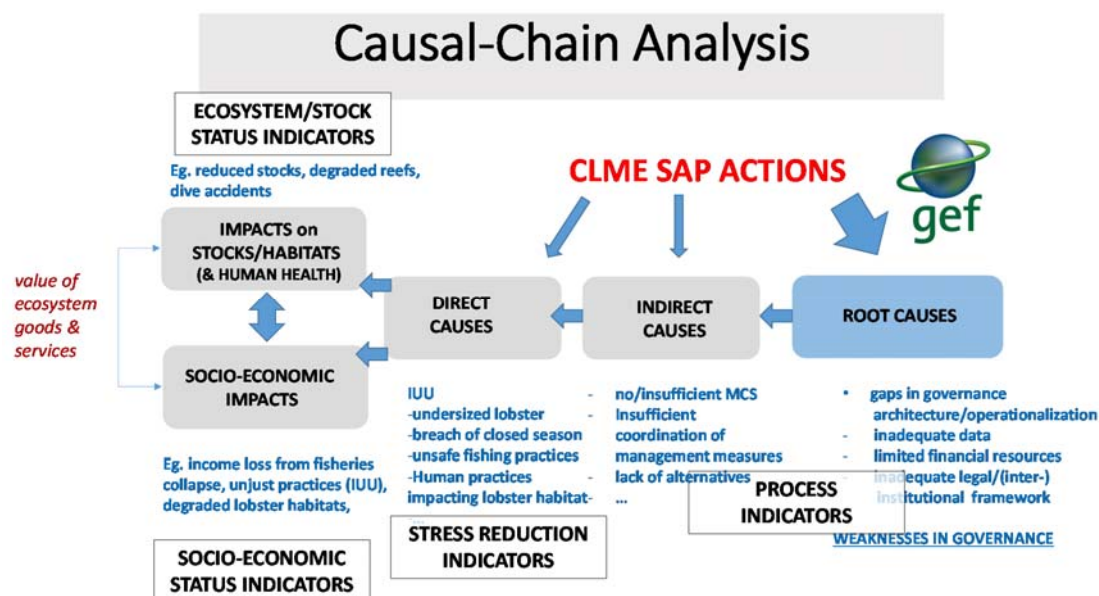


Figure 3. The different types of indicators typically used for the monitoring and evaluation of results under GEF (co)funded International Waters Projects

With its strong focus on being a catalyst for enhanced, transboundary governance processes, many of the Sub-Project's Indicators will fall under the category of "**Process Indicators**".

It will therefore be of critical importance to continuously link processes and obtained progress/results back with the over-arching goal to which the project is expected to contribute, i.e. maximized, sustainable contributions from the spiny lobster resource to human well-being and socio-economic development. In this context, periodic fine-tuning and/or revision of planned processes may be needed, as preliminary results are evaluated and additional knowledge is acquired. Such will demand an adaptive (project) management approach.

In line with the above, preliminary "**Stress Reduction**" and, as feasible, "**Ecosystem/Stock Status**" and "**Socio-economic Status**" Indicators and associated Targets are to be defined, following –to the extent that such will be possible during the Project Inception Phase- a consultative/participatory approach. Wherever feasible, approximate baseline values for these indicators have been identified using the best information available to date. These values will need to be updated as better information becomes available as a consequence of the implementation of activities under the Sub-Project.

¹⁰ SMART indicators are: Specific, Measurable, Achievable, Relevant and Time-bound

For certain of the (draft) targets set under the project results framework during the project preparation and/or inception phase, a fine-tuning and/or formal revision and adoption of their values by a broad group of (relevant) stakeholders¹¹ will need to be undertaken once the transboundary governance arrangements and processes that will facilitate such broader stakeholder participation have been made operational. The operationalization of these processes is expected to be achieved through the activities associated with esp. Outcome 1 and 2 of the Sub-Project.

Certain of these project indicators and their associated baseline values and targets can then also become part of the overarching, longer-term Monitoring & Evaluation Framework for SAP implementation, and contribute to the “State of the Marine Ecosystems and associated living resources” reporting that will be supported through CLME+ Project Component 5.

Associations between the components of the GEAF framework (which was used to structure the Sub-Project strategy, as described under Section 0) and **(a)** the different Sub-Project components, and **(b)** impact monitoring indicator types, are illustrated in the figure below.

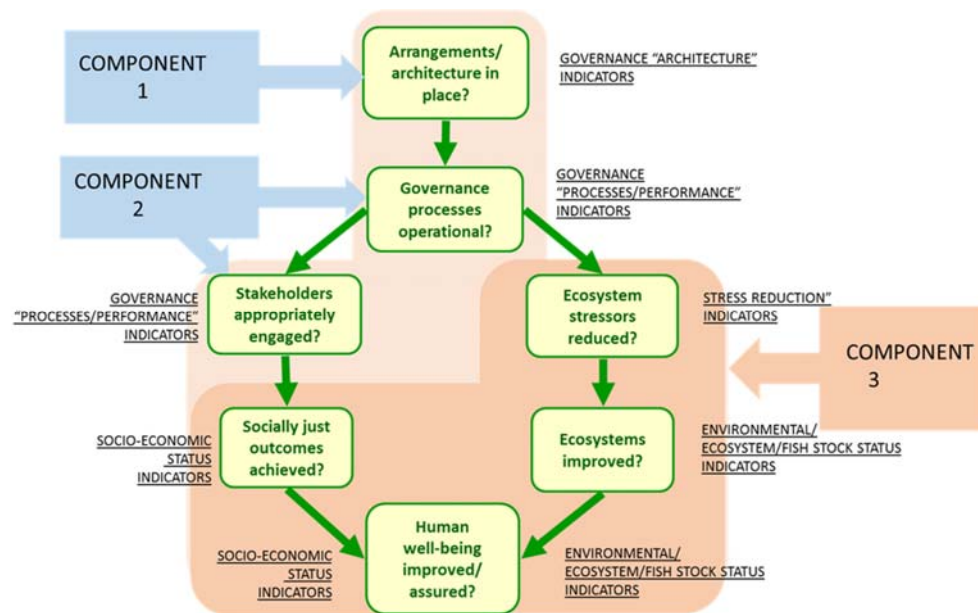


Figure 4. Association between the elements of the GEAF framework, and **(a)** the Sub-Project components and **(b)** the different project impact monitoring indicator types

It is intended that during the Sub-Project’s inception phase, the project objectives, indicators and reference points will be further fine-tuned and developed through a participatory approach. They will then be used to steer and inform the Sub-Project management process, and to guide monitoring and evaluation of its implementation.

¹¹ i.e. beyond the governance bodies, country representatives and organizations that actively participated in the development of the current Sub-Project proposal

2.5. Risks and assumptions

As a consequence of the number of countries and stakeholders involved in Caribbean spiny lobster fisheries, and the associated differences in customs/culture, language, legal and management frameworks, there is a series of risks the project will have to deal with, and a number of assumptions it will have to work under. Combined, the dynamics of risks, and the periodic review (and revision, where applicable) of assumptions, justify the adoption by the Sub-Project, of an adaptive approach to project management and implementation.

Risks and assumptions, identified or made during the project preparation phase, have been given due consideration during project design.

- Political considerations

It is critical for the success of the project that countries accept, and commit to an evolution from the strictly national or geopolitically-defined sub-regional management frameworks to multi-level, nested management frameworks which take into account both species biology and common markets. It is assumed that the progress obtained to date (e.g. SAP endorsement, CRFM-OSPESCA Joint Action Plan, OSPESCA/CRFM/WECAFC/CFMC, etc) is a clear indication that political will exists, and that the first steps for such evolution have been made.

However, in a region with so many countries and dependent territories, there is a risk that political turn-over and the inertia typical of an evolution away from Business-as-Usual schemes, together with the more-or-less fixed periodicity and timeframes proper of regional, sub-regional and national-level political processes, may impact on the speed with which targets set under this Sub-Project can be met.

In order to mitigate to the best possible extent this risk, due consideration has been given during the project design to strong ownership over the project by the relevant RFBs; further, project milestones and targets have been defined to the best possible extent in alignment with the established frequencies and expected timeline of relevant native planning and decision-making events in the region

However, it is to be noted that delays in the operationalization of the CLME⁺ Project, beyond the currently anticipated initiation of the project during the first months of 2015, will impact on the feasibility of some of the currently defined targets, included under the Project Results Framework in this document. In such case, a critical revision of the results framework (incl. a re-evaluation and alignment of targets with the calendar of native governance processes) will need to be made during the project inception phase.

Other risks are the limited or uncertain funding levels of governments and (sub-)regional organizations; shifts in political priorities (e.g. as a consequence of natural disasters), and difficulties in reaching consensus among the many countries and organizations; the cost of improving critical data & information sets; aversion to change on the side of stakeholders (e.g. fishers, intermediaries, consumers); market pressures etc.

In consideration of the above, there will be a need to identify and/or forge strong political and technical leadership in the region, as well as good lobbying capacity. Involvement and participation of stakeholders should be improved. Limited (political will for) inter-sectorial communication and stakeholder participation may delay proper decision making, or affect the legitimacy and/or buy-in for decision and associated actions. Recurrent administrative and technical turn-over can lead to substantial delays in implementation.

- Legal considerations

Regional and national legal frameworks are often still not sufficiently harmonized. Many of the regional regulations are not binding; in practical terms, the concept of “voluntary implementation” makes such regulations subject to an increased risk of in compliance. Measurable impacts from the expected Outcomes, especially at the level of stress reduction or environmental or socio-economic conditions, may take (much) more than 5 years to manifest themselves, at levels other than the local scale. Weak (capacity to enforce or ensure) compliance with regulations hinders the possibility of reaching goals and targets “in the field”. New market-based international regulations with implications for the lobster fisheries may be imposed on the region if regulations and measures to ensure stock sustainability and well-being of fisherfolk are not put in place in a timely manner, through the native regional mechanisms.

- Considerations of human, technical and financial capacity

Technical data and info on the fisheries sector is not always compiled, analyzed and made available to the users and for decision making. Limitations on national government funding have an influence on the availability of (qualified/sufficiently trained or experienced) human and technical resources. Often, limitations persist in the awareness/ understanding of the importance of developing a knowledge base for decision making. There could be difficulties in reaching consensus on technical matters for decision making. Natural conditions and distance/remoteness of selected sites could not be suitable for the implementation of some activities e.g. deployment of artificial shelters. Costs of travel in the region are substantial.

- Cultural considerations

There are language and cultural barriers which impose an extra burden in the implementation of any project. Drug traffic impact and influence on the fisheries sector may limit the feasibility to implement certain activities.

There could be loss of income/human well-being under a closed season implementation at the regional level if proper additional measures to avoid such loss are not considered with stakeholders. There could be misunderstanding of the scope and nature of the agreements/regulations adopted and promoted by the countries and unwillingness to change. Unwillingness and fragmentation of the community would affect their participation and commitment.

2.6. Cost effectiveness, sustainability and replication potential

Cost effectiveness

Sub-Project activities will be embedded within the context of a regional priority, set under the CLME+ SAP, the joint CRFM-OSPESCA Action Plan, and the current WECAFC Biannual Work Plan. This means that the project will be able to build upon past and ongoing efforts and (planned) investments at regional, sub-regional and national levels, which in turn will result in the high cost effectiveness of the GEF contribution under this Sub-Project. Strategic coordination of efforts with other national, sub-regional and even global initiatives¹² will further enhance cost effectiveness. Cost effectiveness will

¹² E.g. national-level lobster fisheries certification and FIPs efforts, and efforts geared towards better protection of lobster habitats (reefs), sub-regional efforts focussing on the implementation of the ridge-to-reef approach, and global efforts to enhance ocean/fisheries governance, and to exchange best practices and lessons learnt such as TWAP, LME COP, IWLEARN, etc.

further also be increased through the outputs under Outcome 4 of the Sub-Project, in particular those relating to replication, up-scaling and long-term sustainability of activities and results:

The **replication potential** of the Sub-Project is substantial because:

The Sub-Project has been designed in such a way as to enable **cost-effective replication and up-scaling** of best practices and lessons learnt from the implementation of activities in a limited sub-set of countries, across the wider range of CLME+ states.

At the level of the efforts toward the adoption of EAF, replication will be facilitated across the Sub-Projects under CLME+ Project Document Component 3 as all Sub-Projects have been shaped around a common conceptual framework: the Governance Effectiveness Assessment Framework (GEAF). The use of this framework, developed under the TWAP Project and adopted by the CLME+ Project will not only facilitate replication within the context of the suite of CLME+ Sub-Projects, but also among other efforts to adopt the EAF approach, both within the CLME+ region and beyond.

Specifically within the context of the actions towards the adoption of EAF for the Caribbean spiny lobster fisheries, replication of best practices and lessons learnt through the work conducted in pilot sites, countries or sub-regions of the CLME+ will be facilitated through Output 4.2., under Outcome 4.

Sustainability of progress and results obtained through the CLME+ Sub-Project's contributions will be ensured as:

- (a) the Sub-Project's design foresees for strong ownership over the project activities by those organizations and institutions at the regional, sub-regional and national level that have a formal long-term mandate for the management of the spiny lobster resource
- (b) the timeline of Sub-Project activities and milestones will be aligned as much as possible with the timeline of the relevant existing governance processes in the CLME+ region (e.g. Table 4)
- (c) the development and region-wide adoption of a monitoring & evaluation (M&E) framework to track progress towards EAF for the spiny lobster fisheries in the CLME+, including the definition of medium- to long-term targets in terms of desired status of lobster stocks, lobster habitats, and associated desired socio-economic benefits, will trace a roadmap for action which will extend beyond the Sub-Project life span itself
- (d) the development of a project after-line plan, to be delivered by the end of Sub-Project year 3, is embedded as a specific output (O4.3.) in the Sub-Project's logical framework under Outcome 4

2.7. Beneficiaries and stakeholder involvement plan

Long-term and short-term beneficiaries

In the medium and long term, the most important beneficiaries of the spiny lobster Sub-Project activities are expected to be the peoples of the CLME+ region (and beyond) that make a living, or benefit in any other way, out of the sustained existence of the Caribbean spiny lobster resource. In this context, the stakeholder groups on which the Sub-Project activities will mostly focus are: Caribbean fisherfolk, and stakeholders along the value chain. "*End consumers*" of the spiny lobster resource will of course also be beneficiaries of the project outcomes.

In the shorter term, the Sub-Project activities are expected to benefit those organizations and institutions that have been given a mandate linkable/of relevance to the over-arching objective of the CLME+ spiny lobster Sub-Project:

“to maximize in a sustainable way the contributions of the spiny lobster resource to human well-being and socio-economic development in the CLME+ region, while conserving the structure, diversity and functioning of the ecosystems that host this species”

These include regional and sub-regional fisheries bodies, and fisheries ministries and technical departments at the country level, plus their peers involved in the protection of key lobster habitats. Within the context of integrative, interactive governance, the CLME+ core stakeholder group should be expanded beyond the “public sector”, to also include the relevant civil society and private sector representatives with key roles in the spiny lobster policy and management cycles¹³.

Achieving sustainable lobster fisheries, as a means to sustain livelihoods and promote socio-economic development in the CLME+, can also be of strategic importance in the context of the other objectives of the CLME+ Project, and the over-arching objectives of the CLME+ SAP: the high economic value of the spiny lobster fisheries can help taking pressure away from other living marine resources in the CLME+; at the same time additional awareness can be built among stakeholders, in the context of the spiny lobster value chain, on the importance of healthy, well-managed and sufficiently protected marine ecosystems/habitats (e.g. coral reefs) that are critical to the lobster resource in the CLME+.

Primary and secondary beneficiary countries

As indicated under Section 2.3, the geographic scope of the activities under this Sub-Project will be variable and will depend on the specific activity. Countries that will directly benefit from the spiny lobster Sub-Project activities will thus range from those directly involved in the activities under Sub-Project components (1) – (3), to the full range of CLME+ spiny lobster fishing countries, through the activities under component 4 (outcome 4).

Stakeholder involvement plan

Involvement in project implementation of key stakeholders linkable to the spiny lobster policy and management cycles will be secured through the initial project management & execution arrangements -specifically designed for this purpose- described under Section 5 (with a possible further discussion during the CLME+ project inception phase and project inception workshop), and through the provisions made for this purpose under the Sub-Project logframe (Section 3) and budget (Section 4).

Stakeholder involvement is expected to take place through a regional consultation committee which is considered under the regional management plan. A more detailed participation scheme will be developed by the spiny lobster Sub-Project co(executing) organizations during the project inception phase. Periodic reviews, and, whenever applicable, revisions of the stakeholder involvement plans may take place during project execution under the concept of adaptive project management.

¹³ A partial analysis, focused on a number of Central American countries and conducted under the spiny lobster fisheries governance assessment under the CLME Project (GEF ID 1032) can be found in Annex 3. Agencies with responsibility, or potential responsibility, for the 6 key transboundary issues affecting the Central American spiny lobster fisheries resource (governance assessment)

3. Project Results Framework

Table 1. CLME+ Spiny lobster Sub-Project Results Framework

OVERARCHING GOAL:					
The Spiny Lobster Sub-Project will support the regional and national-level efforts to maximize, in a sustainable way, the contributions of the spiny lobster resource to enhanced human well-being and socio-economic development in the CLME+ region, while conserving the structure, diversity and functioning of the ecosystems that host this species.					
PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
OUTCOME 1: Expanded and enhanced, interactive and cross-sectorial governance arrangements enable full policy cycle implementation, with EAF focus, at (sub-) regional and national levels Output 1.1. (O1.1.) Expanded and enhanced transboundary governance architecture	O1.1.PI1. institutional/organizational architecture that enables interactive, cross-sectorial governance of the Caribbean spiny lobster resource within a meaningful, transboundary geographic scope O1.2.PI1. national-level institutional architecture (linked with the transboundary arrangements of O1.1), that enables interactive, cross-sectorial governance and management of the Caribbean spiny lobster ecosystem	- Governance assessments (incl. methodology, associated completeness/functionality metrics, and recommendations) available from CERMES' generic and lobster-specific case studies conducted under the CLME Project - No RFMO in the CLME+ region - One regional fisheries body covering all CLME+ countries, with partial policy cycle mandate¹⁴ (current mandate: D&I and A&A only¹⁵): FAO-WECAFC - Two sub-regional fisheries bodies with full policy cycle mandate: CRFM (CARICOM countries) and OSPESCA (SICA countries); these do not cover all	O1.1.T.PI1. (a) architecture covers all relevant WECAFC member countries, with a focus on at least all SICA countries plus Colombia, Jamaica and Bahamas; (b) clear mandates for all policy cycle components; (c) arrangements in place that facilitate participation of civil society and private sector actors in transboundary policy cycle implementation; (d) arrangements in place that facilitate cross-sectorial policy coordination (EAF approach); by end of Year 2 of the Sub-Project O1.2.T.PI1. at least 5 CLME+ spiny lobster fishing countries with enhanced national-level architecture that: (a) enables full policy cycle implementation; (b) facilitates cross-sectorial coordination; (c) facilitates interactive governance; by Sub-Project end	- Meeting reports (incl. participants lists) from the relevant governance arrangements - Revised ToRs (as applicable) and composition of the WECAFC spiny lobster working group - Signed MoU, defining organizational roles and coordination arrangements under O1.1.T.PI1 - Signed MoU or equivalent proof of (commitments towards) enhanced coordination at regional and national levels between Spiny Lobster EAF and Reef EBM arrangements	- Non-binding frameworks - language/cultural/geopolitical/sectorial barriers - political will and institutional commitment - differences in stakeholder priorities - limited resources - project timeline vs timeline of native (regional/national) governance/decision-making processes

¹⁴ Mahon, R., A. Cooke, L. Fanning and P. McConney (2013). Governance arrangements for marine ecosystems of the Wider Caribbean Region. Centre for Resource Management and Environmental Studies, University of the West Indies, Cave Hill Campus, Barbados. CERMES Technical Report No 60. 99p.

¹⁵ Policy cycle components: **D&I** = data and information; **A&A** = analysis & advice; **DM** = decision-making; **I** = implementation; **R&E** = review and evaluation

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PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
Output 1.2. (O1.2.) Enhanced national-level governance architecture for EAF approach to spiny lobster fisheries management at the demo scale (selected CLME+ countries)		CLME+ countries with spiny lobster fisheries • “WECAFC WG”: WECAFC/OSPESCA/CRFM/CFMC working group on Caribbean spiny lobster (mandate: R&E, D&I, A&A)¹⁶ • GCFI: well-established NGO with acknowledged (potential) contributions to spiny lobster fisheries policy cycle: D&I and A&A • Sub-regional stakeholder organizations in place (CONFEPESCA and OECAP in SICA, CNFO in CARICOM) but currently disconnected to address issues and subjects of common interest • 2009 OSPESCA regional agreement to harmonize lobster fishing regulations OSP-02-09 • 2012 OSPESCA-CRFM Memorandum of Understanding and Joint Action Plan, calling for enhanced collaboration		(WECAFC, OSPESCA, CRFM, UNEP CEP, CCAD, Ministries of Fisheries, Ministries of Environment) • Updated governance assessment report (with updated metrics and expanded geographic scope, matching the scope of the CLME+ spiny lobster Sub-Project) • periodic Sub-Project progress reports (<i>incl. progress indicators developed & agreed upon under Outcome 4</i>)	

¹⁶ See Annex 2: Terms of Reference (ToRs) of the OSPESCA/WECAFC/CRFM/CFMC Working Group on Spiny Lobster

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PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
		- on, a.o., spiny lobster fisheries • 2012 OSPESCA-CCAD Memorandum of Understanding (SICA countries) • Prospective talks between OSPESCA and Colombia on matters relating to mutual coordination/collaboration for the management of spiny lobster fisheries • 2014 draft proposal for a CRFM agreement/declaration/MoU on the conservation management and sustainable use of the Caribbean spiny lobster • Review of Honduran Spiny lobster fisheries (Smithsonian) • Darden sustainability – Seafood Stewardship initiative • SPAW Protocol (UNEP CEP), CCAD PARCA			
OUTCOME 2: Enhanced capacity for knowledge/data-based management of	O2.1.PI1. management plan with expanded geographic scope developed and adopted	• draft version sub-regional spiny lobster management plan (proposal) at the level of OSPESCA member states	O2.1.T.PI1. (a) transboundary management plan with geographic scope that is meaningful from scientific (stock sustainability & optimized socio-economic benefits) and implementation (management/compliance measures)	• management plan document with indication of geographic scope + meeting minutes or similar reflecting the	• different priorities and difficulties in reaching consensus among countries and

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PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
the Caribbean spiny lobster resource Output 2.1. (O2.1.) regional management plan for Caribbean spiny lobster fisheries Output 2.2. (O2.2.) Enhanced capacity for data collection, stock assessment, management, analysis, reporting & exchange across the regional, sub-regional and national levels (<i>linked to O3.3.</i>) Output 2.3. (O2.3.) Enhanced capacity for Monitoring, Control &	O2.2.PI1. foundations for operational, regional- and national-level data infrastructure in place O2.2.PI2. training on data collection & management infrastructure and practices provided to key stakeholders O2.3.PI1. inter-connected regional and national-level vessel registry systems O2.3.PI2. training provided to relevant societal actors O2.4.PI1. common stock assessment model developed and agreed O2.4.PI2.	- well-known problems relating to data management & management capacities, and data set inconsistencies - on-going work on harmonization of data formats for some fisheries which can be expanded to the lobster fishery (OSPESCA) - one sub-regional register already in place (OSPESCA) - FAO Fisheries Resources Monitoring System (FIRMS) implementation approved at WECAFC level - CRFM proposal on stock assessment methodologies and data collection	point-of-view; (b) plan adopted by all range states for the spiny lobster stock, within the OSPESCA, CRFM and WECAFC frameworks by at the latest end of Sub-Project year 2 ¹⁷ and (c) plans adopted and integrated at national level in at least 5 CLME countries by the end of project year 3; O2.2.T.PI1. (a) (recommended) specifications for regional- and national-level data infrastructure by end of demo year 1; (b) landings, effort and biological, socio-economic and trade data formats agreed and harmonized/compatible for at least SICA countries + Jamaica + Colombia/range states of 1 spiny lobster stock, by end of year 2 (through linkage with FIRMS); (c) data exchange mechanisms/protocols agreed upon & adopted O2.2.T.PI2. training provided to relevant stakeholders (full chain of custody) from range countries for at least 1 lobster stock O2.3.T.PI1. (a) inter-linked regional and national-level vessel register in place and operating in at the least OSPESCA	adoption of the plan (e.g. joint Ministerial Meeting) - minutes & participants lists from training session - training materials distribution lists - technical documents/reports on stock assessment model, vessel registry, data infrastructure - vessel registry systems online & accessible - periodic Sub-Project progress reports (<i>incl. progress indicators developed & agreed upon under Outcome 4</i>)	organizations on technical issues; - administrative turn-over at country-level - technical data and info not available. - human and technical resources not available - limited awareness/poor understanding of the importance of developing a knowledge base for decision making

¹⁷ implementation of selected elements of the plan to be supported through other Sub-Project activities during the remaining Sub-Project timeframe, see also Outcomes 2, 3 and 4

OVERARCHING GOAL: The Spiny Lobster Sub-Project will support the regional and national-level efforts to maximize, in a sustainable way, the contributions of the spiny lobster resource to enhanced human well-being and socio-economic development in the CLME+ region, while conserving the structure, diversity and functioning of the ecosystems that host this species.					
PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
Surveillance (MCS) Output 2.4. (O2.4.) Enhanced stock assessment capacity	training provided to relevant societal actors		countries + Colombia, Jamaica and the Bahamas, by Sub-Project year 3 ¹⁸ O2.3.T.PI2. training on MCS provided for enforcement officers/bodies, by end of project year 3 (potential use of Port State Measures Agreement follow-up under overarching logframe and its activities related to IUU fishing) O2.4.T.PI1. (a) common stock assessment model developed and agreed upon, by end of year 2; (b) stock assessment carried out by year 3, for at least the south-central stock O2.4.T.PI2. training on common stock assessment model provided, by end of project year 2		
OUTCOME 3: Socially just management/stress reduction measures implemented and/or in place	O3.1.SRI1. nationally declared annual closed seasons across the CLME+ region, with substantial chronological overlap,	Simultaneous annual closed season agreed upon at the level of OSPESCA member states in 2009 (OSP-02-09)^{21, 22}	O3.1.T.SRI1. (a) continued implementation of the simultaneous 4-months closed season in at least 6 of the 7 OSPESCA (SICA) member states, throughout the Sub-Project Period; (b) OSPESCA-CRFM agreement, in the context of the Joint Action Plan, on	- official declarations regarding the annual closed seasons in CLME+ countries - meeting minutes & reports	- difficulties in reaching technical or political consensus - weak compliance and control, in

¹⁸ Will be supported by activities under the main CLME+ Project as the vessel registry system will not be fishery-specific

²¹ Only exception is Belize, whose closed season initiates and ends ½ month prior to the official OSPESCA closed season

²² See

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PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
<i>(with special attention to the issues of IUU and human well-being)</i> Output 3.1. (O3.1.) regionally coordinated implementation of annual closed season for Caribbean spiny lobster fisheries Output 3.2. (O3.2.)^{19, 20} enhanced/coordinated implementation of measures against IUU, tailored to the lobster fishery Output 3.3. (O3.3.) implementation & promotion of traceability	wherever such closed seasons, and their chronological overlap, is meaningful from an ecological (stock) and/or management (compliance/common markets) perspective O3.1.SRI2. closed season compliance measures in place (incl. through use of innovative media/technologies) O3.1.SRI3. closed season effectiveness evaluation strategy O3.2.SRI1. Comprehensive package of measures against IUU, tailored to spiny lobster fisheries, coordinated across the key range countries for the south central stock (demo scale)	- Annual closed seasons in several other CLME+ countries, but with no connection among countries from an ecological/management perspective - Documented human health & environmental impacts from scuba-based lobster fishing practice in Honduras and Nicaragua - OSPESCA-level adoption in 2009 (OSP-02-09) of ban on scuba diving-based Caribbean spiny lobster fishery; ban expected to come into effect in 2016; need to identify, agree upon and support the implementation of viable, legal alternatives (draft) technical proposal for transition out of scuba diving lobster fishery (Smithsonian) - WWF work in Honduras and Nicaragua on spiny lobster fishery certification (Fisheries Improvement Projects; FIPs)	geographic expansion of coordinated closed season implementation; to be approved at the second high-level OSPESCA-CRFM Ministerial Meeting; (c) subsequent implementation of the OSPESCA-CRFM agreement; (d) coordination of closed season implementation with additional relevant lobster stock range countries (min. 60% of CLME+ countries where such measure is deemed meaningful) during the last Sub-Project year O3.1.T.SRI2. (a) bundled set of compliance support measures identified and agreed upon by end of Sub-Project year 1; measures combine at least enforcement and awareness building measures, and target the broader stakeholder range (full value chain, consumers, general public); (b) multi-lingual and stakeholder-tailored, printed and electronic awareness building materials; with basic set of materials available at the latest at the onset of Sub-Project year 2; (c) implementation of innovative compliance/enforcement measures supported by the Sub-Project (incl. use of metrics for evaluation of compliance levels, as feasible) during at least 2	- printed and electronic dissemination and awareness building materials on the annual closed season - technical reports - sub-regional standard for lobster products traceability - implementation reports (incl. evaluation of compliance and effectiveness) for the annual closed seasons (pilot) site visits, stakeholder interviews, pilot report(s) with specific results and recommendations - periodic Sub-Project progress reports (<i>incl. progress indicators developed & agreed upon under Outcome 4</i>)	particular in the case of voluntary implementation - loss of income/human well-being under closed season implementation - misunderstanding of the legal scope and nature of the agreement by the countries - human and technical resources not available - refusal to implement the system - new market-based international regulations with implications for the lobster fishery if a traceability system is not in place and operating - unwillingness to change

¹⁹ partially overlapping with O3.1. where illegal fishing during the closed season is concerned

²⁰ to be coordinated with related activities under the main CLME+ Project

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PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
system for Caribbean spiny lobster fisheries products Output 3.4. (O3.4.) alternative spiny lobster fishing methods tested at the pilot level and potential for replication and up-scaling evaluated	O3.3.SRI1. Traceability system for Caribbean spiny lobster catch and exports O3.4.SRI1. On-the-ground experience with alternative(s) to spiny lobster scuba diving fishery	- TNC work in Bahamas on spiny lobster fishery certification - Pre-assessment for Marine Stewardship Council Certification of Honduran lobster trap fishery in 2011, resulting in list of recommendations - OIRSA export monitoring system - NOAA Seafood Trade Monitoring System - Proposal for a traceability system already in place in SICA countries	closed seasons, in at least 5 CLME+ countries O3.1.SRI3. Experimental effectiveness evaluation methodology defined and agreed upon by year2, and tested during at least 3 closed seasons at at least 4 pilot sites O3.2.T.SRI1. (a) bundled set of measures against IUU including Monitoring, Control and Surveillance (MCS), awareness building, and identification of viable income alternatives, agreed upon among south central stock range countries, at the latest by end of Sub-Project year 2; (b) measures implemented at demo scale (range of south central stock) during second half of Sub-Project, and best practices/lessons learnt captured/documented by Sub-Project end; (c) aimed reduction in IUU fishing for spiny lobster of at least 30%, in min. 3 countries, by Sub-Project End O3.3.T.SRI1. (a) standardized approach towards traceability of Caribbean spiny lobster fisheries agreed upon among at least the OSPESCA member states, by end of Sub-Project year 2; (b) at least 8 countries from the CLME+ subset adopt and implement a lobster traceability system in their fisheries by end of Sub-Project year 4		- drug traffic influence and impact on fisheries operations - unwillingness and fragmentation of the community would affect their participation and commitment - natural conditions not suitable for the use of artificial shelters - high running costs in remote areas

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PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
			O3.4.T.SRI1. (a) pilot initiative under implementation to test and evaluate the use of artificial shelters as alternative sustainable fishing method in (at least) 5 fishing communities, including some communities affected by the scuba diving ban; by the end of Sub-Project year 1 (b) technical and economic feasibility evaluated by end of year 3 of the Sub-Project (c) potential for replication and up-scaling analysed and quantified, linked to socio-economic target indicators, and documented by end of Sub-Project year 3; (d) aimed reduction in spiny lobster fisheries-related human health hazards of at least 30% in minimum 1 country, by Sub-Project End		
OUTCOME 4: Mechanism in place to track progress towards EAF and to facilitate adaptive Sub-Project management, replication & up-scaling of activities, and strategy to ensure continuity of efforts beyond	O4.1.PI1. operational M&E system, shaped on the Governance Effectiveness Assessment (GEA) Framework O4.2.PI1. multi-lingual materials documenting best practices & lessons learnt O4.2.PI2. dissemination	- Governance assessments methodology available from CERMES case studies under the CLME Project (GEF ID 1032) and from the TWAP Project (GEF ID 4489) - GEF IW Focal Area suggested suite of indicator categories - Draft baseline information (indicators) available from CERMES case study on Central American spiny lobster fisheries	O4.1.T.PI1. M&E framework consisting of process indicators (incl. governance/ policy cycle architecture & performance), stress reduction indicators, stock & ecosystem/ habitat status, and socio-economic status/ well-being indicators agreed upon by the Spiny Lobster Working Group, by the end of Sub-Project Year 1; baseline values for at least 40% of indicators under the M&E framework identified by at the latest the end of Sub-Project Year 2; values for at least 70% of indicators identified by Sub-Project end; target values for key stock/ecosystem/socio-economic	- report/technical documents on M&E framework, indicators, and indicator values - experience notes: printed materials; permanently available digital materials - stakeholder inventory & distribution lists - web portal(s) & web portal content - formal co-financing commitments	- Persistence of business as usual schemes would hinder progress - limited government funding for co-financing, different priorities and difficulties in reaching consensus among countries and organizations

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PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
the Sub-Project lifespan Output 4.1. (O4.1.) System to track and evaluate progress towards EAF and to facilitate strategic/adaptive decision-making, adopted and operational (incl. participatory definition of EAF-related environmental and socio-economic targets) Output 4.2. (O4.2.) Lessons learnt and best practices from the demo activities documented and disseminated among interested CLME+ states and other stakeholders	activities & associated target public O4.3.PI3. amount of additionally mobilized financial resources O4.3.PI4. after-life plan to further advance region-wide adoption of EAF approach developed and approved	governance (CLME Project, GEF ID = 1032)	indicators under the M&E framework agreed upon through participatory approach (at least 3 countries) by end of Sub-Project Year 3; permanent M&E mechanism in place and associated, clear institutional mandates agreed upon by project end; O4.2.T.PI1 (Target A) Experience note(s), tailored to CLME+ stakeholders and documenting best practices/lessons learnt, available in at least English, Spanish and French and produced & available by Sub-Project end; (Target B) A least 1 GEF/CLME+ Sub-Project Experience Note produced, in a timely matter to facilitate dissemination by the CLME+ PCU to the global LME Community of Practice (<i>see also Output 5.3 of the main CLME+ Project Results Framework</i>) O4.3.T.PI2. additionally mobilized resources match the GEF contribution to the CLME+ spiny lobster Sub-Project by end of project year 3 (possible mobilization scenarios: 50% OSPESCA, 30% CRFM, 20% WECAFC and/or individual CLME+ countries) O4.3.T.PI2. (a) Sub-Project after-life plan approved by relevant bodies of FAO-WECAFC, CARICOM-CRFM and SICA-OSPESCA, by project end; (b) after-life plan describes the agreed upon, permanent institutional/organizational	- periodic Sub-Project progress reports (incl. progress indicators developed & agreed upon under Outcome 4) - after life-plan document	- There is the need for a strong political and technical leadership in the region and lobbying capacity. - Involvement and participation of stakeholders should be improved. - The limited intersectorial communication, political will and institutional commitment may delay proper decision making. - The project timeline vs timeline of native (regional/national) governance/decision-making processes face the risk of not accomplishing desired targets. - Administrative and technical turn-over has an effect in delaying

OVERARCHING GOAL:					
The Spiny Lobster Sub-Project will support the regional and national-level efforts to maximize, in a sustainable way, the contributions of the spiny lobster resource to enhanced human well-being and socio-economic development in the CLME+ region, while conserving the structure, diversity and functioning of the ecosystems that host this species.					
PROJECT OUTCOMES & OUTPUTS					
	Indicators	Baseline	Milestones & Targets	Source of verification	Risks and Assumptions
Output 4.3. (O4.3.) Additional co-financing leveraged for Sub-Project implementation, and formally adopted Sub-Project after-life plan			mandates; (c) resource mobilization strategy for after-life plan developed and available by end of Sub-Project Year 3		implementation of the activities

4. Total budget and (tentative) work plan/implementation timeline

Table 2. Preliminary Budget Breakdown (to be revised/fine-tuned during Project Inception Phase)

PROJECT OUTCOME	OUTPUTS	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Amount (USD) Year 4	Total Amount (GEF; USD)
1. Expanded and enhanced governance arrangements enable full policy cycle implementation, with EAF focus	O1.1. transboundary level	30.000	30.000	20.000	20.000	100.000
	O1.2. national level	35.000	35.000	25.000	25.000	120.000
	Sub-total	65.000	65.000	45.000	45.000	220.000
2. Enhanced capacity for knowledge/data-based management of the Caribbean spiny lobster resource	O2.1. regional management plan	20.000	10.000	10.000	15.000	55.000
	O2.2. data capacity	40.000	25.000	25.000	45.000	135.000
	O2.3. MCS capacity ²³	0	0	0	0	0
	O2.4. stock assessment capacity	20.000	10.000	10.000	20.000	60.000
	Sub-total	80.000	45.000	45.000	80.000	250.000
3. Socially just management/stress reduction measures implemented and/or in place	O3.1. closed seasons	20.000	20.000	20.000	25.000	85.000
	O3.2. measures against IUU	25.000	15.000	20.000	20.000	80.000
	O3.3. traceability systems	25.000	25.000	30.000	45.000	125.000
	O3.4. alternatives	20.000	15.000	5.000	0	40.000
	Sub-total	90.000	75.000	75.000	90.000	330.000
4. Mechanism in place to track progress towards EAF and to facilitate replication/up-scaling, and strategy to ensure continuity of efforts beyond the Sub-Project lifespan	O4.1. M&E system	30.000	10.000	10.000	30.000	80.000
	O4.2. dissemination of best practices & lessons learnt	0	0	10.000	40.000	50.000
	O4.3. up-scaling & Sub-Project after-life plan	0	0	10.000	10.000	20.000
	Sub-total	30.000	10.000	30.000	80.000	150.000
TOTAL		265.000	195.000	195.000	295.000	950.000

²³ In coordination with activities under the main CLME+ Project

Table 3. Tentative Work Plan and alignment with relevant regional governance processes (to be revised during Project Inception Phase)

Table 4. Relevant (sub-)regional governance processes and corresponding, tentative timelines

TENTATIVE ALIGNMENT WITH RELEVANT REGIONAL GOVERNANCE PROCESSES																
Relevant GOVERNANCE process cycles	2015				2016				2017				2018			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
WECAFC	2014-15 work programme				IGM	2016-17 work programme							IGM	2018-19 wp		
<i>WECAFC/OSPESCA/CRFM Spiny Lobster Working Group Meetings</i>				AM?				AM?				AM?				AM?
OSPESCA		SCM		SCM		SCM		SCM		SCM		SCM		SCM		SCM
CRFM		MM				MM				MM				MM		
OSPESCA-CRFM MoU																
<i>2nd Joint OSPESCA-CRFM meeting</i>				JM?	JM?			JM?								
UNEP CEP	2015-16 work programme							IGM	2017-18 work programme							IGM
<i>LBS Protocol</i>	2015-16 work programme							COP	2017-18 work programme							COP
<i>SPAW Protocol</i>	2015-16 work programme							COP	2017-18 work programme							COP
CCAD (PARCA)																
GCFI				AM				AM				AM				AM

AM = annual Meeting; IGM = Inter-governmental Meeting; MM = Ministerial Council Meeting; JM = Joint Ministerial Meeting; SCM= Steering Committee Meeting

5. Project management & implementation arrangements

The CLME⁺ Project Coordination Unit (PCU) will oversee the overall implementation of the CLME⁺ spiny lobster Sub-Project throughout the implementation period, to:

- o ensure its continued alignment with the overall objectives of the CLME⁺ Project and SAP²⁴
- o ensure synergies with other related CLME⁺ Project activities
- o promote synergies with other relevant regional initiatives
- o promote the timely achievement of the expected Sub-Project outcomes, and of the associated outputs (targets) under Component 3 of the main CLME⁺ Project

The implementation of Sub-Project activities itself will be delegated to those organizations, institutions and/or stakeholders with a formal mandate for, broadly recognized (potential) role and/or important stake in the sustainable management of the spiny lobster resource and its associated habitat in the region. The specific role of each partner will be defined in alignment with the scope of the partner organization's mandate, recognized strength²⁵ or stake.

The implementation arrangement(s) for the Sub-Project between UNOPS GPSO WEC and the prospective partner(s) will be based on formal and/or informal agreements - in the first case through the establishment of Memoranda of Understanding (MoU) or alternative, equivalent arrangements, and, where financial transactions are involved, on UN to UN agreements (inter-agency agreements; e.g. between UNOPS and FAO-WECAFC) and/or grant agreements (e.g. between UNOPS and OSPESCA, CRFM). The specificities of the arrangements will be further fine-tuned, and the arrangements will be put in place, during the CLME⁺ Project inception phase.

In the above context, Sub-Project management arrangements will contemplate the payment of instalments under the Sub-Project grant to the co-executing partner(s). The payment of instalments will follow, to the best possible extent, a pre-defined (agreed upon) timeline, on which major project milestones will be identified. Payments will be linked to the delivery of mutually agreed upon project deliverables, incl. standardized technical and financial progress reports and initial and/or revised work plans (as applicable).

Coordination of Sub-Project activities among the different partners (where applicable) (incl. their subsidiary bodies) will further be supported by the Interim Fisheries Coordination

²⁴ Once established, the interim SAP implementation coordination will help ensuring alignment of the Sub-Project with the CLME⁺ SAP objectives

²⁵ The subsidiarity principle will be applied, meaning that sub-regional organizations will be expected to take on a leadership/coordinating role for the execution of activities within the sub-region that falls under their mandate

Mechanism, to be established under Component 1 of the main CLME⁺ Project, during the Project inception phase.

Expected/prospective partners under the implementation arrangement(s) include: FAO-WECAFC, OSPESCA, CRFM, WWF, TNC, CCAD, UNEP CEP, OECS, GCFI, CERMES/UWI, Smithsonian, CONFEPESCA, OECAP, CNFO, Fisheries Ministries and Environmental Ministries of CLME⁺ participating countries, relevant civil society and private sector actors, etc.

6. References

- Behringer DC, Butler MJ IV, Shields JD (2008) Ecological and physiological effects of PaV1 infection on the Caribbean spiny lobster (*Panulirus argus* Latreille). *J Exp Mar Biol Ecol* 359:26–33
- Behringer et al. 2009. Is seagrass an important nursery habitat for the Caribbean spiny lobster, *panulirus argus*, in Florida? *New Zealand Journal of Marine and Freshwater Research* - 01/2009; 43(1):327-337.
- Box S., 2013. A review of the Spiny Lobster fisheries of the Honduran Caribbean. *Spatial Ecology of Fisheries and Marine Protected Areas Program*. Smithsonian Institution, National Museum of Natural History. 49 p.
- Butler MJ IV, Behringer DC, Shields JD (2008). Transmission of *Panulirus argus* virus 1 (PaV1) and its effect on the survival of juvenile Caribbean Spiny lobster. *Dis Aquat Org* 79: 173-182.
- Butler MJ, Cowen, R, Paris, C, Hirokazu, M & Goldstein, J. (2009). Long PLDs, Larval Behavior, and Connectivity in Spiny Lobster. http://www.nova.edu/ncri/11icrs/abstract_files/icrs2008-000679.pdf
- Chavez, E. 2001. Policy Design for Spiny Lobster (*Panulirus argus*) Management at the Meso-American Barrier Reef System. *Crustaceana*, 74 (10), 1119-1137. Chavez, 2001).
- CFMC; NMFS; GMFMC; SAFMC. (2008). Final Amendment 4 to the Fishery Management Plan for the Spiny Lobster Fishery of Puerto Rico and the U.S. Virgin Islands and Amendment 8 to the Joint Spiny Lobster Fishery Management Plan of the Gulf of Mexico and South Atlantic. Caribbean Fishery Management Council, National Marine Fisheries Service, Gulf of Mexico Fishery Management Council & South Atlantic Fishery Management Council.
- Claro, R., Baisre, J.A., Lindeman, K.C. & Garcia-Arteaga, J.P. Cuban fisheries: historical trends and current status. In: *Ecology of the Marine Fishes of Cuba* (eds. R. Claro, K.C. Lindeman & L.R. Parenti), Washington. D.C: Smithsonian Institution Press, pp. 194-218.
- Cochrane, K.L. y Chakalall, B. 2001. The spiny lobster fishery in the WECAFC region - An approach to responsible fisheries management. *Mar. Freshwater Res.* 52: 1623-1631.
- CRFM, 2011. Baseline Review of the Status and Management of the Caribbean Spiny Lobster Fisheries in the CARICOM Region. CRFM Technical & Advisory Document, No. 2011/ 5. 64p
- Ehrhardt, N., Puga, R., & Butler, M. I. unpub. *The Caribbean Spiny Lobster, Panulirus argus, Fisheries*.
- Ehrhardt N. 2001. Regional review. Pages 12–16 in P. Medley and S. Venema, eds. Report on the FAO/DANIDA/CFRAMP/ WECAFC Regional Workshops on the Assessment of the Caribbean Spiny Lobster (*Panulirus argus*). FAO Fish. Rep. 619.
- Ehrhardt, N. M. (2005). Population Dynamic Characteristics and Sustainability Mechanisms in Key Western Central Atlantic Spiny Lobster, *Panulirus argus*, Fisheries. *Bulletin of Marine Science*, 76 (2), 501-525
- Fanning, L. 2012. OSPESCA/CLME Pilot for the Shared Stocks of the Central American Lobster Fisheries –Governance Assessment. Centre for Resource Management and Environmental Studies, University of the West Indies, Cave Hill Campus, Barbados. CERMES Technical Report No 54: 33p.

Gittens, L., & Haughton, M. O. (unpub). *A Regional Overview of Spiny Lobster (Panulirus argus) Resources in the CARICOM/CARIFORUM Countries*. Caribbean Regional Fisheries Mechanism

IOCARIBE. 2007. CLME Full Project Component 4: Spiny Lobster Pilot Project.

Kimmel, J., & Rueter, J. (2007). Proposed Fisheries Management for Caribbean Spiny Lobster in the US Caribbean: Minimum Size for Imports. *Proceedings of the 60th Gulf and Caribbean Fisheries Institute*, (pp. 222-229). Punta Cana.

Kough, AS., Paris, CB. & Butler MJ. (2013) Larval connectivity and the international management of fisheries. PLoS One. 2013 Jun 7;8(6):e64970. doi: 10.1371/journal.pone.0064970

Mahon, R., A. Cooke, L. Fanning and P. McConney. 2013. Governance arrangements for marine ecosystems of the Wider Caribbean Region. Centre for Resource Management and Environmental Studies, University of the West Indies, Cave Hill Campus, Barbados. CERMES Technical Report No 60.99p.

Martinez, S., I. Monnereau and L. Fanning. 2007. CLME Full Project Component 4: Spiny Lobster Pilot Project. Caribbean Large Marine Ecosystem Project (CLME). 9 p.

Monnereau, I. and A.H.J. Helmsing. (2010). "Local Embedding and Economic Crisis: Comparing Lobster Chains in Belize, Jamaica and Nicaragua" in A.H.J. Helmsing and S. Vellema (eds) *Value Chains, Inclusion and Endogenous Development: Contrasting Theories and Realities*. Routledge Publishing Company. Abingdon.

Puga, R., R. Piñeiro, N. Capetillo, M.E. de León and L.S. Cobas 2008. Estado de la pesquería de langosta espinosa (*P. argus*) y su relación con factores ambientales y antrópicos en Cuba. Informe de Caso de Estudio del Programa: PNCT: Los cambios Globales y la Evolución del Medio Ambiente Cubano. Proyecto: Bases Oceanográficas para el estudio de las afectaciones del cambio global en la biodiversidad marina y costera de Cuba. Tarea: Evaluación de las posibles afectaciones del Cambio Climático a la Biodiversidad Marina y Costera de Cuba. Havana: Centro de Investigaciones Pesqueras. Septiembre de 2008.

WECAFC, 2007. Report of the fourth session of the SCIENTIFIC ADVISORY GROUP, Mérida, Mexico, 2–4 April 2007. FAO Fisheries Report No. 842.

WWF & PROARCA. (2004). *Spiny Lobster Marketing Chain*. Central American Commission for Environment and Development.

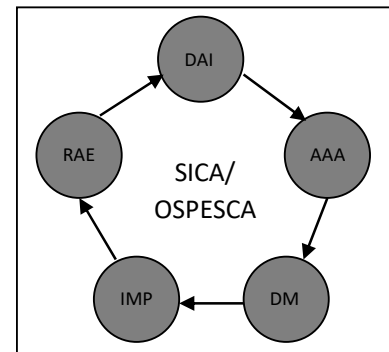
7. Annexes

Annex 1: The policy cycle and mandates of key regional and sub-regional organizations

From: Mahon, R., A. Cooke, L. Fanning and P. McConney. 2013. Governance arrangements for marine ecosystems of the Wider Caribbean Region. Centre for Resource Management and Environmental Studies, University of the West Indies, Cave Hill Campus, Barbados. CERMES Technical Report No 60.99p.

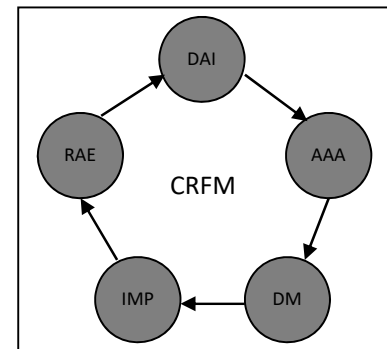
OSPESCA: current mandated policy cycle scope

The organisation was established to function across the five policy cycle stages. In terms of data and information, the Committee of Deputy Ministers is the scientific and technical arm of the Organisation. This Committee is assisted by work groups such as the fisheries group whose central objective is to provide the scientific and technical elements to harmonise the regional management measures. The Committee is also involved at the analysis and advice and review and evaluation stages. It is responsible for the formulation and follow-up to the regional policy decisions made at the level of the Council of Ministers. Under the Act of San Salvador, the responsibility for implementation of strategies, policies and related projects has also been established as a function of the Organisation.



CRFM: current mandated policy cycle scope

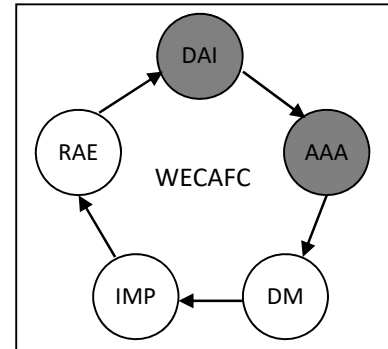
The CFRM may operate across all stages of the policy cycle. CFRM's policy activities are to be extended to the Member States directly and to regional policy making. There is the support to and collection of data and information and the provision of advisory services or recommendations at the national level and through the organs of the Mechanism. Decision making is supported in the Mechanism based on the recommendations received from the Forum. The approval of the recommendations is provided at the level of the Ministerial Council. Implementation can take place within the scope of the work programme and through national and regional projects. Regarding the review and evaluation stage, the mandate speaks to the review of the work undertaken by the Technical Unit and the examination and consideration of actions by the Member States and third states. The evaluation aspect is however not strongly highlighted at this mandate level.



WECAFC: current mandated policy cycle scope

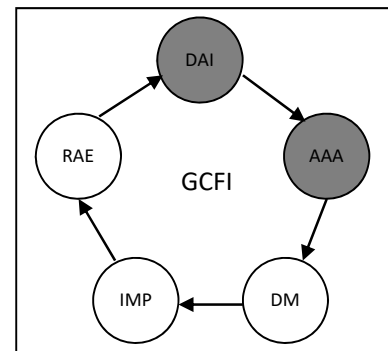
The WECAFC can operate across two stages of the policy cycle – data and information and analysis and advice. The scope of its data and information responsibilities includes the collection, exchange and dissemination of statistical, biological, environmental and socio-economic data and other marine fishery information. Data and information on the interactions between fisheries and the ecosystem has also been identified.

Within the scope of the provision of analysis and advice, the Commission can undertake the analysis of the data and information and provide advice to both member governments and competent fisheries organisations.



GCFI: current mandated policy cycle scope

The GCFI may be involved in two main stages of the policy cycle – data and information and analysis and advice. The Institute was established to have both a facilitating role and an active role in the data and information stage. Specifically, it should provide for the acquisition and exchange of scientific findings, management techniques, fishing technology, aquaculture among other topics related to the well-being and the use of marine fishery. It would accomplish this objective through its annual meetings, workshops, extension programmes, research activities, advisory



Annex 2: Terms of Reference (ToRs) of the OSPESCA/WECAFC/CRFM/CFMC Working Group on Spiny Lobster

Terms of Reference - OSPESCA/WECAFC/CRFM/CFMC Working Group on Spiny Lobster

- Share already available data and information on spiny lobster
- Develop common methodologies for assessment and monitoring of spiny lobster stocks; involve the private sector in data collection
- Monitor changes in distribution of spiny lobster species in the Caribbean
- Compile and analyze data on spiny lobster catch and effort and aquaculture production in the member countries and monitor changes
- Compile information about the social and economic importance of lobster fisheries
- Provide management advice and advice on the implementation of regional management regulations on spiny lobster to countries and regional organizations (e.g. OSP-02-09)
- Establish communication between the members of the working group, and between the working group and interested parties including the private sector
- Take other necessary actions involving the emerging issues in the spiny lobster field
- Report to OSPESCA, WECAFC and CRFM on the outcome of each session

Define a precise profile of the experts to participate in the Working group to ensure that the right experts participate

Mandat - OSPESCA/COPACO/CRFM/CFMC Groupe de travail conjoint sur la langouste blanche

- Partager les données et les informations déjà disponibles sur la langouste blanche
- Élaborer des méthodes communes pour l'évaluation et le suivi des stocks de langouste blanche ; associer le secteur privé à la collecte des données
- Suivre les changements dans la distribution des espèces de langouste blanche dans les Caraïbes
- Recueillir et analyser des données sur les captures et l'effort ainsi que sur la production aquacole de langouste blanche dans les pays membres et suivre les changements
- Recueillir des informations sur l'importance économique et sociale des pêcheries de langouste
- Donner aux pays et aux organisations régionales des conseils de gestion et des avis sur la mise en œuvre des règlements régionaux relatifs à la gestion des ressources en langouste blanche (ex : OSP-02-09)
- Établir une communication entre les membres du groupe de travail, et entre le groupe de travail et les parties intéressées, y compris le secteur privé
- Prendre d'autres mesures pour faire face aux nouveaux problèmes concernant la langouste blanche
- Rendre compte à l'OSPESCA, à la COPACO et au CRFM du résultat de chaque session

Définir un profil précis des experts qui participeront au groupe de travail afin de s'assurer qu'ils seront bien choisis

Términos de Referencia - OSPESCA/COPACO/CRFM/CFMC Grupo de Trabajo para la Langosta Espinosa

- Compartir datos e información disponibles sobre la langosta espinosa

- Desarrollar metodologías comunes para la evaluación y monitoreo de la población de langosta espinosa; involucrar al sector privado en la recolección de datos
- Monitorear cambios en la distribución de las especies de langosta espinosa en el Caribe
- Recopilar y analizar datos sobre la captura y esfuerzo de la langosta espinosa así como la producción acuícola en los países miembros y monitorear cambios que ocurrirá
- Recopilar información sobre la importancia social y económica de la pesca de la langosta espinosa
- Brindar asesoría en gestión y la implementación de regulaciones regionales para el manejo de la langosta espinosa para los países y organizaciones regionales (ej. OSP-02-09)
- Establecer medidas de comunicación entre los miembros del grupo de trabajo, así como entre el grupo de trabajo y partes interesadas incluyendo el sector privado
- Iniciar otras acciones pertinentes que incluyan temas emergentes dentro del campo de la langosta espinosa
- Informar a OSPESCA, COPACO y CRFM sobre los resultados de cada reunión

Definir un perfil en detalle de los expertos a participar dentro del grupo de trabajo a fin de asegurar que los expertos adecuados sean seleccionados

Annex 3. Agencies with responsibility, or potential responsibility, for the 6 key transboundary issues affecting the Central American spiny lobster fisheries resource (governance assessment)

From: Fanning, L. 2012. OSPESCA/CLME Pilot for the Shared Stocks of the Central American Lobster Fisheries - Governance Assessment. Centre for Resource Management and Environmental Studies, University of the West Indies, Cave Hill Campus, Barbados. CERMES Technical Report No 54: 33p.

Issue Stage	Overfishing	Illegal Fishing	MCS	Habitat degradation and biodiversity loss	LBS of pollution	MBS of pollution
Meta level - preparation of policy advice	SICA/OSPESCA; CARICOM/CRFM; FAO-WECAFC	SICA/OSPESCA; CARICOM/CRFM; FAO-WECAFC	SICA/OSPESCA; CARICOM/CRFM; FAO-WECAFC; NOAA	SICA/OSPESCA; CARICOM/CRFM; CCAD; CEP	CARICOM/CRFM; SICA/CCAD; CEP	CARICOM/CRFM; CEP; SICA/CCAD
Meta level - Policy setting or decision-making	SICA/OSPESCA; CARICOM/CRFM; FAO-WECAFC	SICA/OSPESCA; CARICOM/CRFM; FAO-WECAFC	SICA/OSPESCA; CARICOM/CRFM	SICA/OSPESCA; CARICOM/CRFM; CEP	CARICOM/CRFM; SICA/CCAD; CEP	CARICOM/CRFM; CEP; SICA/CCAD
Provision of data and information	GCFI, MAREA, OSPECA, STRI (PAN); cooperatives (BEL); NGOs (TNC, WWF, IDF); Fisheries Associations - APESCA (HON); CAPENIC (NIC); Univ. of Costa Rica	GCFI; CRFM; WCAFC; NOAA, SICA/OSPESCA, MAREA; Cooperatives (BEL); Fishing Associations (APESCA and APICA (HON); CAPENIC (NIC)	GCFI; CRFM; NOAA, SICA/OSPESCA; Cooperatives (BEL); fishing association (APESCA & APICA (HON) and CAPENIC (NIC)	SICA/OSPESCA, CRFM, CEP, CRI, CATHALAC, IOCARIIBE, MAREA Healthy Reefs Min of Env (BEL) ; DAPVS(PAN); SERNADIBIO (hon); DAPVSICF (HON); DPNDIBIO (NIC); AP(NIC); DIPRONA(GUAT); STRI(PAN), CBMAP (PAN) TNC, WWF, IDF, Lobster initiative; MINAET (CR) Coastal Zone Unit (BEL)	CEP, CATHALAC, IOCARIIBE Min of Env (BEL); ANAM PAN); CESCOSERNA (HON); DSQDSMARENA (NIC); DGA(GUAT); STRI(PAN), CICA(Univ. of CR); Coastal Zone Unit (BEL); CRI, Healthy Reefs	CEP, CATHALAC, IOCARIIBE Min of Env (BEL); ANAM PAN); CESCOSERNA (HON); DSQDSMARENA (NIC); DGA(GUAT); STRI(PAN), CICA(Univ. of CR); Coastal Zone Unit (BEL); CRI, Healthy Reefs
Analysis and advice	SICA/OSPESCA; CARICOM/CRFM; FAO-WECAFC FAB (BEL); CAPENIC (NIC); FISHERIES DEP; ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); DIPESCA (GUAT); INCOPESCA (CR)	SICA/OSPESCA; CRFM; FAO-WECAFC ; FAB (BEL); CAPENIC (NIC); FISHERIES DEP (BEL) ; ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); DIPESCA (GUAT); INCOPESCA (CR)	SICA/OSPESCA; CRFM; NOAA FAB (BEL); FISHERIES DEP (BEL) ; ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); CAPENIC (NIC); DIPESCA (GUAT); INCOPESCA (CR)	SICA/OSPESCA; CRFM; SICA/CCAD; CEP Min of Env (BEL); DAPVS(PAN); SERNADIBIO (HON); DAPVSICF (HON); DPNDIBIO (NIC); AP(NIC); DIPRONA(GUAT); STRI(PAN) TNC, WWF, IDF, Lobster Initiative; MINAET, CONAGEBIO Y SNAP (CR);	CEP, SICA/CCAD Min of Env (BEL); ANAM PAN); CESCOSERNA (HON); DSQDSMARENA (NIC); DGA(GUAT); STRI(PAN), CICA(Univ. of CR); Coastal Zone Unit (BEL)	CEP, SICA/CCAD Min of Env (BEL); ANAM PAN); CESCOSERNA (HON); DSQDSMARENA (NIC); DGA(GUAT); STRI(PAN), CICA(Univ. of CR); Coastal Zone Unit (BEL)

Issue Stage	Overfishing	Illegal Fishing	MCS	Habitat degradation and biodiversity loss	LBS of pollution	MBS of pollution
				Coastal Zone Unit (BEL)		
Decision-making	MIN OF AG&FISH(BEL); ARAP (PAN); SAG (HON); INPESCA (NIC); MA&GANADERIA (GUAT); INCOPESCA (CR) Local govts or autonomous govts (NIC & PAN)	MIN OF AG&FISH (BEL); ARAP (PAN); SAG (HON); INPESCA (NIC); MA&GANADERIA (GUAT); INCOPESCA (CR)	MIN OF AG&FISH(BEL); ARAP (PAN); SAG (HON); INPESCA (NIC); MA&GANADERIA (GUAT); INCOPESCA (CR) Local govts or autonomous govts (NIC & PAN); Navy/coastguards; Fisheries enforcement	Min of Env (BEL); ANAM(PAN); SERNA (HON); MARENA(NIC); MARN(GUAT);MI NAET (CR); Coastal Zone Unit (BEL)	SICA/CCAD, CARICOM Min of Env.(BEL); ANAM(PAN); SERNA(HON); MARENA(NIC); MARN(GUAT);MI NAET (CR); Coastal Zone Unit (BEL)	SICA/CCAD; CARICOM; Min of Env.(BEL); ANAM(PAN); SERNA(HON); MARENA(NIC); MARN(GUAT);MI NAET (CR); Coastal Zone Unit (BEL)
Implement ation	FISHERIES DEP(BEL); ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); DIPESCA (GUAT); INCOPESCA (CR); local govts or autonomous govts(NIC & PAN)	FISHERIES DEP (BEL); ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); DIPESCA (GUAT); INCOPESCA (CR); CENDEPESCA (EL SAL)	FISHERIES DEP (BEL) ; ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); DIPESCA (GUAT); INCOPESCA (CR) Navy/coastguards; Fisheries Enforcement	Min of Env (BEL); DAPVS(PAN); SERNADIBIO; DAPVSICF (HON); DPN(NIC); DIPRONA(GUAT); Navy/coastguards; Fisheries enforcement or Rangers Coastal Zone Unit (BEL); FUNDARI	Min of Env (BEL); ANAM PAN); CESCOSERNA A (HON); DSQDSMARE NA (NIC); DGA(GUAT); MINAET (CR); Coastal Zone Unit (BEL)	Min of Env (BEL); ANAM PAN); CESCOSERNA (HON); DSQDSMARENA (NIC); DGA(GUAT); Coastal Zone Unit (BEL); MINAET (CR); Navy; Coast Guard; Coastal Zone Unit (BEL)
Monitoring and Evaluation	SICA/OSPESCA; FISHERIES DEP (BEL); ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); DIPESCA (GUAT); INCOPESCA (CR); Cooperatives (BEL)	SICA/OSPESCA, FISHERIES DEP (BEL); ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); DIPESCA (GUAT); INCOPESCA (CR); Cooperatives (BEL) CENDAH (PAN) Processing plants (NIC and HON) Navy/coastguards; Fisheries enforcement officers.	SICA/OSPESCA, NOAA, FISHERIES DEP (BEL) ; ARAP (PAN); DIGEPESCA (HON); INPESCA (NIC); CAPENIC (NIC); DIPESCA (GUAT); INCOPESCA (CR); Cooperatives (BEL) Navy/coastguards; Fisheries Enforcement CENDAH	SICA/OSPESCA; CRI; CEP; Healthy Reefs Min of Env (BEL); DAPVS(PAN); SERNADIBIO (hon); DAPVSICF (HON); DPNDIBIO (NIC); AP(NIC); DIPRONA(GUAT); STRI(PAN) TNC, WWF, IDF, Lobster initiative; MINAET (CR); Coastal Zone Unit (BEL)	CEP Min of Env (BEL); ANAM PAN); CESCOSERNA A (HON); DSQDSMARE NA (NIC); DGA(GUAT); (BEL) MINAET (CR); Coastal Zone Unit (BEL)	CEP; Min of Env (BEL); ANAM PAN); CESCOSERNA (HON); DSQDSMARENA (NIC); DGA(GUAT); Coastal Zone Unit (BEL); MINAET (CR);

Annex 4: Spiny lobster fisheries closed seasons in the CLME⁺ region: current status

Country/State	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Anguilla	No closed season											
Antigua & Barbuda*												
Aruba	?	?	?	?	?	?	?	?	?	?	?	?
Bahamas*												
Barbados*	?	?	?	?	?	?	?	?	?	?	?	?
Belize*												
Bonaire	?	?	?	?							?	?
Brazil*												
BVI	?	?	?	?	?	?	?	?	?	?	?	?
Cayman Islands	?	?	?	?	?	?	?	?	?	?	?	?
Colombia*												
Costa Rica*												
Cuba* (variable according to fishing area)												
Curacao	?	?	?	?	?	?	?	?	?	?	?	?
Dominica*	No closed season											
Dominican Republic*												
French Guiana	?	?	?	?	?	?	?	?	?	?	?	?
Grenada*												
Guadeloupe	No closed season											
Guatemala												
Guyana*	No lobster fishery											
Haiti*												
Honduras*												

*countries that are eligible to receive direct financial support from the GEF

[illegible]