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Decision Support Systems of LME projects (CLME+ project)
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Implementation and usage of FIRMS in different regions is increasingly associated to the support to priority national or regional fishery management plans.

*In the **Western Indian Ocean**, the SmartFish project has supported the development of Chimaera, a portal which provides seamless access to fisheries information and statistics available in three distinct systems (FIRMS, WIOFish, and Statbase) as a key information resource to support the development of national fisheries management plans. This project has been presented at FSC8.*

*In the **Caribbean region**, WECAFC has actively promoted FIRMS at donors' level with the goal to support priority regional fishery management plans, by strengthening national data collection and regional data sharing through FIRMS. This objective will be implemented through EU/DG-MARE (see document FIRMS FSC9/2015/Inf.10) and GEF with the CLME+ project.*

*Similar objectives are pursued in the **Bay of Bengal** under the BOBLME project, where FIRMS prototypes are being developed in the context of two regional fishery management plans.*

*This document describes more specifically the goals under the CLME+ project, which constitutes a strategic opportunity to promote and share fisheries data in the context of LME initiatives and the broader MDGs and SDGs, and to develop collaborative capacities with other organizations in the endeavour to develop and maintain a "**Regional State of the marine ecosystems and associated living marine resources**" reporting capacity.*

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1. CLME+ objective

The CLME+ Project, currently in the GEF final evaluation stage, is expected to run from 2015 – 2019 and will catalyse the implementation of the 10-year CLME+ Strategic Action Programme (SAP) for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems, ie the CLME+ region. This region consists of a total of 39 States and dependent territories.

The SAP is an umbrella programme that will deal with the 3 priority environmental problems in the CLME+, namely: (1) **habitat degradation**, (2) **unsustainable fisheries**, and (3) **pollution**.

CLME+ Project's component 5 will aim at the development of a Monitoring and Evaluation (M&E) system, including the production, through a collaborative approach and building upon the already existing regional efforts, of a “**State of the marine ecosystems and associated living marine resources**” report.

This M&E capacity will be delivered through a Decision Support System (DSS).

2. CLME+ Decision Support System (DSS)

Due consideration has been given across all strategies under the CLME+ SAP to the need for better decision-making processes based on enhanced access to, and use of quality data and policy-relevant knowledge derived from science. This includes data on the valuation of ecosystem goods and services.

Setting-up and maintaining the evidence base which will support policy development and management will require three main outputs:

a. **Data management, access and exchange arrangements in support of adaptive management and implementation of the CLME+ Project and SAP**

Protocols will be established on the management, access and exchange of key data, information and indicator sets that will be critical for the overall Monitoring & Evaluation of CLME+, and for the successful development of the “State of the Marine Ecosystems and Shared Living Marine Resources in the CLME+ Region” portals and report. The following activities will contribute to this output:

- Identification of key data and information/indicator sets and types (incl. their minimum quality and format) required by end users in the context of the M&E activities;
- Identification of the owners, managers and relevant end users of these data sets;
- Development and adoption of protocols.

In the context of this Output, a collaborative arrangement has already been formalized between CLME+ and, amongst others, the Caribbean Marine Atlas initiative (CMA2 Project, FUST/IODE - IOC of UNESCO & INVEMAR). Collaboration with and among several of the other relevant (sub-)regional and global initiatives including WECAFC-FIRMS have been explored and formalization of the collaborative arrangements will take place during Project implementation (e.g. with prospective partners such as: CCAD, WECAFC/FAO/FIRMS, TNC, CI, WWF, IUCN, UNEP ROLAC, UNEP WCMC, UNEP Live, WRI, UN ECLAC, ...

b. A “State of Marine Environment” portal served by a distributed infrastructure

The DSS will feed the CLME+ website(s) online with dynamic and/or periodically updated content. The website will showcase an Atlas of indicators for three demonstration projects. The types of indicators typically required in the context of integrated coastal zone and shared living marine resources management include: state of stocks, management status, governance framework (FAO, CRFM, OSPESCA), invasive species (OSPESCA), MPAs and Biodiversity within Protected areas (IUCN, UNEP), ICZM (CPPS), MDG and SDG indicators under International Water (UNEP, WWF), Ocean Health Index (Conservation International).

The DSS will rely on established platforms that can provide access to specific data and indicator sets. The development of the DSS will be fostered by Caribbean Marine Atlas 2 (CMA2) project which main goal is to sustainably operationalize an online digital “Caribbean Marine Atlas” technological data platform or combination of platforms, to support policy development, decision making, and monitoring and evaluation processes in support to:

- reduction of the vulnerability of coastal socio-ecological systems in Caribbean States through better Integrated Coastal Zone Management (ICZM), in up to 10 pilot countries;
- improved sustainable management of shared living marine resources management, at the CLME+ region level;

CMA2 will enhance awareness, capacity and foster participation of key regional and national-level stakeholders in the process, with special attention to the long-term sustainability of the systems that will be developed, and to the potential for the up-scaling of the results from the pilot and demonstration activities under CMA2.

The other regional or global initiatives or platforms which will contribute to the DSS include:

- The **IMS-REMP** prototype conducted under the CLME Project;
- The **Fishery Resources Monitoring System (FIRMS)** for WECAFC;
- “**CaribNode**”, the sub-regional GeoNode established by TNC for MPA/MMA-related M&E and decision-support at the level of the OECS member states;
- **CamPam**’s online database and IUCN’s work on the “**Caribbean Observatory**” (BIOPAMA), both for marine protected areas;
- The **Ocean Health Index (OHI)** of Conservation International with nested initiatives nationally within the CLME⁺;
- the “international waters” and “governance” indicator-related efforts under the GEF-funded **TWAP, LME COP** and **IW:LEARN** projects, as well as the **GEF IW Tracking Tool**, and the UN-steered **World Ocean Assessment**.
- The **World Database on MPAs**, the **Global Coral Reef Monitoring Network**, the **World Atlas of Mangroves** and the **Global Fisheries Improvement Projects (FIPs)** database.
- The Latin America and Caribbean **Regional Integrated Environmental Assessment GEO LAC**, through UNEP’s online knowledge platform UNEP Live.

c. DSS proof testing through three demonstration projects supporting the decision-making processes in EBM/EAF contexts

The DSS framework set-up through the above described outputs will serve and will be ground tested through three demonstration projects:

- EAF for the Shrimp and Groundfish Fishery of the Guianas-Brazil Shelf;
- EAF for the Eastern Caribbean Flyingfish
- EAF for the Caribbean Spiny Lobster

The first project is thereafter described as typical example: the system will support FAO-WECAFC-CRFM sub-regional arrangement for the management of the shrimp and groundfish fisheries, and establish a decision-making capacity for policy formulation and EAF management plans for shared fishery resources, and for environmental protection in the Guianas-Brazil continental shelf.

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:

- Current versus desired shrimp and groundfish stock status;
- Aspects of human well-being associated/linkable with the current and desired status of shrimp and groundfish stocks and fisheries

The main outputs include:

- Sub-regional data policy to support EAF management of the fishery;
- Enhanced knowledge base on shrimp and groundfish resources, and on the communities they sustain;
- Operational sub-regional data and information repository on fisheries and their associated ecosystems in the Northern Brazil Shelf LME;
- System to track and evaluate progress towards EAF and to facilitate related strategic/adaptive decision-making, adopted and operational.

FIRMS including the Regional Database in support to stock assessment and fisheries management, as described in document FIRMS FSC9/2015/Inf.10, will be a key component of the DSS. Regarding FIRMS, progress will be monitored by the indicators “Number of published fisheries inventories in FIRMS with status information”; and “number of marine resources with status information published in FIRMS that build upon catch/effort data sources available in the regional repository”.

As a reporting system on the status of stocks, FIRMS can contribute summary indicators on the status of stocks at regional level (Figure 1).

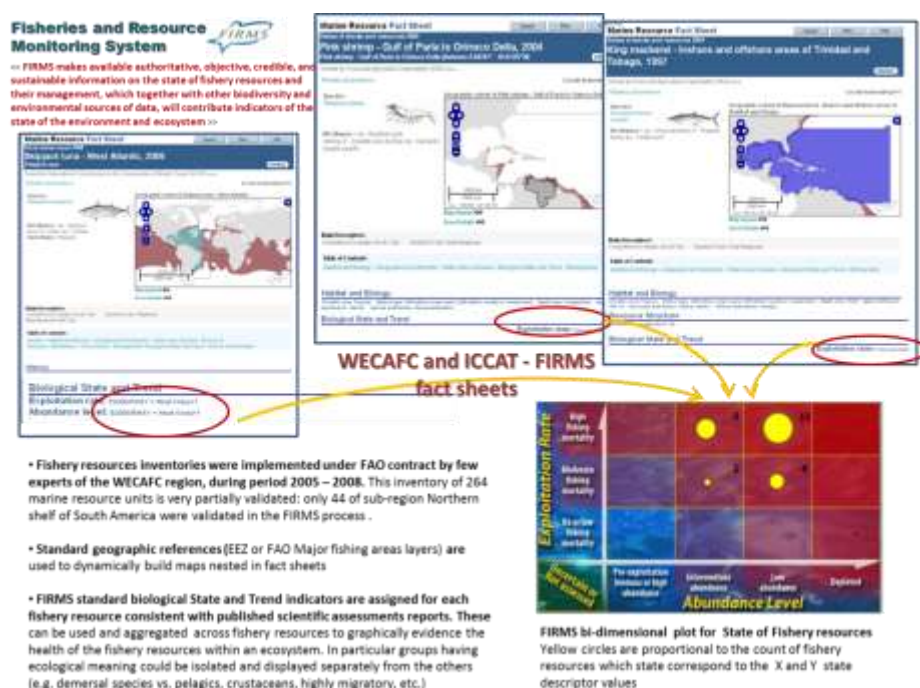


Figure 1 – How FIRMS can generate regional indicators on state of stocks

3. Questions for FIRMS partners

Strategic considerations: the DSS approach in the CLME+ project represents an innovative approach to manage ever complex demand for data and indicators, in the broader context of MDGs and SDGs objectives. At the regional level, it is expected that the results of the three demonstration projects can be up scaled to embrace a more comprehensive set of LME components. At the global level, it is likely that other LME projects follow the same track. Positioning rightly FIRMS in CLME+ and in other similar projects, and demonstrating that it can usefully contribute to SDGs and MDGs indicators appears strategic for FIRMS and its partners.

FIRMS partners are expected to comment the developments described above, to suggest other regions and LME projects where same approaches could be considered, and to discuss the strategic considerations and the possible benefits of such developments to FIRMS.