

## Tailoring Fisheries Global Information System infrastructure

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The Fisheries Global Information System (FIGIS) is the FAO Fisheries Department web-based infrastructure which integrates within one unified system, regardless of the physical location of the data base repositories, the different information domains necessary to monitor and manage fisheries: fisheries statistics; registers such as high seas fishing vessels, fisheries institutions, introduced species database; fact sheets presenting scientific knowledge on aquatic species, fishing techniques, status of fishery resources; fact sheets presenting syntheses and technical reviews on fisheries and their management, systems of fisheries governance, fishery country profiles. All these databases are geo-referenced and can give way to spatial representation of fisheries features. This infrastructure relies heavily on existing international information standards, and has required the development of XML based fisheries Metadata standards (FIMES). In the framework of the Fishery Resources Monitoring System (FIRMS), these Metadata standards are now promoted as international standards for widespread application of protocols for data exchange on marine resources, fisheries and their management. A working system relying on these information standards channels and streamlines to the central FIGIS factory sets of information prepared according to agreed protocols. Designed to serve a variety of clients, the working system includes on-line editing forms, web-based upload mechanisms, and peer to peer dynamic protocols. This paper discusses how the potential offered by this infrastructure can recycle existing information flow in order to actually serve a diversity of end-user needs in the field of fisheries management and conservation.

1. Monitoring of fishery resources, fisheries and their management. FIRMS is a formal partnership arrangement which was created with the objective to provide to information users a means to better monitor the state of world fishery resources and the status and trends of fisheries and their management, based on authoritative information sources. Through FIRMS mechanisms, the institutional Partners assemble in a collaborative and systematic way the best scientific evidence. Through its Marine resource and Fisheries fact sheets, FIRMS harmonises reports on the exploitation, assessment, management and status and trends contributed by various actors. Ease of comparison, reliability of content, traceability to source documents, tracking of the command chain from scientific advice to effective implementation of management measures, makes FIRMS the obvious place to go for a policy maker. The development of standards, for example on the sensitive question of status and trends descriptors, opens the perspective of synoptic views supporting better understanding of the state of world fishery resources, including through mapping of spatial indexes of fishery resources status.
2. Support to elaboration of scientific advice in a regional fishery management organization. Regional fisheries organizations increasingly set-up standard internal frameworks to format and present stock assessment results. The project supporting regional collaboration in North West Africa to Improve Scientific and Technical Advice for fisheries Management (ISTAM) describes and archives the entire process of elaboration of the scientific advice, from the basic data collected, through the assessment results, up to the formulation and dissemination of the advice. The scientific mechanism which produced the advice can be replayed. The FIMES XML data dictionary is integrated by ISTAM for the high level description of assessment results and the advice, and is extended for more refined regional needs. A web-based service enables FIRMS to dynamically access status and trends information on West African fish stocks.
3. Management of deep-sea fisheries in the high seas. The conservation of deepwater resources in the high seas is an emerging issue of great concern to the international community. The development of governance and regulatory measures requires better understanding of both the dynamic of the fisheries, and the spatial distribution of the resource and its reaction to exploitation. The international community is developing an inventory of high-seas fisheries in order to list, quantify and characterise them. This includes an attempt to better specify the geographic distribution of these fisheries catches, based on regional fishery statistics. A parallel mapping of the

resource and its bio-diversity is implemented based on a spatial distribution index by species modelled by combining their distribution functions for various ambient criteria such as temperature and ocean depth and environmental, geographical and topographical data. The FIGIS infrastructure provides all the necessary building blocks in terms of data sources, archiving mechanism for the information which will be generated through inventories, or dissemination of the results. 4. Advocating the importance of small scale fisheries. The need for advocating the importance of small scale fisheries to livelihoods in developing countries is a driver to enhancing their monitoring through social and economic indicators. The on-going global inventory of fisheries aims at providing the comprehensive list of fishery units by country and establishing how much existing national data collection systems are able to generate for each fishery the expected indicators. For each fishery, quality indexes are designed in order to reflect how much the set of available indicators meet the policy and management framework's expectations. These indexes provide the basis to assess the progress through time. Spatial indexes are derived in order to advocate through maps issues of monitoring or management gaps.