



RECOFI Technical Workshop on Spatial Planning for Marine Capture Fisheries and Aquaculture Doha, Qatar 24–28 October 2010



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Draft Regional Strategy for Spatial Planning for Mariculture and Marine Capture Fisheries in the RECOFI Region

Background, vision, guiding principles and
strategy outline

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Part 1 Background

- Aquaculture in the RECOFI Region
- Mariculture in the RECOFI Region
- Fisheries in the RECOFI Region
- Common needs for GIS, remote sensing and mapping between the fisheries and mariculture sectors
- Constraints on spatial planning common to mariculture and fisheries

Aquaculture in the RECOFI Region

- Characteristics:
 - Freshwater production dominates, mariculture is at a modest level in most countries relative to fisheries, or not yet practiced (3 countries)
 - Opportunities vary widely in space available for development
 - The gilthead seabream is most widely cultured (5 countries); the cage is the prominent culture system

Mariculture issues in the RECOFI Region

- ⦿ Lack of experience and of suitable endemic species
- ⦿ Potential limited by highly fluctuating physical environment
- ⦿ Economic constraints include price competition from wild-caught fish and high production costs

Fisheries in the RECOFI Region

- Characteristics: extensive, mainly artisanal, many fishing methods, shrimp the main target, production varying widely among countries, stocks shared
- Issues: over-exploitation, illegal fishing, poor monitoring and management, habitat destruction, lack of stock assessment

Common needs for GIS, remote sensing and mapping between the fisheries and mariculture sectors

- Need to address management and development issues based on marine spatial planning
- Zone marine activities
- Classify, quantify and delimit habitats
- Need for technical training and awareness-building in marine spatial planning
- Need for custom designed spatial tools (e.g., GIS) and for associated training recognized by all countries

Constraints on spatial planning common to mariculture and fisheries

- ⦿ Lack of knowledge of GIS and/or remote sensing as a means to aid decision-making in fisheries or aquaculture;
- ⦿ Lack of access or unavailability of data requirements
- ⦿ Insufficient expertise
- ⦿ Insufficient institutional capacity and governance (e.g., lacking clear definitions of responsibilities and roles within the institutional governing bodies)
- ⦿ Incomplete legal frameworks (e.g., means for enforcement and control, overlapping jurisdictions)
- ⦿ Lack of clear identification of issues relating to fisheries and aquaculture
- ⦿ Lack of clear understanding of interactions with other sectors

Part 2 Purpose, vision and guiding principles



Purpose of the Strategy

- ⊙ Main purpose
 - Present a draft strategy to enhance and accelerate spatial planning for mariculture and marine capture fisheries in the region
- ⊙ Other purposes
 - Increase production and Improve the marine environment
 - Provide spatial inter-linkages for sustainability
- ⊙ Rationale
 - Most management and development issues in fisheries and aquaculture are spatially-based

Shaping the Strategy

- ⦿ Shaped by issues and opportunities identified:
 - Questionnaire responses
 - Expert opinion
 - Publications
 - Internet searches
 - Deliberations of participants in this workshop

Outputs of the Strategy

- Value the role that GIS can play in the improvement of fisheries and aquaculture
- Satisfy spatial information needs of fisheries and mariculture in each country
- Attract funding for long term GIS and spatial planning initiatives
- GIS operating across institutions and organizations
- Foster the ideas that spatial planning and spatial organization are essential for the success of commercial production activities
- Realize training opportunities including formal training at universities and under the auspices of software vendors as well as NGOs and in cooperation with other government departments and ministries

Vision

“To achieve clean, healthy, safe, productive and biologically diverse marine seas in the RECOFI Region that are sustained through the use of spatial planning tools, and to allow for mariculture and marine fishery production activities to be maximized whilst at the same time taking into account the other users of the marine space.”

Guiding Principles

Three levels

- ⦿ Ecosystem Approach to Aquaculture and Ecosystem Approach to Fisheries
- ⦿ Marine Spatial Planning
- ⦿ Principles especially designed for RECOFI

Approaches at the Ecosystem Level

◎ The Ecosystem Approach to Aquaculture

“An ecosystem approach to aquaculture is a strategy for the integration of the activity within the wider ecosystem such that it promotes sustainable development, equity, and resilience of interlinked social-ecological systems”

◎ The Ecosystem Approach to Fisheries

“The purpose of an EAF is to plan, develop and manage fisheries in a manner that addresses the multiple needs and desires of societies, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by the aquatic ecosystems. An ecosystem approach to fisheries (EAF) strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties of biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries”

The Marine Spatial Planning Approach

- ⦿ “Marine spatial planning (MSP) is a process of analyzing and allocating parts of three-dimensional marine spaces (or ecosystems) to specific uses or objectives, to achieve ecological, economic, and social objectives that are usually specified through a political process.”
- ⦿ “MSP is a process that is: ecosystem-based (balancing ecological, economic, and social goals and objectives toward sustainable development); integrated across economic sectors and among governmental agencies; place-based or area-based; adaptive (capable of learning from experience); strategic and anticipatory (focused on the long-term); and participatory, with stakeholders actively in the process.”

Source (http://www.unesco-ioc-marinesp.be/msp_faq)

Principles especially designed for RECOFI

- Cooperate with other users and exploiters of marine resources
- Increase production through improved fisheries management and via expanded and sustainable aquaculture production
- Designate marine protection areas to conserve species, to replenish fish stocks and to protect habitats
- Designate marine aquaculture parks in which to develop and manage mariculture
- Emphasize sustainability of fisheries and mariculture as well as other commercial uses of marine space
- Manage fisheries at spatial levels that include the need to co-manage fisheries with neighbouring countries or other administrative areas,
- Use digital spatial tools (GIS, Remote Sensing) to address spatial issues in 2, 3 and 4 dimensions

Part 3 Strategy

- Programme Component 1: Governance
- Programme Component 2: Capacity building for Spatial Planning and Management
- Programme Component 3: Access to data and information
- Programme Component 4: GIS Implementation Strategy

Programme Component 1: Governance

Element 1: Regional Policy and Marine Spatial Planning

1. Identify RECOFI countries and government agencies who will cooperate in developing regional scale Marine Spatial Plans.
2. If regional agreement for spatial management can be reached, then a high level “spatial management (GIS) committee” should be established (see Activity 9).
3. High level RECOFI area workshop to formulate and draft a Regional Marine Spatial Planning document which covers the objectives for the best use of marine space. Depending on local regulations this might need to go out to consultation for comments and feedback. (see also Appendix A and B).
4. Organize a series of national (and regional) seminars to inform stakeholders on the needs, purposes and functioning of a Marine Spatial Plan.
5. Devise and adopt Regional Marine Spatial Plans.

Programme Component 1: Governance (cont.)

Element 2: National needs and national GIS/RS related capacities

6. If necessary, devise and adopt national level Marine Spatial Planning documents and carry out subsequent national marine spatial zoning.
7. Convene a national high and mid level management workshop in order to determine marine fishery management priorities.
8. Devise and adopt 'fishery activity zoning' to be practiced in the marine fishery zones allocated under the Marine Spatial Plans.
9. Establish a national 'marine GIS committee' to oversee GIS-based spatial management project work within the country at national and local levels. (A committee might include fishery managers, fishery scientists, aquaculturists, GIS workers and external personnel who might be relative to a specific project. A GIS manager would supervise this).

Programme Component 1: Governance (cont.)

Element 3: Legislation and regulation

10. If RECOFI region-wide, part region-wide or national Marine Spatial Plans can be agreed, develop and adopt legislation to formalise this.
11. National level legislation may need to be enhanced covering the scope of any of the 11 competing marine spatial activities (listed in Appendix B).
12. Put in place legislation allowing for the collection of fishery related data via either electronic means or from the recording of catch information at local landing sites. All fishery legislation may need updating to meet more stringent rules that need enforcing if fisheries are to be better managed.

Programme Component 1: Governance (cont.)

Element 4: Regional and national cooperation and networking

13. Higher level meetings to agree on methods and formats for improved communications and networking in the context of 'working cooperation'.
14. Mid level seminars to establish IT-based communication channels and to set up desired computing networks (WAN's).
15. Lower level meetings/seminars to plan communication and networking requirements procedures at local levels of Marine Spatial Planning, e.g. investigate the use of the Regional Aquaculture Information System (www.raisaquaculture.net) as a working communications network

Programme Component 2: Capacity building for Spatial Planning and Management

Element 5: Awareness building and promotion of spatial planning to non-GIS specialists

16. Assess capacity to carry out spatial analyses for mariculture and fisheries management and development. Based on this assessment create and deliver a range of appropriate promotional 'spatial planning' based materials to regional and national personnel including those working in sectors listed in Appendix B.
17. Based on assessed requirements, conduct regional and/or training workshops to explain the principles of spatial planning including the use of GIS, RS and other related tools. This is aimed primarily at technical and management personnel in the fisheries field.

Programme Component 2: Capacity building for Spatial Planning and Management (cont.)

Element 6: Regional or national basic training in GIS

18. Identify sources of GIS training at national and/or regional scales. This could vary from short “GIS Vendor-based” courses to Further Education (College) level courses or to full GIS degree courses.

Element 7: Identification of GIS-based Pilot Projects

19. Based on assessed requirements, conduct regional and/or training workshops to explain the principles of spatial planning including the use of GIS, RS and other related tools. This is aimed primarily at technical and management personnel in the fisheries field.

Programme Component 3: Access to data and information

Element 8: General and sectoral data needs and sources

20. Project committees (established under Activity 9) to advise on data needs.
21. Project Committees also to advise on data sources and to establish database of possible source materials including their locations.

Programme Component 3: Access to data and information (cont.)

Element 9: Data collection and storage

22. The GIS Manager to instigate data collection and other activities to fulfil any primary data needs.
23. Implement any post-collection updating or editing as required.
24. Collect secondary data for GIS projects as required, and edit or update.
25. Establish secure database management systems for the storage, security and management of all data needed for GIS projects.

Programme Component 3: Access to data and information (cont.)

Element 10: Integration of GIS related information and publications databases

26. Establish archives for useful GIS based materials, books, manuals, journals, exercises, etc.
27. Establish digital archives for data and information source materials, e.g. GISFish, National Universities, GeoNetwork, etc).

Programme Component 4: GIS Implementation Strategy

Element 11: System's requirements, design, procurement and testing

28. National GIS Committee to discuss with Fisheries authorities the location(s) for GIS activity to be based, plus the remit for each location.
29. Mid level meetings involving GIS personnel (including the GIS Committee), consultants and perhaps fisheries management to develop the structural (needs) requirements for the system (based on Appendix E).
30. Carry out GIS procurement and testing activities necessary to bring the system up to the needs requirement.

Programme Component 4: GIS Implementation Strategy (cont.)

Element 12: Managing and operating the GIS

31. The national level GIS Committee to appoint a high quality candidate who can direct overall management of the GIS project work. Other personnel may need appointing.
32. Establish and implement all the working requirements wherein GIS operations are able to sustainably function at full capacity.
33. Initiate GIS projects based on what is practicable in terms of skills, data needs, hardware and software..

Programme Component 4: GIS Implementation Strategy (cont.)

Element 13: Continuing support and training

34. For all participants in the GIS projects a programme of support and training should be drawn up, budgeted for and updated by the GIS manager.
35. Complete work flow planning must be implemented such that, as well as direct GIS project work, allowance is made for training updates, for methodological refreshment, for system's maintenance and for necessary interactions with other sectors that are associated with the GIS work.

Programme Component 4: GIS Implementation Strategy (cont.)

Two levels – **regional and national**. This is highly important

○ National Level

- (a) to ensure that various exploiters of marine space are working together for their mutual benefit.
- (b) contains government plans for short, medium and long term actions/activities.
- (c) each RECOFI country concentrates on its specific needs.
- (d) each strategy contains clearly identifiable elements.
- (e) supported by rules, regulations and resources.
- (f) plenty of 'example strategies' exist from other countries.
- (g) a competent authority must be identified to take the strategy forward.
- (h) the Strategy will be progressed through various means that can be decided once approval has been given.

Programme Component 4: GIS Implementation Strategy (cont.)

Two levels – **regional and national**. This is highly important

⦿ Regional Level

- (a) I have already indicated why regional level working is essential.
- (b) Similar elements and activities to be developed as per the national plans.
- (c) If Regional plans are approved by the Commission they must be incorporated into the WGA and WGFM working programmes.

Programme Component 4: GIS Implementation Strategy (cont.)

Focal points for coordinating spatial planning activities for fisheries and aquaculture

- Essential to have a “Fisheries and Aquaculture Spatial Planning Committee” at a national level in each country. They will appoint a representative to a regional “Fisheries and Aquaculture Spatial Planning Committee” .
- Exact working procedures, terms of reference, activities, funding, membership, etc, will be drawn up following approval by the Commission.

Part 4: Appendices

- Marine Spatial Planning
 - Marine spatial planning at UNESCO
 - High Level Marine Objectives
- Main activities competing for marine space
- Typical uses of GIS for fisheries and aquaculture
 - Typical uses of GIS in the capture fisheries domain
 - Main applications of GIS for aquaculture
- Typical range of GIS-based functions and analyses
- The main considerations in designing a suitable GIS architecture
- Issues and challenges concerning mariculture development and management in the RECOFI Region