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REGIONAL COMMISSION FOR FISHERIES (RECOFI)

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Spatial Planning Development Programme for Marine Capture Fisheries and Aquaculture

Executive Summary

This document provides a summary of the joint RECOFI Working Group on Aquaculture (WGA), and Working Group on Fisheries Management (WGFM) Technical Workshop on "Spatial planning development programme for Marine Capture Fisheries and Aquaculture'. A regional development progamme to allow for spatially-based planning and management of marine capture fishery activities and aquaculture in the RECOFI Region is proposed along with a budget estimate for its implementation.

The Commission is invited to:

- appraise the work done, advise on future developments for implementing the proposed regional spatial planning development programme and seek opportunities through the Commission for its implementation.

INTRODUCTION

1. This document is a summary of RECOFI's joint Working Group on Aquaculture (WGA) and Working Group on Fisheries Management (WGFM) Regional Technical Workshop on "Spatial planning development programme for Marine Capture Fisheries and Aquaculture" held in Cairo, the Arab Republic of Egypt, from 25 to 27 November 2013 (see RECOFI/VII/2013/Inf.5).

BACKGROUND AND CONTEXT

2. A Regional Technical Workshop on Spatial Planning for Marine Capture Fisheries and Aquaculture was conducted in response to recommendations made during the Fourth meeting of the Working Group on Aquaculture (WGA) of the Regional Commission for Fisheries (RECOFI) held in Muscat, the Sultanate of Oman (27–28 January 2009) and the Fifth Session of RECOFI held in Dubai, the United Arab Emirates (12–14 May 2009). The workshop, which took place in Doha, the State of Qatar (24–28 October 2010), was hosted by the Department of Fisheries Wealth, Ministry of Environment, the State of Qatar. Twenty-one delegates participated representing seven RECOFI Member countries (the Kingdom of Bahrain, the Islamic Republic of Iran, the State of Kuwait, the Sultanate of Oman, the State of Qatar, the Kingdom of Saudi Arabia, and the United Arab Emirates) and FAO. The Regional Strategy described in the workshop report (FAO/Regional Commission for Fisheries, 2011)[1] constitutes a solid and sound basis upon which to develop a programme for the development of the capacity to use spatial tools in fisheries and aquaculture management and planning.

3. The last and Sixth session of RECOFI, held in Rome in May 2011, agreed to adopt an FAO/RECOFI joint WGA and WGFM regional spatial planning approach to marine capture fisheries and aquaculture for the RECOFI Region, and within available resources, to provide the necessary support for follow-up action for the implementation of the Regional Strategy completed in Qatar in 2010.

4. The workshop in Cairo was hosted by the FAO Regional Office for the Near East and North Africa. Twelve delegates participated representing six RECOFI Member countries (the Kingdom of Bahrain, the Republic of Iraq, the Sultanate of Oman, the State of Qatar, the Kingdom of Saudi Arabia, and the United Arab Emirates) and FAO (secretariat staff/resource experts from Rome, the Subregional Office for North Africa and consultants). Specific objectives achieved during the workshop included: (i) awareness and capacity building through technical seminars given by the Secretariat on key concepts such as the ecosystem approach to aquaculture and fisheries (EAA/EAF) and "marine spatial planning" (MSP), as well as feedback from each RECOFI country on the status of spatially-based planning tools in their respective country's; (ii) results and analysis of the "RECOFI regional spatial planning development programme for marine capture fisheries and aquaculture questionnaire survey"; and (iii) an agreed "Proposal for a regional spatial planning development programme for Marine Capture Fisheries and Aquaculture in RECOFI Member countries" including concept notes for small GIS pilot projects. The proposal and the projects were based on the survey outcomes and workshop deliberations. It is the latter proposal for a "Development Programme" to implement the "Regional Strategy" that lies at the core of attempts to improve the outlook for the future success of capture fisheries and aquaculture in the RECOFI Region via the use of spatial tools.

DEVELOPMENT PROGRAMME

5. The Regional Strategy completed in Qatar in 2010 and endorsed by the Commission in May 2011 sets out four Programme Components, 12 Elements and 30 Activities. The purpose of this current Development Programme is to address some of the key Elements of the Regional Strategy in

[1] FAO/Regional Commission for Fisheries. 2011. Report of the Regional Technical Workshop on Spatial Planning for Marine Capture Fisheries and Aquaculture. Doha, the State of Qatar, 24–28 October 2010. FAO Fisheries and Aquaculture Report. No. 961. Rome, FAO. 2011. 118 pp. (also available at www.fao.org/docrep/014/i2054e/i2054e00.pdf).

order to develop a programme to allow for spatially-based planning and management of marine capture fishery activities and aquaculture in the RECOFI Region.

6. The key elements of the proposed Development Programme are based on (i) the Regional Programme for implementing a Strategy on Spatial Planning for Marine Capture Fisheries and Aquaculture in RECOFI Member countries, (ii) inputs received through a questionnaire survey conducted during 2012, and (iii) feedback received from participants attending the workshop in Cairo. The Development Programme is essentially based on four of the components and eight of the 12 elements from the 2010 Regional Strategy. The Development Programme is described in the workshop report (RECOFI/VII/2013/Inf.5).

7. In order to convey the Development Programme in a meaningful way for workshop participants, the components, elements and activities from the 2010 Regional Strategy were grouped into seven topic areas each to represent a cohesive, and simplified version of the development programme as follows:

8. Overseeing fisheries and aquaculture GIS work – For fisheries to be successfully managed in an area such as the Gulf, where numerous other activities also take place in a shared marine space, it will be essential to introduce marine spatial planning. Marine spatial planning (MSP) will cover the integration of these marine activities, with additional ecosystems approaches being adopted to best promote both fisheries and aquaculture management. These facts mean that all of the spatially-based work will have to be carefully planned and managed, i.e. in a working environment that requires multiple stakeholder involvement, extensive cooperative working, the establishment of joint legal structures and major inputs of higher level decision-making. Both MSP and EAA/EAF considerations will need to be operative at national and regional levels, with "general spatial planning committees" at both levels, as well as there being "fisheries and aquaculture spatial committees", plus committees for (i) marine recreation; (ii) energy; (iii) coastal development; (iv) mineral and marine resources; and (v) shipping.

9. Capacity building for higher level decision-makers – For any programme of work to be successful it is important that decision-makers at various levels are familiar with what the work will be concerned with, and that they are firmly behind its aims. This almost certainly means that some level of capacity building will be required. It is important to establish who the decision-makers are, in what sectors they may be employed and what are the preferred ways of imparting the required information to people who are usually extremely busy. Briefing meetings and/or succinct literature (leaflets, summaries or brochures) are possibly optimum ways of conveying the required information. For those decision-makers having more direct involvement with spatial activities then it is likely that more extensive familiarisation may be required, possibly in a workshop environment.

10. *Prioritising GIS work and identifying pilot projects* – Results from both the questionnaire analyses and from workshop presentations and discussions, reveal that there is wide range of spatial analyses that are desirable in both the fisheries and aquaculture fields. For some countries there is uncertainty over the potential of GIS-based procedures to be of assistance. This is due to both a lack of familiarity with the technology (its capability and potential) and also with data requirements. One way of overcoming these problems is for countries to partake in pilot projects. After further discussion and advice most countries have selected suitable fisheries and aquaculture-based projects to pursue, i.e. based on important perceived local issues (see Table 1 in the Annex). In respect to marine fishery projects, these are generally more difficult to undertake because data requirements often include those requiring a knowledge of marine spatial distributions of, for instance, life stages of species or of specific marine habitats/ecosystems, and this data is not yet available. In some cases it has therefore been necessary to suggest pilot projects that are within individual country's current capabilities.

11. *Where and how will the GIS best function?* – Spatial planning and analyses work will need to be carefully optimised in terms of (i) its physical locations within the RECOFI Area, (ii) the scale it should operate at, (iii) the physical architecture of the IT systems, (iv) the software used, (v) the personnel and management structure, (vi) plus a host of other operating considerations. For some

countries, GIS operations might best be seen as being in the IT domain whereas others will prefer that the system is directly under the direction of fisheries or aquaculture personnel. It is important that these considerations are taken with care, especially given that all spatially based work should be carried out in conjunction with other private and public enterprises, with other users of the marine space and through cooperative working with other REFOFI Member countries.

12. *Practical training in GIS* – It is clear from questionnaire feedback that the situation in respect to a RECOFI country's ability to physically address the required GIS work is highly variable. While there are frequently small centres of GIS excellence in individual countries, these are usually only located in administrative locations and centres. It is quite rare to find adequate expertise in fishery/aquaculture centres. It is therefore clear that training needs will be variable as will be the potential to supply these needs. Matching training needs to the demand will, in some cases be a primary task before even elementary GIS processing can begin. It is clear that GIS training will need to be addressed on a RECOFI wide basis, probably with the help of local IT consultants.

13. *Identifying and acquiring data for GIS* – As with the other aspects concerning the adoption of spatial planning methods and working practices, the data situation is highly variable between and within countries. For marine fisheries and mariculture (i.e. off-the-coast and offshore) many of the data requirements refer to dynamic variables. This often means that much time and expenditure will be required to identify and collect the essential data upon which spatial analyses can be based.

14. *Updating and managing GIS data and information* – Once the data is gathered, it will need to be regularly edited, updated and managed in various ways, e.g. through the use of database management systems. Indeed not only will this apply to data but also to the array of hardware, software, training and other pre-requisites that make spatial analysis possible. It will be especially important that all staff are kept adequately trained and updated and that they are familiar not only with developments in GIS and remote sensing, etc, but also with developments in aquaculture or fisheries and to peripheral technologies (e.g. models, databases).

CONCLUSIONS AND FOLLOW-UP ACTIONS

15. A Development Programme has been formulated so as to best put into place the required measures to address the management needs of the RECOFI marine area over the coming decades, these management needs arise out of a set of problems that have their basis in a whole series of spatially-based issues. This Development Programme therefore follows a series of logical and attainable measures that best helps redress the situation, with the longer-term goal of the various users of the marine space working in harmony for the benefit of all, and for the natural ecosystems to be functionally in balance and moving towards a situation where maximum marine productivity is attained and maintained.

16. A key regional activity and a core component of the regional Strategy will be to identify RECOFI countries and appropriate government agencies who are willing to cooperate in developing regional plans (Marine Spatial Plans) to improve the environmental, social and economic conditions of the RECOFI Region and to agree on cooperative working environments including the need to share data. It will be up to RECOFI Members to address issues concerned with governance-related recommendations contained in the regional Strategy at government level, including, most importantly, acceptance by RECOFI countries on current approaches to marine spatial planning, fishery zoning, and the adoption of EAA and EAF.

17. A budget summary estimate to implement the development programme is provided in Table 2 (see Annex), so it will be up to RECOFI to fund the development programme components, likewise, it will be the responsibility of each Member country to implement their pilot projects and/or to seek synergies for collaborative work with neighbouring countries and/or countries with similar needs and priorities.

ANNEX. Summary of budget estimates for the spatial planning development programme

Table 1. List of pilot projects

Country	Pilot project
Marine capture fisheries	
Bahrain	Fishing effort distribution in the EEZ of Bahrain.
Saudi Arabia	Mapping the fishing effort of shrimp fishery in the Al Qatar area of Saudi Arabia.
UAE	**Identification of the spawning habitats of demersal species in EZZ of the United Arab Emirates.
Oman	**Identify the cause of kingfish decline in the EEZ of Oman.
Iraq	**Identification of protected habitats for some commercially important species in the EEZ of Iraq.
Qatar	Identification of nursery grounds for demersal species in the western waters of Qatar. *Marine spatial planning for Qatar to serve as a model for RECOFI Member countries. *Training in Qatar on spatial planning tools to other RECOFI Member countries.
Aquaculture	
Bahrain	Identification of potential sites for the development of fish aquaculture in Bahrain.
Saudi Arabia	Identification of sites for mariculture in the Kingdom of Saudi Arabia areas in Arabian Gulf, e.g. Ras Abo.
UAE	Identification of potential aquaculture sites to avoid/minimize effects of red tides.
Oman	Integrated coastal planning and management of mariculture development in Oman.
Iraq	Identification of potential sites on Iraqi coast for a marine fish hatchery to produce fry for restocking of Iraqi waters and marine recirculation farm to on-grow to market size for human consumption at the future.
Qatar	Identification of suitable sites for mariculture in Qatar territorial waters.

* Additional projects proposed by RECOFI Secretariat.
** These project proposals are likely to be amended because they are entirely dependent on the availability of data.

Table 2. Budget summary estimate for the RECOFI spatial planning development programme

Programme themes	US$
Overseeing fisheries and aquaculture GIS work (costs are approximate and difficult to estimate because it depends on what (and who) is included - clearly a whole management structure would need to being established, formalised, and legally endorsed, and then it must be sustained. A cost/benefit analysis should exhibit considerable social, economic and environmental gains)	10 000
Capacity building for higher level decision-makers (costs would need to include only fisheries/mariculture personnel, but capacity building would be needed throughout all marine sectors – these costs would significantly reduce over time)	10 000
Prioritising GIS work and identifying pilot projects (projects themselves have been budgeted at US$30 000–60 000 for each country. A total of 14 pilot projects are proposed)	420 000 to 840 000
Where, and how, will the GIS best function? (the budget assumes some start-up costs and annual operating costs – these costs would be significantly higher for larger countries)	40 000 to 150 000
Practical training in GIS (the cost depends on the starting situation and the numbers trained – a basic level of expertise is assumed for all employees - figures give mean annual costs for a medium size country – this cost would reduce over time)	10 000
Identifying and acquiring data for GIS (initial costs may be high depending on needs and data sources – a typical range of mean annual costs is given – but countries with smaller EEZs could incur significantly lower costs)	50 000 to 100 000
Updating and managing GIS data and information (estimated mean annual cost per country)	20 000
Total	**560 000 to 1 140 000**

Note: Cost estimates are mean figures per RECOFI country per annum and include labour costs.