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COMMITTEE ON FISHERIES

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IMPLEMENTING THE ECOSYSTEM APPROACH TO FISHERIES, INCLUDING DEEP-SEA FISHERIES, BIODIVERSITY CONSERVATION, MARINE DEBRIS AND LOST OR ABANDONED FISHING GEAR

INTRODUCTION

1. The Ecosystem Approach to Fisheries (EAF) is becoming the main reference framework for managing fisheries and implementing the principles of sustainable development. As per the following working definition (FAO 2003):

> '*An Ecosystem Approach to Fisheries strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries*'

2. The principles that underpin EAF clearly emerged in the 1995 Code of Conduct for Responsible Fisheries (CCRF), inherited from the 1982 Convention on the Law of the Sea (UNCLOS), the 1992 United Nations Conference on Environment and Development (UNCED), its Agenda 21 and the 1992 Convention on Biological Diversity (CBD).

3. EAF was more explicitly addressed in the Reykjavik Declaration, which was adopted at the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, Reykjavik, 1-4 October 2001, organized jointly by the Government of Iceland and FAO with the co-sponsorship of the Government of Norway. The Plan of Implementation of the World Summit on Sustainable Development (WSSD), Johannesburg, 2002, encourages nations to apply the ecosystem approach by 2010 with specific reference to the Reykjavik Declaration. The Twenty-fifth Session of COFI in 2003 supported the role of FAO in facilitating the process of adoption of the ecosystem approach as agreed during the WSSD.

4. While the approach has broad international acceptance, views on what it actually implies still vary with some having the perception of EAF being a daunting task. The 7th meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS) held in June 2006, and the Conference on Implementing an Ecosystem Approach to Fisheries, Bergen, September 2006, contributed to 'demystifying' the concept by sharing experiences from EAF implementation around the world, while contributing to build a common understanding of what it implies and of how it can be implemented.

5. Applying an EAF implies a sincere societal commitment to a strategy that promotes conservation, sustainable use and equitable sharing of ecosystem services. Its actual application does not need to follow a single blueprint but be consistent with local context, means and culture.

FAO ACTIVITIES TO PROMOTE IMPLEMENTATION OF EAF

6. Most of the Fisheries Department work is dedicated to promoting and monitoring responsible fisheries development and management, consistent with the CCRF. Therefore, while stressing that most of the activities of the Department are relevant to EAF and recognizing that many countries are making progress in implementing EAF, only a brief outline of the main FAO publications, projects and meetings or other activities organized or sponsored by the Organization is provided below, with more detailed reference to the main FAO projects and publications addressing EAF being provided for information in the made available document entitled "Main FAO publications and projects dealing with Ecosystem Approach to Fisheries" (thereafter referred to as the "EAF publication document"). The usefulness of these activities in promoting awareness and wider implementation of EAF is stressed, requesting that consideration be given to the importance of having these type of efforts continued, updated, upgraded and/or expanded, and properly funded, as appropriate.

Guidelines and other FAO Publications

7. The FAO Technical Guideline for Responsible Fisheries No.4, Supplement 2 - The ecosystem approach to fisheries, published in 2003, directly addresses the issue of EAF implementation by providing guidance on how to translate the economic, social and ecological policy goals and aspirations of sustainable development of EAF into operational objectives, indicators and performance measures. Other complementary guidelines and publications that deal with the broader aspects of EAF or address and expand on specific aspects of its implementation are listed in the EAF publication document.

Broad encompassing EAF projects

8. Several projects and other FAO activities listed in the EAF publication document address EAF through concerted efforts aimed at simultaneously achieving progress in several if not most of the relevant aspects of EAF in selected locations or ecosystems. One such project examined the feasibility of implementing EAF in the Benguela region in cooperation with the Benguela Current Large Marine Ecosystem programme (BCLME) and fisheries agencies of Angola, Namibia and South Africa. This project pursued a structured and participatory approach based on the FAO Guidelines, to identify and prioritize the gaps in the existing approaches and consider potential management actions to address them.

9. Through another project, technical assistance is provided to fisheries institutions of selected countries in the Lesser Antilles to develop the information tools, including ecosystem modelling, use of Geographic Information Systems (GIS) and collection of standard fisheries data, to improve management of their pelagic resources and fisheries in accordance with EAF. This project is funded by the Government of Japan, which also funds another project providing extended capacity building for EAF to selected countries mainly through smaller-scale pilot studies and workshops examining the needs and priorities for EAF, and also is supporting on-

going investigations on ecosystem indicators and modelling approaches and the production of an abridged version of the Technical Guidelines on EAF, aimed at a more general audience.

10. Yet another project is being implemented with core funding from the Government of Norway and in partnership with various GEF-LME regional projects, to strengthen the knowledge base for implementing EAF in developing countries. With an initial focus in the African region, this project will promote capacity building, standardized data collection and monitoring of marine fisheries and related ecosystems, while supporting policy development and management practices consistent with EAF principles.

11. Several complementary sub-regional projects that implicitly address the various biological and socio-economical aspects of EAF in the Mediterranean region are also being implemented with funding from the Governments of Greece, Italy, Spain and the EC and in cooperation with the General Fisheries Commission for the Mediterranean (GFCM).

Focussed EAF projects

12. Other projects focus on fewer and sometimes only one of the sector specific or thematic aspects of EAF, usually allowing for high profile and highly visible results to be achieved in few but important aspects. These projects, also listed in the EAF publication document, address, for instance: sea turtles and fisheries interactions; reduction of shrimp bycatch; deep sea fishing; marine protected areas; reducing the incidental catch of seabirds; conservation and management of sharks; assessment and mapping of fishery resources; species identification; biodiversity index estimation; safety at sea; marking of fishing vessels; participatory approaches, socio-economic and institutional aspects of EAF.

Meetings and related activities

13. Further to the 2001 Reykjavik Conference, the main meetings organized or supported by the Organization during the past two years that specifically addressed EAF include the Expert Consultation on the Economic, Social and Institutional Considerations of Applying the Ecosystem Approach to Fisheries Management, Rome, 6–9 June 2006, and the International Conference on Implementing an Ecosystem Approach to Fisheries, Bergen, 26-28 September 2006. Main meetings planned for 2007 include a Conference on Reduction of Environmental Impact of Shrimp Fisheries and a Workshop on Application of the Ecosystem Approach to Inland Fish Production.

14. The Organization has also supported or participated in a number of international meetings and conferences promoting EAF, such as the 10th GLOBEC Scientific Steering Committee for the Global Ocean Ecosystem Dynamics, Rome, 1-3 June 2005; GFCM/SAC-SCMEE Transversal Workshop on EAF, Salambo, Tunisia, 7-9 September 2005; NAFO Annual Meeting, Tallin, Estonia, 19-23 September 2005; IOC-UNESCO Third Global Conference on Oceans, Paris, 23-28 January 2006; 7th Meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS), New York, 12-16 June 2006; 30th Virginia Law of the Sea Conference on Law, Science and Ocean Management, Dublin, 12-14 July 2006; ICES Symposium on Fisheries Management Strategies, Galway, June 2006; IFREMER Conference-Workshop on EAF and Research Priorities, Paris, 24 October 2006, and the IMARPE/IRD International Conference on the Humboldt Current System - Climate, Ocean Dynamics, Ecosystem Processes and Fisheries, Lima, 27 November - 1 December 2006.

SELECTED ISSUES WITHIN EAF

15. A number of selected issues are highlighted in this section due to their current high visibility or the international attention that they have attracted in the past or could attract in the future, without this implying that these are to be considered as the most important EAF issues at global level or that they should be assumed to be the most important in any particular country or region. Priorities need to be evaluated on a case-by-case basis, and the Committee is requested to

consider the depth with which these and other relevant issues should be dealt with within FAO and in relation to other organizations.

Deep-sea Fisheries

16. Management of deep-sea fisheries remains a concern. Many of these fisheries are located on the high seas and in areas not appropriately covered by competent fisheries management organizations. Also, many of these fisheries harvest valuable but relatively small catches with few vessels from a small number of flag States, which complicates the provision of data of adequate quality to permit effective resource management.

17. Management can be further complicated by the long-lived, low-fecundity and slow-growing nature of some of the targeted fish.

18. Bycatch is an additional concern. Deep-sea fisheries usually have few non-targeted species, but when bycatch occurs it may consist of species with a population biology that makes them highly vulnerable to depletion. Of particular concern here are almost all deepwater sharks, which are ubiquitous in deepwater fisheries, although commonly taken in small quantities. This is exacerbated when they are targeted by unregulated fisheries.

19. A third area of concern is the effect of deepwater bottom trawling on cold-water corals and other similar fragile benthos that are commonly found at the same depths as many deepwater fisheries. When addressing the issue of the conservation of these corals, they should be considered first in their own right, as extremely long-lived animals, and second, as providers of a habitat for a wide range of benthos, including fishes of commercial value.

Marine Debris and Lost or Abandoned Fishing Gear

20. Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) prohibits the disposal at sea of fishing gear made of synthetic material, except the accidental loss of synthetic fishing nets provided all reasonable precautions have been taken to prevent loss. Furthermore, it requires ships of 400GT and over to keep records that include reporting the loss of synthetic fishing material.

21. The guidelines for the application of Annex V of MARPOL 73/78 calls for fisheries managers to utilize fishing gear identification systems which provide information such as vessel name, registration number and nationality, and encourages governments to consider the development of technology for more effective fishing gear identification.

22. The issue of marking fishing gear was first raised at FAO in 1987 during the 17th Session of COFI. In reviewing the report of the Expert Consultation on the Marking of Fishing Gear, Victoria, British Columbia, 14-19 July 1991, the 20th Session of COFI in 1993 recommended that the draft Standard Specification on the Marking of Fishing Gear be reviewed before being incorporated in the CCRF. This led to the convening of the Expert Consultation on the Code of Conduct and Fishing Operations, Sidney, British Columbia, 6-11 June 1994, which in relation to Article 8 of the Code identified as possible solutions: the reporting of all lost gear in terms of numbers and location to national management entities, and that industry and governments should consider efforts and means to recover extant ghost fishing gear. The Consultation proposed a regulatory framework to deal with violators, recommending that all fishing gear should be marked, as appropriate, in such a way so as to uniquely identify the ownership of the gear.

23. The Asia-Pacific Economic Cooperation Seminar on Derelict Fishing Gear and Related Matters, Honolulu, Hawaii, 13-16 January 2004, recognizing the issue as critical, requested FAO to reprint and disseminate widely the 1991 FAO Fisheries Report No. 485 on the Marking of Fishing Gear and to consider whether the report and its supplement should be revised based on recent knowledge and technological developments.

24. The 2005 UNGA Resolution A/Res/60/31 encouraged FAO, IMO and UNEP to cooperate to address the issue, and in this regard the Committee is advised that FAO in cooperation with UNEP have produced a study on "Marine Litter and Abandoned/Lost Fishing Gear", that concludes that derelict fishing gear remains a serious global problem causing significant ecological, biodiversity, economic and amenity impacts. The study also notes the poor and uneven availability of relevant scientific data and information and identifies the need for a concentrated global effort to address the problem requiring close cooperation between the relevant UN Agencies (FAO, IMO and UNEP), RFMOs, Regional Seas Organizations, Governments, fishing industry, ports and landing authorities as well as environmental NGO's. It stresses that such a global response should focus on the implementation of Annex V of MARPOL rather than the development of new regimes.

25. UNGA Resolution A/Res/60/31 also referred to the January 2004 APEC Seminar on Derelict Fishing Gear and Related Marine Debris, encouraging COFI to consider the issue of derelict fishing gear and related marine debris, and in particular the implementation of relevant provisions of the Code. In this regard the attention of the Committee is drawn to Paragraph 8.2.4 of the Code, which states that "*Fishing gear should be marked in accordance with national legislation in order that the owner of the gear can be identified. Gear marking requirements should take into account uniform and internationally recognizable gear marking systems"*.

Marine Protected Areas

26. MPAs are neither equivalent to nor necessarily essential for EAF, but may certainly have an important role to play due to the potential benefits they can provide in protecting critical ecosystem components or processes from negative impacts of fishing as well as from other human activities such as coastal zone development and mining or oil and gas extraction.

27. There is evidence that if properly implemented, protected areas can lead to higher densities, biomass, mean size of organisms and diversity of species within their boundaries, although this general result is influenced by factors such as the species composition, the nature and intensity of the activities being displaced by the restrictions inside the area, fishing intensity outside the protected area, etc. The results can be important in terms of biodiversity conservation, and if critical habitats for species of interest to fisheries are included in MPAs, these results may also have important implications for fisheries. However with the information available, the direct implications and benefits of MPAs for fisheries are less clear. MPAs have been clearly found to have some benefits for fisheries performance beyond their boundaries in some cases, but results have been mixed and the potential role of MPAs in this regard will need to be carefully evaluated in comparison to other management tools on a case-by-case basis, taking into account the objectives being pursued, the relevant local biological and ecological characteristics as well as the nature and spatial characteristics of the fishery and the people dependent on it.

28. MPAs are frequently advocated as a new management tool on the grounds that the more conventional management measures for fisheries have failed. This argument does not take into account that area closures have been used as a tool in conventional fisheries management for a long time and that a number of studies have demonstrated that MPAs themselves are also very prone to failure. The reasons are complex but, as with any management measure, careful study and consultation are required to ensure compliance and fulfilment of pursued objectives. Valuable insights have been gained on the social and economic reasons for success and failure and it is essential that these are taken into account.

29. As recommended at the 26th Session of COFI, FAO is developing technical guidelines on the design, implementation and testing of MPAs, building on the best available knowledge on fisheries science and management and the role and requirements of MPAs, with particular emphasis on their potential contribution to EAF.

Bycatch

30. The catch of non-target animals or bycatch may result in serious conservation problems because whether the bycaught species are retained or discarded, their mortality is frequently not managed. This may result in the wasting of valuable targeted and non-targeted living resources, high mortality of juveniles, threats to populations of endangered and rare species, impacts on stocks that may already be heavily exploited, and other impacts on the ecosystem.

31. The extent and impact of bycatch has not been comprehensively quantified. However, since discards are a direct consequence of bycatch, studies on discards may provide important indicators. The FAO estimate on the global quantity of discards has been reduced over a period of about ten years from 27 to 7 million tonnes. Part of this reduction might have been caused by the original figure being an overestimate (of about 7 million tonnes) and the switching to more selective gear, but there are also indications that an increased portion of the bycatch is now being retained and used.

32. Reasons for increased bycatch retention include the collection of bycatch at sea by small vessels, particularly in tropical shrimp trawl fisheries in Africa and in Central and South America; newer technologies for using small-sized fish to produce value-added products; management regimes that encourage, facilitate or even oblige landings (zero-discards); and perhaps above all, having bycatch gaining sufficient commercial value to supplement the meagre earnings of many small-scale fishermen.

33. If the rate of discarding is high, and if the incentives for compliance with mandatory requirements (e.g. to use bycatch reduction devices - BRDs) outweigh the disincentives, the sector will generally comply. Rates of compliance may be enhanced by usable technologies, awareness raising and education, reinforced by regulations and enforcement.

34. However, if bycatch is desirable (causing discarding to be low or nil), as when it supplements income by meeting the demands of market and aquaculture, the use of BRDs is likely to be unpopular and mandatory requirements, particularly in small-scale and artisanal fisheries, are likely to be unenforceable. In such cases, and if the level of bycatch may represent a threat to the sustainability of target and/or non target resources, alternative management interventions such as protected areas (e.g. area or seasonal closures of nursery grounds) could be considered as these could afford (if properly enforced) a level of protection to species remaining within boundaries that BRDs would be unlikely to achieve.

Biodiversity mapping

35. Maintaining biodiversity is fundamental for sustainable use of ecosystems. This concept is embedded in the Code and is explicitly mentioned in articles 6.6, 7.2.2, 8.4.8 and 12.10.

36. Measuring and monitoring biodiversity requires close consideration of its fundamental geographic components, and thus cartography and mapping are essential tools to be coupled with other biological and ecological measurements. For many years the Fisheries Department has been involved in mapping the geographic distribution of the world's main species of interest to fisheries. The FAO Species Identification Guides and Catalogues include distribution charts together with other information about species biology and fisheries. The most recent distribution maps are produced using GIS technology, contributing to a collection of electronic geo-referenced maps of considerable potential value for biodiversity mapping and analyses.

37. The consolidation of these maps allows the identification of biodiversity regions and highlight biodiversity hotspots. Also, maps produced in different periods (the first FAO species distribution charts date back to 1973) provide time changes and biodiversity trends. Many factors affect changes in the distribution of individual species and fish assemblages. Environmental changes are the most obvious, but anthropogenic species introductions can also deeply modify species distributions and ecosystem diversity. Usually fishing does not impact the number of species but rather their proportions.

38. Knowledge on the spatial distribution of target fishery resources and of other relevant species also allows a better understanding of ecosystem functioning and provides the basis for the application of some fishery management regulations, such as those involving time or area closures and MPAs in general.

Economic, social and institutional considerations

39. In 2003, the Twenty-fifth Session of COFI requested the development of a tool box containing rapid appraisal techniques and covering issues such as participatory processes, conflict resolution, methods of integrated resource assessment and management, including co-management and capacity-building. It was also stressed that in undertaking these activities fishers should be seen as integral components of aquatic ecosystems, taking into account the social and economic impacts of applying EAF. Following the preparation of the relevant background documentation, an Expert Consultation was convened in Rome, 6-9 June 2006, to elaborate a framework for technical guidelines on the economic, social and institutional considerations, including information, processes and approaches needed in the application of EAF.

40. The Expert Consultation recommended that a report on the economic, social and institutional considerations of applying EAF be produced for publication in the FAO Fisheries Technical Paper series, and that the FAO Technical Guidelines for Responsible Fisheries series be expanded to include a more comprehensive coverage of the economic, social and institutional considerations of applying EAF. The Expert Consultation provided specific guidance for the production of the technical paper and for the preparation of the technical guidelines. It also noted the need to improve understanding of EAF, expressing the ideas of an holistic, participatory and integrated approach to fisheries management, and that the move towards EAF would, in many instances, be accomplished on an incremental and adaptive management basis in view of each specific context being addressed. The requested guidelines are being prepared, to be issued as supplemental guidelines to the existing Fisheries Management Guidelines.

Safety at Sea for Small-Scale Fishing

41. Fishing is considered to be the world's most dangerous occupation with an estimated 24 000 deaths per year (ILO 1999). Safety at sea involves several interrelated components but social and economic issues as well as overfishing of coastal resources are probably among the major factors which have negated the results of efforts to improve safety at sea. Safety issues on fishing vessels are of a different nature to those on merchant vessels where for example, the majority of operations are carried out in the safety of the port, unlike on fishing vessels (particularly small fishing vessels) where crews have to work at sea, on deck in all weathers, frequently with their hatches open. Largely for these and similar reasons, fishing vessels are excluded from the vast majority of provisions of international shipping conventions drawn up by bodies like IMO, and to this day, there is no international convention in force dealing with the safety of fishing vessels or the training of their crews.

42. The safety of fishermen needs to be addressed through approaches which reflect their working environment which, in turn, is strongly influenced by the fisheries management regime. Maritime and fisheries administrations are aware of the safety problem in general and of the need to address it in respect of their particular competences, but effective and concerted action often remains lacking, particularly in developing countries. Long standing co-operation between FAO, ILO and IMO has resulted in the development or revision of a number of binding and non-binding instruments concerning Safety for Fishermen and Fishing Vessels, but their effect will remain minimal unless placed as appropriate within a mandatory framework.

43. There are however some examples of success, though these are generally to be found within developed countries, and stem from *inter alia* mandatory training initiatives, strict enforcement of regulations and from changes in management regimes. However, loss of life in the fishing industries of these countries generally remains higher than in other sectors, and at the globally level, there is no evidence to suggest the number of fatalities is declining.

44. The Department has elaborated proposals for regional projects, but the necessary resources are lacking to ensure their implementation. The small projects of pilot character conducted by FAO show that important progress can be achieved, particularly in providing guidance in the development of national sea safety strategies; what remains lacking is often the implementation of these strategies. Because the link between safety at sea and fisheries management has been demonstrated in isolated cases, further studies on these could provide guidance on how their positive impacts could be replicated elsewhere.

LESSONS LEARNED

45. The EAF and the CCRF both strive for the same goals of responsible fisheries, with EAF providing a systemic approach to implementing the principles contained in the CCRF. The opportunities and obstacles to implement both are also similar and on-going monitoring and review of progress are essential for effective improvements towards meeting the WSSD and Millennium Development goals.

Progress in Implementation

46. The broad ecological issues that must be addressed and reconciled in managing fisheries within an ecosystem approach are:

- direct impacts of fishing such as:
  - overfishing of target species
  - threat to endangered or emblematic species (taken as bycatch)
  - degradation of critical habitats through destructive practices
  - living conditions of fisher communities
- direct impacts of the ecosystem on fisheries:
  - short and medium-term oscillations in productivity
  - consequences of extreme and environmental events (e.g., hurricane, tsunami)
- indirect impacts from fishing and other users:
  - long-term climate changes
  - degradation of habitat, fish health, and food safety, e.g., through extractive uses and pollution
  - modification of the food chain
  - inter-sectoral conflicts for space and resources

47. It is stressed that humans are an integral component of marine ecosystems and the implementation of EAF requires that the full set of social and economic objectives and issues are also identified and prioritized, to be reconciled with the ecological issues. Governance also needs to be evaluated to ensure that the proposed management and governance measures to implement EAF are realistic, effective and appropriate to the ecological, social and economic context.

48. EAF is concerned with the status and sustainable use of target and bycatch species. Therefore, the existence of high levels of overexploitation and depletion of such stocks, as estimated for example in the 2005 FAO Review of the State of World Marine Fishery Resources, is one indicator that countries have yet to implement EAF fully. Nevertheless, FAO experience in promoting EAF amongst Member States has revealed widespread interest and desire to understand and implement EAF. While there is still some uncertainty about exactly what such implementation entails, there is a general recognition that the conventional approaches to fisheries management, focusing more or less exclusively on the target species and the objective of sustainable yields, has been inadequate for conservation and sustainable use of ecosystems as a whole. This combination of uncertainty and awareness has generated the recognition that greater clarity and guidance is needed on how to proceed with EAF in practice.

49. Where countries have begun to explore the operational implications of EAF, almost all of them have realized that they have already started implementation under conventional management practices. Protection of coastal habitats and water quality, banning destructive fishing practices, the use of closed areas, season and gear restrictions to reduce bycatch, and special measures to protect species of conservation concern have been common, even if often insufficient, amongst countries. The FAO International Plans of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries and for the Conservation and Management of Sharks have contributed to this progress as countries have implemented national plans of action under both. The need to take measures to reduce the impact of fishing on sea turtle populations has been widely recognized and management actions have been undertaken in a number of regions to reduce these impacts, including closing areas and/or introducing appropriate gear modifications.

50. However, progress has generally been made in a reactive and often unstructured manner, responding to specific international agreements, advocacy pressure, trade requirements or immediate crises, rather than as a result of a comprehensive, ecosystem-wide analysis planning and priority implementation. As a result, most countries have not systematically identified where the major deficiencies in the existing fisheries management strategies lie and what priority actions are required to reduce risks to the natural system and fishing communities, health and productivity. Where it has not already been done, a systematic exercise to review the existing management approaches and to formalize an EAF management plan for all fisheries and ecosystems (Chapter 4 of the FAO Guidelines on EAF) should be seen as a high priority for national governments and, where appropriate, regional fishery management organizations.

Constraints

51. The primary constraints hindering progress in the implementation of EAF are, to a large extent, the same ones that have led to the economic demise of many fisheries through overexploitation of many individual fish stocks and have prevented countries from maintaining those stocks at productive population sizes, or restoring them to such a state when they are depleted. Those constraints were listed, under the heading 'Threats to implementing EAF' in the FAO Guidelines on EAF and include the following:

1. Mismatch between expectations and both human and financial resources. Countries expect a lot from EAF but agencies responsible for its implementation may lack adequate capacity and/or are not receiving the support necessary to implement it responsibly and promptly.
2. Conflicting objectives between stakeholders within and outside the fishery sector. Resolving these conflicts in a transparent and participatory manner may be time consuming and costly. High level interventions may be required in cases where consensus amongst stakeholders cannot be achieved. Issues of equity and ethics need to be addressed in determining who pays the costs and who receives the benefits.
3. The need to ensure adequate participation by the expanded range of stakeholders recognized under EAF, with all its financial and logistic costs and the time that will be required for adequate consultation.
4. Insufficient capacity in management agencies that may be already fully-stretched by conventional fishery targets and mandates. Realignment of responsibilities may partly address this problem but frequently additional resources will be required to allow proper incorporation of EAF considerations.
5. Lack of proper institutional frameworks in cases where different national agencies have responsibility for different aspects of marine ecosystems. Fisheries, tourism, coastal zone development and coastal and offshore mining and oil industries typically fall under different government departments and each sector may impact on the achievement of objectives in other sectors. Institutional obstacles to cooperation between agencies and even rivalry, is an important impediment to implementation of EAF in many countries. EAF frameworks should not be created in isolation from, or to the exclusion of, wider interest groups.

6. Constraints related to livelihoods. Implementation of EAF will frequently bring to the fore the need to reduce effort in many fisheries with the associated displacement of people dependent directly or indirectly on fishing for their livelihoods. Identifying realistic and available alternative livelihoods for those displaced will be a primary problem in many countries, particularly developing countries.
7. Incomplete and insufficient scientific knowledge (including human sciences) can be a serious limiting factor in progressing towards implementation of EAF. Identifying problems, estimating the risks associated with those problems and evaluating the costs and benefits of different management responses to the problems have all been found to be surrounded by considerable gaps in knowledge and resulting uncertainties. This problem can be addressed by wise use of the best available knowledge and balanced use of the precautionary approach within an adaptive management framework.

52. All of the above problems are being encountered as countries attempt to move forward in the implementation of EAF. The relative importance of each will vary from country to country and ecosystem to ecosystem so there are no generic solutions. Recognizing the primary obstacles in each case and establishing strategies to address them is an essential component of effective implementation of EAF.

FAO'S FUTURE ROLE

53. Incorporation of environmental concerns in fisheries management is well underway in the international policy arena. A first phase of awareness raising had its roots in the 1972 Stockholm Conference and culminated with the 1992 Earth Summit in Rio de Janeiro. A phase of convergence of fisheries management and conservation is reflected by the 1995 Jakarta mandate and the 1995 FAO CCRF. Commitment to implementation characterizes the present phase as clearly stated in the 2001 Reykjavik Declaration and in the Johannesburg Plan of Implementation adopted by the 2002 World Summit on Sustainable Development (WSSD).

54. Despite concerns about the challenges it implies, EAF is becoming more understood and therefore 'demystified' and is broadly accepted as the reference framework for managing fisheries. Recent international meetings such as the UNICPOLOS (June 2006) and the Bergen Conference (September 2006) showed how countries concepts and understanding about EAF are converging. However, this progress is mainly taking place at the international policy level while the principles and operational implications may still not be fully grasped at the grass-roots level.

55. The major developments that have taken place in the international arena need to be fully translated into national policy and implementation. Important steps towards this goal imply inclusion of EAF principles in national policies and revision of fisheries management plans to ensure consistency with those principles, increasing institutional capacity, assuring collaboration with other ministries and sectors, and identifying relevant stakeholders. While limited knowledge should not stop implementing EAF, the more limited the knowledge the more conservative (precautionary) will the management measures be. Therefore, increased funding to research is also encouraged with the view of optimizing resource utilization, but with well defined criteria of what should be considered as relevant knowledge.

56. FAO has played a key role in the development of the EAF concept internationally. Valuable experience is being gained as regards the initial steps towards actual implementation of EAF, particularly in developing countries. FAO would therefore be in a good position to help facilitation of the needed actions described above, with capacity building being a priority. FAO would be also an appropriate forum for sharing experiences as the application of EAF progresses, which in turn could be fed into further concept development and harmonization.

57. A call to provide special support to developing countries as regards implementation of EAF was made both in the 2001 Reykjavik Declaration, the 2002 WSSD and in the 25th Session of COFI. As the application of EAF has become more realistic through the recent conceptual developments, this call has become even more relevant.

SUGGESTED ACTIONS BY THE COMMITTEE

58. Based on the above, the Committee is requested to note the activities undertaken so far, consider in what areas FAO should take or reinforce action as regards promoting awareness and wider implementation of EAF, and identify the necessary financial resources to support those actions.

59. The Committee is also requested to consider whether an Expert Consultation on the Marking of Fishing Gear should be convened to review FAO Fisheries Report No. 485 and its Supplement, and whether standards for the marking of fishing gear should be developed on the basis that they would be an integral part of the Code of Conduct in the same manner as the Standard Specifications for the Marking and Identification of Fishing Vessels that are voluntary in nature.