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ADVISORY COMMITTEE ON FISHERIES RESEARCH

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FAO'S ACTIVITIES ON SMALL SCALE FISHERIES – AN OVERVIEW

INTRODUCTION

1. Around 90% of the 35 million people recorded globally as fishers are classified a small-scale and a further 20 million people are estimated to be involved in the small-scale post-harvest sector. In addition, there are millions of other rural dwellers involved in seasonal or occasional fishing activities that are not recorded as "fishers" in official statistics. Women are heavily involved in processing and trade of fish and fish products from small-scale fisheries. When numbers of fishers and fish workers are combined with those involved in activities supplying inputs to fishing and post-harvest activities and their household dependents, it is likely that more then 200 million people worldwide depend in some part on small-scale fisheries for their livelihood. These people include many millions who live in remote rural areas, especially in Asia and Africa, where there are few alternative sources of income and employment offering significant potential to contribute to livelihood strategies. The Twenty-sixth Session of COFI (2005) recognized the special importance of small-scale fisheries.

2. The Committee noted a range of issues that should be addressed in order for small-scale fisheries to make a greater contribution to rural development, sustainable livelihoods, poverty alleviation and food security. These issues included the risk of overexploitation of fishery resources, especially in inshore waters, increasing operating costs particularly due to rising fuel prices, conflicts with large-scale fisheries and other users of coastal resources. In addition, many Members noted the geographical remoteness of many small-scale fishing communities, inadequacy of infrastructure and service facilities, a lack of access to credit as well as post-harvest losses. It was also pointed out that high exposure to occupational hazards and the high incidences of malaria, bilharzias and HIVAIDS took their toll on fisherfolk, especially in some areas of sub-Saharan Africa.

3. COFI recognized the special importance of small-scale fisheries, especially to small island developing States, and the positive experiences of countries in support of this sector. These experiences included the development of specific policies and legislation for small-scale fisheries in areas such as preferential and exclusive access to near shore fishery resources and secure rights to coastal land; strengthened co-management structures including MCS; diversification of livelihoods and better integration with other economic activities; measures to reduce post-harvest losses and value addition, inter alia, through microfinance schemes targeting women who play a predominant role in these activities and in fish marketing; fair competition at the point of first sale to mitigate against exploitative practices by "middlemen" and support to improve safety at sea and disaster preparedness.

4. COFI expressed its appreciation to FAO and donor countries for giving greater attention to small-scale fisheries and for allocating more resources in their support. It welcomed the advance version of the Code of Conduct Guidelines on Enhancing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security. The Committee noted the importance of some of the measures in the Guidelines including the better integration of small-scale fisheries into national development and poverty reduction strategies and their empowerment through the strengthening of fish workers organizations, communication and capacity-building. Concern was articulated that the Guidelines should address the issue of open-access fisheries as experience has demonstrated that open-access conditions invariably resulted in unsustainable fishing practices.

ACFR AND SMALL SCALE FISHERIES

5. In the past FAO Advisory Committee on Fisheries Research (ACFR) provided valuable advice on small scale fisheries:

6. At the fourth session of ACFR, in December 2002, ACFR highlighted that small-scale fisheries had not received the research attention that they deserved considering the important contribution that they make to nutrition, food security, sustainable livelihoods and poverty alleviation, especially in developing countries. ACFR pointed out that although many of the issues such as user-rights, excess capacity, illegal, unreported and unregulated fishing, trade and incentives, governance, etc. are common across all fisheries, they need explicit attention in the small-scale fisheries (SSF) context. The Committee recommended that a working party be convened to elaborate a draft research agenda and undertake an evaluation of the role and importance of small-scale (marine) fisheries and outline ways in which the transition to responsible fisheries could be facilitated, bearing in mind the developing paradigm of Ecosystem Approach to Fisheries (EAF). The scope was later extended within the FAO Fisheries Department to also include estuarine and inland water capture fisheries.

7. A second session of the Working Party on Small-scale Fisheries held its meeting in Bangkok, Thailand, from 18 to 21 November 2003. Drawing on the output of the Working Party, two separate documents, a draft research agenda for small-scale fisheries and contribution, role and importance of small-scale fisheries were prepared.

8. The draft research agenda for small scale fisheries included 5 major themes:

a) Research on Policy, legislation, governance and institutional arrangements

b) Research to elucidate the contribution, relevance and importance of small-scale fisheries to national economy and livelihoods

c) Research on the Management approaches to Small Scale Fisheries

d) Research on Post harvest issues and trade

e) Research and required action to develop Information systems for Small-Scale Fisheries

9. The Fifth Session of ACFR (2004) commended the work that had been undertaken by its Working Party on Small-Scale Fisheries since the last session. ACFR acknowledged the practical approach adopted in assessing the contribution of small-scale fisheries to rural livelihoods in developing countries. It however expressed the view that the vision statement, although adequate for advocacy purposes, needed to be recast in a research context in terms of soliciting information for a better understanding and improved management of the sub-sector. ACFR pointed out that sufficient emphasis had not been given in the document to the interactions between small-scale and large-scale fisheries and the consequent conflict that arise from such interactions. Similarly the unaccounted contribution of women as well as issues related to safety at sea and safety of the products needed to be stressed.

10. ACFR expressed its appreciation of the elements of a research agenda on small-scale fisheries presented by the Secretariat. ACFR indicated that the material provided a good foundation for the elaboration of a concise strategy document on small-scale fisheries. Such a document should provide guidance on modalities of implementation as well as priorities in terms of geographical location. ACFR also noted the complementary nature of the Sustainable Livelihood Approach, the Ecosystem Approach for Fisheries and the Code of Conduct for Responsible Fisheries in guiding the research agenda.

11. ACFR recommended that the research agenda needed to encompass the connection between human development issues including poverty alleviation and food security with natural science and technology aspects, especially the impacts of environmental variability and climatic change. Furthermore, international issues of small-scale fisheries, in particular migration of small-scale fish workers, migrant fishing vessels and management of shared stocks needed more attention. ACFR noted that there was also the need for gaining a better understanding of the historical development of small-scale fisheries in the context of the specific demographic, social, cultural, political and economic developments in the different regions and sub-regions.

12. ACFR also felt that the role of aquaculture in contributing to improved fisheries management needed to be given increased attention, especially with regard to its potential to allow for re-stocking and resource enhancement as well as serve as a source of alternative income and employment. The potential impact of the release of cultured specimens on the genetic richness of the wild population was of concern and needed to be further researched.

13. One area of priority accorded by ACFR was the strengthening of fish workers organizations which were considered of central importance for greater participation of the small-scale sector in policy decisions and in the implementation of effective fisheries management and development programmes. It also considered important to gain a better understanding on the best ways and means to facilitate communication among small-scale fish workers and between them and other stakeholders including government fisheries agencies. Whether or not communication strategies where needed specifically for small-scale fisheries versus the fisheries sector in general would depend on the particular conditions in a country.

14. ACFR felt, however, that generalized communication strategies ran the risk of neglecting small-scale fisheries or assigning them too low a priority. The Committee recognized the increasing importance of fish workers' organizations and civil society organizations supporting small-scale producers and their organizations in the areas of communication and exchange, and more broadly in empowerment.

15. ACFR noted the joined WorldFish Center (WFC)-FAO project proposal on Integrated Assessment of Small-Scale Fisheries for which donor support was currently sought and whose concept included partnerships with academic institutions and national fisheries research agencies.

It further noted that, especially with regard to natural science assessments, the approaches applied in large-scale temperate water fisheries were of little applicability in small-scale fisheries in tropical waters. More direct assessments of ecosystem health were needed that perhaps required a shift in paradigm. It also concurred with the desirability of developing a set of integrated assessment tools that are tailored to small-scale fisheries and which could then form the basis for training and capacity-building.

16. ACFR strongly recommended that a larger number of case studies of small-scale fisheries should be conducted in order to develop lessons-learned on the reasons for success or failure in sustained small-scale fisheries development and management. These case studies should be well designed and based on clearly articulated research questions or hypotheses including, for example, how the influence of globalization manifested itself in different small-scale fisheries, especially in relation to various characteristics such as the nature of fishing rights. Where appropriate, the critical research questions/hypotheses could be translated into research templates, perhaps with different emphasis for different regions and sub-regions.

17. ACFR recognized that safety at sea remained a particularly serious problem in small-scale fisheries. It recognized that FAO had many years of experience in providing expert advice and assistance on this subject and was well placed to continue to raise awareness of the problem among the various stakeholders and provide assistance for improved fishers safety in the fields of data collection and data management, training, education and the development of regulations, ass well as the designing and use of safer vessels and equipment. Given the importance of the issue, the Committee recommended that the Department continued its efforts to improve safety and working conditions of fishers and fish workers.

18. ACFR noted that a significant amount of knowledge and experiences in small-scale fisheries were not communicated through existing journals including the findings of especially local level case studies and case-specific experiences. This was the reason why other means of knowledge sharing were especially important for small-scale fisheries. The idea was also mentioned of launching a new journal (traditional or electronic) that would focus on reporting the findings of fisheries case studies.

19. The planning, organization and implementation process used for the FAO - Norway Fish Trade and Food Security Study was considered an excellent example that could be followed to advance the case study concept. The Committee also encouraged cooperation with existing projects and programmes that would allow for the conduct of a larger set of case studies at lower costs to FAO. It also recommended to draw upon past and ongoing information gathering, initiatives and research efforts on small-scale fisheries including, for example, the Support to Regional Aquatic Resources Management (STREAM) initiative of the Network of Aquaculture Centres in Asia-Pacific (NACA) that is supported by the Australian Government's overseas aid program (AusAID), the Department for International Development (DFID), FAO and the Volunteers Sharing Organization (VSO).

GUIDELINES ON "INCREASING THE CONTRIBUTION OF SMALL-SCALE FISHERIES TO POVERTY ALLEVIATION AND FOOD SECURITY"[1]

20. The subject of these Guidelines acknowledges that poverty and food insecurity are widespread among small-scale fishers, and that a change in the way in which fisheries are managed is necessary in order to improve the lives of small-scale fishers and fish workers. Poverty is a complex phenomenon involving failure to meet a range of basic human needs and the denial of options that have consequences for opportunities to live long, healthy and creative lives.

[1] FAO (2005). Increasing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security. FAO Technical Guidelines for Responsible Fisheries. No. 10, FAO, Rome. 2005. 47p.

Poverty in fishery-dependent communities, therefore, is not solely related to the abundance of the catch, market opportunities or the state of the resource. It is also critically dependent on how the benefits from the use of fishery and other resources are used and whether a range of basic services (e.g. in health and education) are provided.

21. Poverty is both partly an outcome of inadequate fisheries management (resulting in depleted fish stocks, overcapacity, etc.) and a constraint in improving fisheries management. It is a constraint because, in the context of generally poor communities, it is impossible to exclude people living on the edge of survival from fishing without creating alternative sources of food and livelihoods. Exhortations about reducing pressure on fisheries resources are futile as hungry people will choose, quite reasonably, to survive in the short-run rather than to preserve or rebuild a resource that they might not otherwise survive to benefit from. Increasing the contribution of fisheries to poverty alleviation and food security thus is an integral part of the larger challenge of development.

22. If management of small-scale fisheries is neglected in conditions where the demand for fisheries resources is greater than the productive capacity of the resources, then inevitably there will be a depletion of stocks and a consequent reduction in benefits accruing from fishing. Effective management of fisheries aims to move fisheries towards use of aquatic resources that will eventually approximate an economically optimal position which is inextricably tied to the biological health of the resources in question. In this way, benefits accruing from use of the fisheries resources are maximized for society as a whole. But it is equally important to ensure that there is an equitable distribution of the benefits that do accrue, resulting in an increase in the contribution made by small-scale fisheries to poverty alleviation and food security.

23. In the years since the Code of Conduct for Responsible Fisheries was developed, there has been a growing realization of the importance of addressing socio-economic issues, especially those relating to the small-scale sub sector. About 90 percent of fishers worldwide are small-scale fishers, some 50 percent of fish used for direct human consumption is harvested by the sub sector, and it provides livelihoods to millions of people in poor fishing communities. Recognizing the relationship between poverty and the sustainable use of resources, the Johannesburg Plan of Implementation of the WSSD stated that "eradicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development". The Guidelines seek to reflect this new emphasis and to expand on the guidance offered by the Code.

24. The first part of the Guidelines discusses the current contribution, role and importance of small-scale fisheries in poverty alleviation and food security. It examines the importance of small-scale fisheries for poverty alleviation at a national, local and household level. It also notes the nutritional qualities of fish and thus the particular role of fish in nutritional aspects of food security. In many countries small-scale fisheries contribute to national food security both directly – where fish is a crucial part of the daily diet, and indirectly – by generating foreign exchange earnings that enable the purchase through trade of a range of food products. The second part of the Guidelines explores ways through which the contribution of small-scale fisheries to poverty alleviation and food security could be enhanced. A vision for the future of small-scale fisheries is presented as a goal towards which the sub-sector should develop. Ensuring greater participation by small-scale fishers and their communities in the formulation of policies, the development of related legislation and regulations, and in management decision-making and implementation processes, is key to the realization of this vision. The central role of effective fisheries management, the importance of considering cross-sectoral uses of fisheries and related resources, the special role of women in fish marketing, processing and value addition, the significant scope for trade, the critical role that adequate financing may have in enabling transitions for effective fisheries management and the role of knowledge in making informed decisions are all discussed in the Guidelines.

25. The Guidelines also addresses six specific research areas and make recommendations on bridging the gap between research, policy and action. The six research areas relate to (i) poverty and vulnerability in small-scale fisheries; (ii) demographic, economic, social and cultural issue; (iii) the role and contribution of small-scale fisheries in rural and peri-urban economies in developing countries; (iv) effectiveness of the changing fisheries governance; (v) small-scale fisheries, resource and environmental conservation; and (vi) the use of integrated assessment in fisheries.

26. The Guidelines will soon also be available in French and Spanish as well as a companion FAO Fisheries Technical Paper.[2] The Guidelines were well received at the FAO Expert Consultation on the Regulation of Fisheries Access and Sustainability of Small-Scale Fisheries of Latin America, Lima, Peru, 9-12 May 2006 and at the ICSF International Workshop on Emerging Concerns of Fishing Communities: Issues of Labour, Gender, Disaster Preparedness, Biodiversity and Responsible Fisheries, Fortaleza, Brazil, 4-6 July 2006.

INTERDISCIPLINARY ASSESSMENT AND MANAGEMENT OF SMALL-SCALE FISHERIES AND THEIR ROLE IN FOOD SECURITY AND POVERTY ALLEVIATION

27. The project proposal on Integrated Assessment of Small-Scale Fisheries, developed by FAO and WorldFish Center was discussed at the Fifth Session of the ACFR (2004) and at that time, the Committee noted that, especially with regard to natural science assessments, the approaches applied in large-scale temperate water fisheries were of little applicability in small-scale fisheries in tropical waters. More direct assessments of ecosystem health were needed that perhaps required a shift in paradigm. It also concurred with the desirability of developing a set of integrated assessment tools that are tailored to small-scale fisheries and which could then form the basis for training and capacity-building.

28. As a follow up a Workshop on Interdisciplinary Approaches to the Assessment of Small-Scale Fisheries (Rome, 20–22 September 2005) was organised jointly by the WorldFish Center and the FAO FishCode Programme as a first step in developing a collaborative project towards capacity-building for small-scale fisheries assessment in developing countries. Participants represented various international and national agencies and academic institutions as well as private firms, and were invited on the basis of their extensive experience in small-scale fisheries either from a natural or social science background. The Workshop addressed three main tasks through plenary and working group sessions: preliminary development of a framework for interdisciplinary assessment of small-scale fisheries; identification of appropriate approaches, methods and research needs to help fill small-scale fisheries information gaps; and preparation of an outline implementation strategy for a collaborative project on small-scale fisheries.

29. The Workshop agreed that small-scale fisheries contribute significantly to poverty alleviation and improvement of food security, and play an important role in sustainable use of aquatic resources. However, the Workshop expressed concern over the lack of methods to demonstrate this contribution.

30. The importance was stressed of clearly identifying who assessments are for (clients/beneficiaries) and what purpose they serve in the context of a larger development agenda for SSF.

31. The Workshop noted that it was useful to make a distinction between two major types of assessments – diagnostic and ongoing. Ongoing assessments are part of an iterative process that monitors progress in implementing action and feeds into an adaptive learning process, whereas

[2] Béné, C.; Macfadyen, G.; Allison, E.H. [In press]. Increasing the contribution of small-scale fisheries to poverty alleviation and food security. FAO Fisheries Technical Paper, No. 481. Rome, FAO.

diagnostic assessments are used more to provide a “snap shot” of a situation. More work has been done on diagnostic assessments of socio-economic dimensions as compared to environmental/resource dimensions. Diagnostic assessment should lead to ongoing assessment.

32. It is important to exert due efforts to explore the availability of existing data/information and also the possibility of coordinating with other ongoing initiatives before investing scarce resources on assessment. Such information can be fed into planned assessments, whether diagnostic or ongoing.

33. It is not possible to assess SSF in isolation from their broader context, including large scale fisheries and sectors outside of fisheries. Externalities must be considered and assessments must be based on more holistic and integrated analysis.

34. Principles that should underpin selection of diagnostic and ongoing assessment methods were formulated by the Workshop to guide analysis and development of methods for interdisciplinary assessment in future.

35. Participants noted that there are many frameworks for dealing with the large number of attributes of a small-scale fishery under assessment. One general approach is to group these frameworks in terms of major domains: i) Environmental/resources; ii) Human/developmental; and iii) Institutional/governance. This approach was used during the Workshop to categorize known methods as a means to identify their respective weaknesses as well as their potential for expanded application.

36. The Workshop agreed that there was a need for an integrated framework to facilitate comprehensive understanding of the issues, based on the most cost effective and efficient assessments.

37. A preliminary analysis of the strengths and weaknesses of known assessment methods showed that there were considerable limitations with respect to SSF applications in some, and especially for biological methods. There is a need to examine what is available from other sectors (e.g. agro-forestry and water resource management).

38. The Workshop suggested that some methods could be expanded to provide more efficient data collection for more comprehensive assessment of SSF, although it was noted that there were many constraints that would need to be addressed to make this a reality. It was also noted that data collected for one purpose could often be used to address other assessment needs.

39. The Workshop concluded that major constraints on the development of integrated assessments include the lack of:

a) standard terminology to describe and categorize available methods;

b) evaluation and adaptation of existing frameworks; and

c) integration methods, in terms of both data collection and analyses.

40. The Workshop reviewed the proposed project to develop appropriate SSF assessment methods and build individual and institutional capacity within developing countries.

41. In general, the scope of the project proposed in the draft Concept Note needs to be more clearly restricted to the issue of SSF assessment, but at the same time should be placed in a broader development agenda context. The revised concept note is presented in Annex 1 of this document

Present status of the proposed project

42. The revised concept note was finalized the beginning of 2006. Within FAO some funds were acquired through The FishCode-STF project for follow up actions for which presently the implementation arrangements wit WorldFish Center are discussed

STATUS AND TRENDS-BIG NUMBERS

Status and Trends

43. Objective, reliable and credible information on the status and trends of capture fisheries is the foundation of policy development for fisheries, and of fisheries management actions. In 1997 the First Session of FAO's Advisory Committee on Fisheries Research (ACFR) raised several concerns about the way fishery status and trends information is assembled and disseminated and the Committee recommended that improvements be made.

44. The 2003 FAO Strategy for Improving Information on Status and Trends of Capture Fisheries (FAO Strategy–STF) was adopted by consensus at the Twenty-fifth Session of COFI (February 2003) and endorsed by the Hundred and Twenty-fourth Session of the FAO Council (June 2003). UNGA Resolution A/58/L.18 adopted in December 2003 on sustainable fisheries invited States to support the implementation of the FAO Strategy-STF at national and regional levels, giving particular attention to capacity-building in developing countries.

45. A number of paragraphs in the Strategy provides explicit recommendations on small scale fisheries.

46. States, relevant intergovernmental and non-governmental organizations, and financial institutions should recognize that many small-scale fisheries and multispecies fisheries, particularly in developing countries, are not well monitored and awareness needs to be raised on the importance of monitoring these fisheries. They are probably underestimated and therefore under-represented in current fisheries status and trends information, and consequently they are not adequately considered in the development of plans and policies for fisheries.

47. States should, with support from development partner agencies and assistance from FAO, where necessary, enhance their capacities to collect data to ensure that the coverage of fisheries information is as complete as possible and includes all sectors, in particular the data necessary to evaluate small-scale and multi species fisheries.

48. States should participate in and support the development of cost-effective methods for acquiring and validating data on small-scale and multi species fisheries, including rapid appraisal methodologies and other approaches for data-poor situations and participatory processes that closely associate the fishers and their organizations to the data collection schemes. Regular surveys at appropriate frequencies rather than continuous monitoring may be more feasible, particularly for some inland and small scale fisheries.

49. States should cooperate through their regional fishery bodies and arrangements and regional programmes, if necessary with the cooperation of FAO, to develop and adopt effective and pragmatic standards and systems for data collection, which should be compatible with FAO systems.

50. FAO, with support from its Members and development partner agencies, should address the special data collection and assessment needs for small-scale and multi species fisheries, including the use of meetings of experts to develop innovative approaches and guidelines.

51. COFI at its Twenty-fifth Session recognized the need for extra-budgetary support for implementation of the Strategy and accordingly endorsed a multilateral project to assist implementation of the Strategy-STF. The FishCode-STF Project became operational in November 2004.

52. The Project, working in close collaboration with Regional Fishery Bodies, international Non-governmental Organizations (NGOs) and other stakeholder organisations, carries out:

a) Inventories of fisheries monitoring systems, fishery resources and fisheries

b) Design and follow-up of programmes for improvement of fisheries monitoring and capacity building

c) Initial studies and workshops for development of new methods for monitoring of small-scale fisheries, with attention to socio-economic information, inland fisheries and use of the ecosystem approach.

d) Development of standards for ensuring information quality and security.

53. Since 2004, the project organised a number of regional workshops on improvement of fisheries information, prepared a large number of country review papers on fisheries monitoring (including small scale fisheries), supported the world wide inventory of fisheries and fisheries resources and developed a number of field activities on capacity building.

54. The major experience over the last two years is that information on small scale fisheries is problematic, structural data are often lacking, and monitoring programmes are insufficient and/or unreliable. Therefore a major focussing point of the FishCode STF project is small scale fisheries.

The PROFISH "Big numbers project"

55. The importance of small-scale fisheries as a source of nutrition, employment and income for many of the world's coastal and rural poor is indisputable and has been discussed above. The ability to raise the profile of this important sector in policy-making is, however, severely compromised by an absence of accurate and accessible data.

56. The highly diverse nature of small-scale fisheries and their often remote and geographically dispersed locations make coordinated reporting a difficult task. Globally, fishery statistics are routinely compiled by FAO, and collated into accessible databases (fish production in aquaculture and capture fisheries by species group, environment and statistical area; fleet statistics; fish trade; and employment in fisheries and aquaculture). However, these do not distinguish between large-scale and small-scale fisheries, due partly to the absence of internationally agreed definitions.

57. The big numbers project (BNP) is a joint activity of FAO and WorldFish Centre and funded through PROFISH and own contributions by the two organizations.[3] The project propose to employ a systematic, country-by-country approach for collating and extrapolating available quantitative data for both coastal and inland small-scale fisheries (including enhanced fisheries, but excluding aquaculture). The most suitable variables to allow extrapolation will be investigated for areas, particularly inland, where data are particularly poor. FAO databases and its Fishery

[3] PROFISH is the World Bank's global partnership programme. It is financially supported by a consortium of donors including several Scandinavian countries, France and the Bank and is technically supported by FAO, IUCN and WorldFish. Its work programme has two streams of activities: to mainstream fisheries into the economic planning of target countries and to develop 'global goods' such as high-level awareness of fisheries issues and 'toolkits' to address these issues.

Country Profile series will be the starting point for data collation. This will be complemented by collation of data from national statistics, databases and literature initially focusing on Asian countries (Bangladesh, China, India, Indonesia, Thailand and Vietnam), which make up a large percentage of global small-scale fisheries.

58. This will be followed by key fisheries nations of Africa and Latin America (e.g. Brazil, Ghana, Madagascar, Senegal). Data on small-scale fisheries in developed countries may be added at a later date, as effort required may be relatively small, and comparisons with developing countries of value. The project will initially capture a snap-shot of most recently available statistics, however the database will be pre-adapted to a longer-term project allowing for analysis of trends. In this connection the availability of historical data will be examined, e.g. in FAO's discontinued Fisheries Policy and Planning databank (FIPPDAT) which provides guidance on the database structure and is too a valuable source of definitions. One of the expected outputs of BNP is an update of David Tomson's seminal table comparing small-scale and large-scale fisheries at the global level in terms of employment, food fish production, capital cost per job, annual fuel consumption, fish caught per ton of fuel, etc. Details of the project will be further discussed in a small workshop on 16 October 2006, i.e. just prior to this 6th ACFR session.

INLAND SMALL SCALE FISHERIES

59. COFI (2005) observed that inland fisheries needed to be accorded greater attention and that it was proposed that more specific policy interventions in support of these fisheries should be identified in some areas while giving due account to possible tradeoffs in other areas. A first step towards this would be a better valuation of this sector.

Inland fisheries – an integral part of rural life

60. Harvesting resources from inland waters is an important traditional activity in many parts of the world. People not only catch fish, but also a wide range of other aquatic organisms, including freshwater molluscs, crustaceans, amphibians, reptiles, insects and aquatic plants for consumption, barter and sale. Inland fisheries are practised in a variety of environments including rivers, reservoirs/lakes, swamps, flood plains, deltas, irrigation canals, ponds, and rice fields.

61. Inland waters are commonly accessible to rural communities and their exploitation does not necessarily require large investments such as boats and sophisticated fishing gear.

62. The contribution of inland fisheries is crucial for sustaining livelihoods in many rural areas, in particular amongst poor communities. In many cases, the people who rely on inland aquatic resources are also the most vulnerable to food insecurity and most disadvantaged in terms of access to alternative sources of food and income.

Inland fisheries under pressure

63. Inland fisheries are increasingly threatened by environmental degradation. Human activities associated with residential and industrial development, mining, deforestation, hydropower, navigation and agricultural land use all have had substantial negative impacts. Competing demands on water resources also put the inland fisheries sector under serious pressure. Agriculture and hydropower are frequently viewed as more important economic sectors and hence given higher development priorities.

64. An inland capture fishery is very often not given a high profile in when inland water resources management is discussed in international fora. Although, for example, the World Commission on Dams report mentioned that inland capture fisheries most more carefully looked at in the context of dams, this is till far from being done on a global scale. The WCD follow-up

arrangement, i.e. the Dams and Development Programme, feels appropriate to address fisheries issues more deeply in future. Small-scale fisheries will definitely benefit from this.

Inland fisheries – undervalued sector

65. Official fishery statistics tend to focus on fish production or "landings" and data collection methods are often simply "borrowed" from the marine fishery sector. These conventional ways of monitoring are not always suitable to inland areas where informal, dispersed and diversified fishing activities predominate. Non-inclusion of fish production for household consumption and production of other aquatic organisms, in particular, significantly underestimates the scale and value of the sector.

66. In addition, catch statistics alone will never be able to measure fully the wider benefits generated by the inland sector in fostering food security and sustaining livelihoods within rural communities.

67. As a consequence, there has been very little information on the true scale and value of inland fisheries; this makes the sector "invisible" in the eyes of policy-makers. There is thus a critical need for information that more accurately demonstrates the importance of inland fisheries in most developing countries, and to raise awareness among planners and decisions-makers for the sector's multifaceted importance.

Importance of inland fisheries

Economic benefits

68. Even though inland fisheries tend to be informal small-scale activities that are under-reported in official statistics, in some countries their economic value is recognized as highly significant in official production estimates. In Cambodia, where more than 90% of the country's fisheries production comes from inland waters, fisheries accounted for 12% of gross domestic product (GDP) while rice crop accounted for 10%. In the Amazon River Basin in Brazil, the inland fisheries sector employs 168 000 people and generates US$170 million per year.

Top 15 countries*

1) Cambodia
2) Uganda
3) Tanzania
4) Chad
5) Mali
6) Gabon
7) Finland
8) DR Congo
9) Zambia
10) Myanmar
11) Lao PDR
12) Bangladesh
13) Niger
14) Malawi
15) Benin

** inland capture production per capita (2004).*

Food and nutrition security benefits

69. Many inland aquatic products are utilized almost entirely for household consumption and there is relatively little discard or wastage. Surplus production can be processed (drying, salting, smoking or other local methods) and stored for lean periods, reducing vulnerability to food insecurity.

70. It is also notable that the majority of countries with higher per capita inland fish production are developing countries, especially in Africa. This underscores the essential role of inland aquatic products in national food supplies.

71. In the framework of the FAO-Netherlands Partnership Programme, FIRI has been investigating the availability and use of aquatic biodiversity in rice-based ecosystems in Cambodia, P.R. China, Lao PDR and Viet Nam. Similar research is currently being undertaken in Mali. Follow-up studies focus on household surveys in three provinces in Lao PDR with a view to determining the importance of these aquatic products for the nutrition and economy of rural households. The final aim of these studies is to inform and guide national policies regarding the real contribution of living aquatic resources in rice-based ecosystems to food security and poverty alleviation.

Sociocultural and livelihood benefits

72. The generally low financial requirement for production inputs means that inland fisheries may function as a livelihoods' safety-net for many disadvantaged groups. Landless farmers and female-headed households, for example, may turn to harvesting, processing or trading inland aquatic products fish in time of need. During periods of food and cash shortages, such as between cropping seasons or during drought, fishery products can play a supplementing and stabilizing role.

73. Recognition of the importance of microfinance as a crucial development tool for poverty reduction has increased during the last two decades. The United Nations, in its General Assembly Resolution 52/94, passed on 18 December 1997, noted that in many countries, micro credit programmes have succeeded in generating productive self-employment by providing access to small capitals to people living in poverty as well as increased participation in the mainstream economic and political process of society.

74. Two workshops identified as main threats to sustainable inland capture fisheries, and in particular small-scale fisheries, the reduction of survival space and modification of habitat of fish and aquatic organisms, deforestation, pollution of water bodies and aquatic environment, overfishing and destructive fishing practices, local conflict in management and utilization of migratory fish stocks and water bodies as well as the lack of capital needed for the development and rehabilitation of inland fisheries and, related to this, the lack of the awareness of financial institutions of the investment and credit needs of inland fisheries. Inland waters are important for food security, livelihoods and income generation of large populations in Asia. Inland waters are also important for biodiversity. Inland waters have many uses, of which fishing is one. Different uses are competing with each other and oftentimes the fisheries sector has very little influence in decision-making regarding the use of these resources. Often in national fisheries policy frameworks and in general national development plans, the inland fisheries sector receives insufficient attention.

75. Rehabilitation of the inland aquatic environment for natural fish production should be done in conjunction with microfinance programmes. Microfinance alone would not solve the problem of poverty in fishing communities. Microfinance benefits the poor by increasing income-earning opportunities, securing livelihoods, decreasing vulnerability and empowering beneficiaries, especially women. So far, microfinance for inland fisheries has been primarily directed towards aquaculture activities. Inland capture fisheries as well as processing and marketing of inland fisheries products have received little attention from microfinance schemes in south-east Asia.

Steps towards appropriate valuation of inland fisheries

76. Improving the valuation of living inland aquatic resources may not be an easy task, but it is essential in order to ensure the sustainable management of aquatic resources and properly place the fisheries in the context of multiple uses of inland waters. Some recommended steps for this purpose include the following.

- Better use of existing information

Useful information may be available, but scattered among various fisheries and other institutions, projects and NGOs. Simple collation of local information from different sources can yield a reasonably full picture of the significance of inland fisheries activities in many localities.

♦ Review of current statistics

It is important to conduct routine reviews of the quality of current statistics from official sources, and to assess areas of deficient coverage.

♦ Clear definition of information requirements

Users of information at various levels need to be consulted in order to identify specific information requirements for inland fisheries.

♦ Options for obtaining better information

New approaches may need to be explored to meet the information requirements of inland fisheries. Given the chronic shortage of operational resources in most of national fishery departments, care should be taken to select cost-effective and sustainable methods.

♦ Better coordination among agencies

Efforts can be made to incorporate fishery information requests into the established survey frameworks of other agencies (e.g. agriculture census/surveys, household income and expenditure surveys).

♦ Awareness raising and capacity building

It is important that all the stakeholders clearly realize the need for appropriate valuation of the sector. Involvement of stakeholders is essential for effective valuation. Training can improve the communication channels between stakeholders and encourage the use of new or adapted approaches for information generation. Stronger representation of inland fisheries in international for a, e.g. the DDF.

♦ Allowance for special features of inland fisheries

For all of the above steps, it is necessary for evaluations to take into account special features of inland fisheries, such as, their:

- **Integrated nature,** in that they may involve many segments of a local population – men, women and children, and part- or full-time fishers, processors, traders or consumers; and

- **Seasonality,** in that the abundance of inland fishery resources and people's response patterns may be highly variable – both seasonally and inter-annually, depending on the extent and duration of flooding and other factors.

- **Interactions** with other users of the aquatic resource: A very often inland fishery is not attributed the right importance compared to other sectors that are often thought to be of higher social and economic value.

Table 1: Numbers of international river basins, and management frameworks by continent; * based on UNEP (2002).

Continent	Number of international basins *	Number of basins with international agreements	Number of inland water commissions with a mandate in fisheries
Africa	59	19 (32%)	8
Asia	57	24 (42%)	2
Europe	69	45 (63%)	12
North America	40	23 (58%)	3
South America	38	6 (16%)	6

Strengthening governance in inland fisheries

77. Many of the world's large lake and river basins cross one or several international borders (Table 1) and activities in one country may therefore affect fish stocks and fisheries in the others. Further, many riverine fish species are migratory, and appropriate management thus requires cooperation of all the countries within the range of the stock. Thus, there is a need for a system of governance in transboundary and international inland waters.

78. A range of regional frameworks provide advice on, or deal directly with management of inland waters and living aquatic resources. However, the governance system is incomplete as only 44% of all the international basins have one or more agreements. The full texts of many of these agreements are available through the databases FAOLEX (http://faolex.fao.org/faolex), and the International Freshwater Treaties Database (http://ocid.nacse.org/cgi-bin/qml/tfdd/treaties.qml).

79. These agreements deal with a variety of issues and most of them do not focus on fishery resources, but on the water as a resource *e.g.* the allocation of water for irrigation, flood protection, navigation or hydropower generation. Nevertheless, many agreements do have a mandate in environmental matters, which although fish are often not specifically mentioned, in many cases could be extended to include fisheries.

80. As part of many agreements, a basin committee or commission (RBO) has been established with the responsibility to oversee that the conditions of the agreement are respected by the parties, and to constitute a forum for discussion and consultation among them. In some of the best working and most active RBOs a permanent secretariat has been set up, which can institute a common vision for the development of the basin, and assist the countries in formulating projects and in obtaining funding for them.

81. Despite of the potentially important role RBOs can play in transboundary cooperation and promoting sustainable development in the water sector, the majority of RBOs do not have a permanent secretariat and are not very active, and some are no longer operational or their status is unclear.

82. There is a remarkable possibility to influence development through empowering existing RBOs, revising their mandates and encouraging the establishment of new RBOs for example by means of the regional fisheries bodies.

GUIDANCE SOUGHT FROM THE COMMITTEE

83. The Committee is invited to offer its advice on this review of the ongoing and planned work in the area of small-scale fisheries, especially as it relates to giving directions on research and capacity-building aspects as well as in relation to the development of adequate data to allow for analysis and better informed decision-making. The Committee is in particular invited to comment on:

a) The Guidelines on "Increasing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security"

b) The project proposal on Integrated Assessment of Small-Scale Fisheries, developed by FAO and WorldFish Center

c) The activities in support of implementing the Strategy on Status and trends in capture fisheries through the FishCode-STF project, especially activities related to Small Scale Fisheries.

d) The joint FAO-World Fish Centre effort to develop a database on country-level small-scale fisheries data.

e) The steps to be taken towards appropriate valuation of inland fisheries

f) How can data be improved to ensure that small-scale fisheries issues in relation to dam development are better taken into consideration in international fora such as e.g. the Dams and Development Forum

g) How microfinance credit schemes could be developed for small-scale inland fisherfolk.

ANNEX 1

REVISED PROJECT CONCEPT NOTE ON SSFA

Objective

This project will significantly increase the sustainable contribution of small-scale fisheries to food security and the alleviation of poverty. In order to achieve this ambitious objective, the project will develop new tools for assessing sustainability, provide new guidelines for making the lives of people dependent on SSF more resilient to change (ecological, social, or economic), and improve the capacity of the countries to assess and manage their fisheries.

Background

At least three quarters of the world's 30 million fishers work in small-scale fisheries[4]. If fisheries-associated livelihoods, such as marketing and processing as well as children and the elderly are also included, an estimated 150 million people directly depend on small-scale fisheries and associated industries. A large figure in itself, its significance further lies in the extent to which these people belong to the poorest and most vulnerable sections of the global population. The World has 1.1 billion people living on less than US$1 per day. Even if the incidence of poverty among fishery-dependent people was only as high as the average in their respective countries, there would be some 23 million fishery-dependent people living on less that US$1 per day.

The importance of these statistics from a development perspective is re-enforced by the fact that small-scale fisheries provide about half of the world's fisheries production used for direct human consumption; about 1 billion people rely on the sector for their main source of animal protein. In many parts of the world small-scale fishing also provides an important means of income generation for the rural poor, including those that only fish occasionally and are not officially recognized as fishers.

Within the context of the Millennium Development Goals (MDGs), improving the productivity of the natural resource base on which fishers depend, along with pro-poor policies and governance will result in direct benefits in terms of eradicating extreme poverty and hunger (MDG Goal 1). Improving the income of poor fishers will also contribute to achieving universal primary education (MDG Goal 2). In many poor communities, fishing can provide one of the few sources of cash income and when this increases families are more likely to be able to educate their children. The goals to reduce child mortality and improve maternal health (MDG Goals 4 and 5) can also be promoted by improving fisheries productivity. Fish significantly improves the nutritional status of young children, pregnant and lactating women. It can complement the carbohydrate-based diets (e.g. rice) of the poor, providing an easily digestible source of protein, which is important for growth and also essential vitamins (e.g. Vitamins A, B1, B2 and D) and minerals (e.g. iron, calcium). Fishing accounts for some of the greatest impacts on aquatic ecosystems, particularly coastal and riverine ecosystems, and fisheries management is therefore key to ensuring environmental sustainability (MDG Goal 7).

[4] Defined as those operating from shore or from small fishing vessels in coastal or inland waters.

The importance of the small-scale fisheries sector to food security and poverty alleviation was recognized by the 25th Session of the FAO Committee on Fisheries. Specifically, COFI members recognized that there was a need for better understanding of the nature, extent, and causes of vulnerability and poverty among small-scale fishers and to improve the information base and monitoring approaches for determining the contribution of the sector to the alleviation of these conditions. The research agenda proposed at COFI 25 marks an important re-emphasis towards effective development strategies for SSF. In response, FAO has developed *FAO Technical Guidelines for Responsible Fisheries (No. 10) on Enhancing the Contribution of Small-Scale Fisheries to Poverty Alleviation and Food Security*. A draft of this document was made available for review and comments at the 26th Session of COFI in March 2005.

The need for new approaches to small-scale fisheries assessment and management

Small scale fisheries in the developing world are diverse, numerous, geographically dispersed, vulnerable to forces external to the sector, and in crisis. Historically, development interventions have sought to reduce poverty through accelerated economic growth, improvements in technology and infrastructure, and market-led economic policy reform. The limited results of these interventions, however, has led to a re-examination of the causes of poverty, the recognition of the significance of vulnerability and the recognition of the need for new strategies for poverty reduction. There is increasing recognition that establishing appropriate pro-poor governance and institutions for fisheries management are central to maximizing the contribution of fisheries to poverty alleviation and food security. Such strategies may include rights-based approaches, co-management regimes and fishing capacity reduction.

Not least of the challenges facing SSF can be the indifference or neglect of governments. In a recent global review of 281 national policy papers, including 50 poverty reduction strategy papers, it was found in only a small number of countries that fishing communities were included among the target groups and that the fisheries sector was accorded an explicit role in poverty reduction and food security. A FAO review of national strategies in West African countries showed that small-scale fisheries were rarely or poorly taken into account, even though they produce over one million tonnes in annual catch and provide livelihoods for over seven million fishers in the region. Improved information on SSF alone will not be sufficient to reverse this situation. Fundamental changes in governance and institutional arrangements are also required. At the same time, it is recognised that improved information can help to encourage such changes. In the absence of improved information bases and supportive governance and institutional measures, policies, plans and management instruments are likely to be ineffective or, worse, detrimental to, the SSF sub-sector.

It is easy to agree that we need to accommodate uncertainty, complexity and dynamic change not only in the aquatic resources but also in the social institutions that define fisheries – the real issue is how to do it. The challenge is both acute and pressing for SSF in the developing world. Not only is there is a bewildering diversity of (ever-changing) small-scale fisheries with differing ecological attributes prosecuted in divergent social and institutional settings, but the range of legitimate perspectives on the problem is wide. It is this latter attribute, and the related issues of values, equity, and social justice that come with these perspectives, that make the assessment and management of small-scale fisheries particularly challenging.

It is implausible to promise sustainable SSF in the developing world within the research and management paradigm, based on single-species biological/economic yield maximization that has dominated fisheries since the 1950s. The last decade or so has seen fisheries research and management broaden considerably in the search for better ways of doing things; these developments have seen new approaches, concepts and methods, such as the precautionary principle, ecosystem approaches to management, the sustainable livelihoods approach, co-management, adaptive management, and so forth. Important international instruments and codes have been promoted to normalize their use. Nevertheless, for all this endeavour there remains no

unifying set of principles nor agreed structure for attacking the particular problem of SSF in the developing world. Further, the more biological approaches are sometimes set as alternatives or in opposition to the 'people centred' approaches. This is unhelpful as, trivially, integration of principles and concepts from both streams of enquiry are required.

The broader literature on the management of natural resources in the developing world is moving fast and on multiple fronts. This literature comes from many academic disciplines, but increasingly is blending ecology, anthropology, sociology, and economics. It may be argued that the fisheries literature has not absorbed many of these developments and there remains no widely accepted framework or suite of methods to guide practitioners in conceptualizing and actually doing the business of assessing and managing small-scale fisheries. Researchers and managers alike are faced with an unrewarding clutter of theories, methods, and case studies. Similar confusion is presented to donors and national policy makers contemplating investments in the fisheries sector.

Clearly, given the diversity of ecological and social contexts, a prescriptive framework would be doomed to failure. Nevertheless, some unifying architecture is necessary if we are to proceed beyond the current idiosyncratic development and promotion of methods that work under particular combinations of circumstances and influences. We suggest a broad framework is not only possible, but also necessary to provide a context to build on hard-won lessons, highlight bottlenecks to development, and as a basis for developing a practical guide to practitioners. The beginnings of such a framework began to emerge from a workshop convened by The WorldFish Center and FAO in September 2005. Existing gaps and weaknesses in methods and approaches were identified, and a roadmap was developed to navigate the complexities of what is an inherently complex multidisciplinary problem.

Below we venture the beginnings of a framework in order to structure the work proposed (Figure 1). In doing so we recognize that this is but one conceptualization of many that could capture the same principles. This framework recognizes five main elements in assessment and management: (1) a diagnosis of the current status, threats, and opportunities of the fishery system; (2) a management arena in which the stakeholders (including government and researchers) negotiate rules and agree upon indicators of performance; (3) management itself, which in all cases will be structured to learn from experience (i.e. be adaptive), and in all cases will be participatory, and in many cases, but not all, be shared with government; (4) the 'external environment' – the threats and influences that impinge on the fishery from outside the domain of the management actors (e.g. climate change, damming rivers, pollution, market distortions, and broader governance and policy settings) and which will influence the diagnosis of the 'limits of the possible' within the domain of the fishery (and which are therefore where emphasis should be placed in management); and (5) the outcomes – the social and economic benefits that flow from the fishery, as well as the ecosystem goods and services that are maintained and/or degraded (in sum, the configuration of the socio-ecological system). The framework draws principles and concepts from the leading approaches to assessment and management but is not, necessarily, dependent on any except adaptive learning and participation.

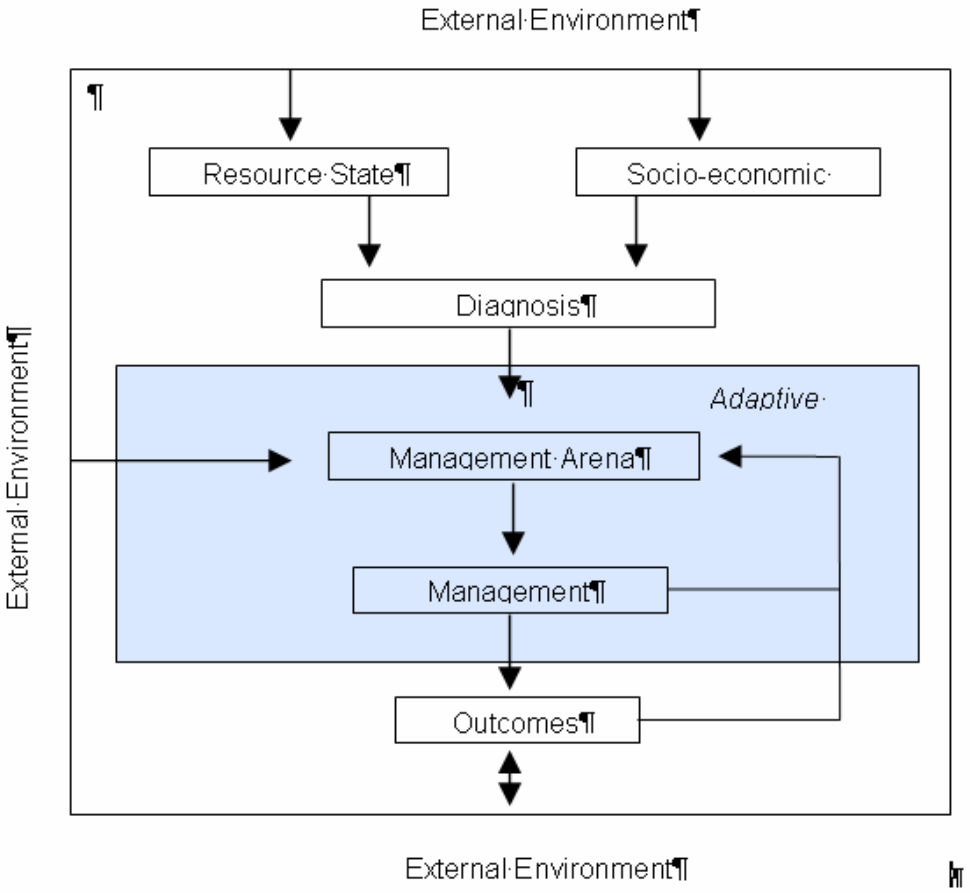

Figure 1: A general framework for the assessment and management of SSF.

The diversity of SSF may be accommodated within this framework by placing emphasis on different elements of the framework. For example, in some inland fisheries, biophysical processes external to the fishery (e.g. water levels or flows) are the dominant influence so emphasis should be placed on mitigating impacts on fishers and ecosystems to reduce vulnerability and increase adaptive capacity. Conversely, in coastal fisheries for sedentary invertebrates in which social institutions may be strong and external influences relatively weak, fishing may be the dominant influence and such a system would be best placed to put emphasis on the adaptive learning cycle.

Project description

The project will last four years and will comprise a mix of research and non-research activities. Using the framework above as a starting-point, the project may be divided into four work packages that require different skills and institutional involvement: (1) Further development of the framework, and within it methods and indicators of management performance; (2) Synthesis and awareness raising, (3) Field Testing / Case studies in a range of countries to validate and refine the framework and indicators; and (4) capacity building in assessment and management of SSF in developing countries. These work packages are briefly described below:

(1) Framework and methods: In this first work package, the framework outlined above will be further developed to organize lessons, and guide method development. To be useful in such a task the framework must be able to accommodate the full diversity of SSF, and to be wedded to as few theoretical and regulatory practices as possible. Each of the five elements introduced above contains researchable questions that need to be answered before a robust framework can be tested in case studies. In addition, as a related, but separate issue we need to develop indicators of sustainability that are appropriate to the classically data sparse, institutionally weak environment of SSF.

(2) Synthesis and awareness raising: The second phase recognizes that achieving the outcomes sought from the project will require a mix of research, non-research activities in which research agencies can play a brokering or convening role, and activities such as management and institutionalization. The synthesis of existing lessons will concentrate on better using the remarkable diversity of SSF to generalize lessons and identify possible future directions. There can presently be no meta-analysis of successes and failures of methods and their application because there is no coherent body of theory that links the various pieces of the jigsaw. Institutional analysis, adaptive management, ecosystem theory, and so forth all sit largely independent of each other. Just as importantly, concepts of resilience, vulnerability, and hysteresis sit uncomfortably together. In order to begin to make connections between these various concepts, approaches, and tools we need to develop a typology of SSF that will allow us to ask larger and more structured questions about these fisheries. What are the major correlates of success? Are there, for example, particular combinations of fishery, biological, social, and economic attributes that predispose certain forms of management to success? Non-research activities such as institutionalization will require both international organizations, particularly FAO, and National management agencies. To this end, the project will be implemented through a partnership of international organizations (e.g. FAO, The WorldFish Center, and the World Bank), national research partners in developing countries, along with a range of research expertise from Advanced Research Institutes.

(3) Field Testing/Case studies: In the third phase of the project, the framework and methods identified as most appropriate will be tested, using case studies within specific guidelines developed by the project. The case studies will directly engage partners from developing countries in methods development, ensuring that they are applicable and acceptable. The theoretical and methodological material will then be refined and published. The project is global in scope but will focus, particularly for the case studies, on countries where small-scale fisheries play a significant role, particularly for the poorer sections of the community. Case study and capacity building activities initially will involve four regions: South and Southeast Asia; Sub-Saharan Africa; West Africa; and Latin America and the Caribbean.[5] Work across these different regions will help ensure that the methods developed can be applied and adapted to a wide range of local contexts.

(4) Capacity Building: This package will specifically address capacity building in integrated assessment and management of SSF in developing countries, through (i) building a constituency or network of agencies and institutions in the developing world to further develop, test, and ultimately apply new approaches and methods, and (ii) development and dissemination of training material/guidelines and regional training courses. Capacity building will take place at different levels (regional and national) and will involve different stakeholders (Government, Community, RFOs, NGOs, and Research Institutes) depending on the results of the project and regional/national needs. The exact extent will be formulated in the second work package of the project in consultation with the different stakeholders involved.

[5] The Research Agenda for Small-Scale Fisheries developed by the FAO Advisory Committee on Fisheries Research (ACFR) will be used as the basis for the selection of case studies. In West Africa the project will build on the experience from the Sustainable Fisheries Livelihoods Programme.

The partners of the project will interact through a web-based knowledge network, supplemented by CD-ROM and other media. The outputs of the project (methods, manuals, software, case studies, etc.) will be disseminated through a targeted information, communication and education campaign, as well as CD-ROMs, and other media to ensure the outreach in poorly connected areas as well as on-the-job coaching and training in the course of the case studies (including through the use of self-training packages). The audience for the major outputs, particularly the framework and methods developed, will be broad and include research and academic institutions, government fisheries agencies, regional fisheries management organizations and civil society groups that support SSF.

Outputs and Activities (dates appropriate at time of writing and assume a July 2006 start)

WORK PACKAGE 1: FRAMEWORK AND METHODS FOR ASSESSMENT AND MANAGEMENT OF SMALL-SCALE FISHERIES.

Output 1.1 Creation of the multidisciplinary team of experts, with experience in small-scale fisheries and rural development and in the application of non-conventional approaches to fisheries assessments, to lead framework development. Completion September 2006;

Output 1.2 Development of a framework for the interdisciplinary assessment of SSF, based on available theories, concepts, and approaches developed for fisheries and other fields of rural development research. This work will use the framework outlined above as a starting point and be organized within the four elements of that framework. Completed December 2006;

Output 1.3 Development of a first set of appropriate indicators of sustainable development for SSF in the developing world. Completed March 2007;

Output 1.4 Development of *ex post* impact assessment tools for the analysis of SSF contribution to national and regional economies. Completed December 2007.

WORK PACKAGE 2: SYNTHESIS OF LESSONS LEARNED AND AWARENESS RAISING

Output 2.1 Implement an information system to catalogue the biophysical, social and economic attributes of SSF to organize and reveal aspects of assessment and management that are not presently known. Completed December 2007;

Output 2.2 Based on analysis of this database and on synthesis of available literature, publish a 'lessons learned' summary of SSF assessment and management with guidelines for case studies and further research. Completed December 2007;

Output 2.3 Produce and disseminate policy briefings about the role and contribution of small scale fisheries to food security and poverty reduction. Completed July 2007;

Output 2.4 Profile raising and awareness building. Completed July 2008.

WORK PACKAGE 3: FIELD TESTING/CASE STUDIES

Output 3.1 Call for proposals to identify candidate fisheries and recruit scientists in developing countries to participate with case studies to the project. Completed December 2008;

Output 3.2 Technical/planning workshops with the selected scientists to establish the process for the case studies, to identify the necessary training needs, and to establish a strategy for exchanging information and monitoring the development of the case studies. Completed July 2009;

Output 3.3 Completion and documentation of the results of the application of the framework and methods, in case studies from a range of geographical settings and fisheries types, aiming at the analysis of the weaknesses and strengths of the proposed methods. Completed December 2009;

Output 3.4 Foster further development and/or improvement of methods and tools, including analytical software, information systems and training packages, to address the research needs identified during the expert consultation and case studies. Completed December 2009.

WORK PACKAGE 4: CAPACITY BUILDING IN DEVELOPING COUNTRIES

Output 4.1 Build a network of NARs and RFOs to partner in the development, testing and application of new assessment and management techniques. Completed December 2007;

Output 4.2 Produce and disseminate a reference guide for the interdisciplinary assessment and management of small-scale fisheries, incorporating the review of theories, concepts and approaches and the results from the case studies. Completed July 2010;

Output 4.3 Promote technical and institutional capacity building for the interdisciplinary assessments of small-scale fisheries through training courses, facilitation of access to tools and information sources, and fostering the exchange of expertise and the establishment of international cooperation programs among developing countries. Completed July 2010.

Project Outcomes and impact

Given the fact that about 1 billion people rely on SSF for their main source of animal protein, and at least 23 million small-scale fishers (and their households) earn < US$ 1 per day, even modest improvements in the resilience of SSF will have enormous benefits to the lives of some of the world's most vulnerable people. The focus for delivery of this impact is poor rural communities that significantly depend on fisheries for food, livelihoods and income. The outcomes of this will be wide-ranging and significant, as depicted in Figure 2. The logic can be summarised as follows: by increasing the understanding, profile and way to measure/estimate the contribution of small-scale fisheries to food security and poverty alleviation, policy makers and managers will become more aware of the importance of this sector. This increased awareness will, in turn, lead to the creation of more effective policies and management decisions that more appropriately reflect the importance of small-scale fisheries and the role they can play in rural development and poverty reduction. This policy development will be enabled by the increased capacity in developing countries to provide the information and assessments necessary for management and also by the growing knowledge base on small-scale fisheries.