

# 1. Purpose of the framework

This introductory chapter argues for and justifies the need for a novel and integrated assessment and advisory (IAA) framework. It details why such an approach is particularly important for small-scale fisheries (SSF) in developing countries.

## **FAILURE OF CONVENTIONAL ASSESSMENT AND MANAGEMENT APPROACHES**

Coastal and inland fisheries are complex, dynamic social-ecological systems with interactions between scales of operation (small- and large-scale, artisanal and industrial) and among different interest groups. Conventional approaches to management typically reflect those used in large-scale fisheries management, which assumes a simplistic and predictable relationship between the productive capacity of the resource (defined stock of single fish species) and the extractive capacity of a homogenous fishing fleet. Management aims to control this relationship through input or output regulations in order to maintain the stock in an optimal productive state. Conventional approaches are still pervasive in practice. Yet, current approaches to fisheries management have, in many cases, moved beyond “classical” fisheries science to account for more than one species, some level of interaction between different resource users and integration of economic and ecological components of the system. Yet, other components of the system, such as the structures and interactions within the social subsystem, remain relatively unaccounted for. Representations of fishery systems continue to be dangerously simplistic. They often fail to account fully for the *complexity of ecological interactions*, including functional relations in the resource pool, the *range of environmental disturbance*, such as habitat degradation and climate change, *external drivers*, for instance global markets or perverse economic incentives, *local socio-economic issues*, such as livelihood constraints or multiple perspectives, values and knowledge, and *institutional constraints*, including inappropriate rights systems, quasi-exclusive sectoral approaches and ineffective administration systems (see Garcia and Grainger, 1997 and Mace, 1997 for reviews). It is difficult to assess to what extent these factors contribute to fisheries management failures individually. Yet, in combination, neglecting to account for these issues has led to the failure of most fishery management systems. As a result, a more comprehensive approach to governing fisheries is strongly advocated (Garcia and Charles, 2007).

## **WHY FOCUS ON SMALL-SCALE FISHERIES?**

SSF widely experience resource depletion, poor economic performance (manifested as poverty in fishing-dependent communities), food and/or nutritional insecurity among vulnerable people and social and cultural stress (Andrew *et al.*, 2007; Béné, 2006). These issues are particularly acute in the developing world as a result of fewer alternatives for development and the absence of social safety nets. Yet, historically, SSF have received relatively little attention within both international and national agendas. It is contended that both the assessment and management of SSF require increased effort in understanding and developing processes, mechanisms and methods that are more attuned to the issues faced by SSF.<sup>1</sup> This document explicitly and exclusively refers to SSF, although the framework is likely to raise some important issues for other fisheries subsectors. Moreover, efforts are primarily towards the “tropical majority” of small-

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<sup>1</sup> This does not advocate simply conducting smaller or more inexpensive versions of conventional assessments.

## BOX 1

## Defining small-scale fisheries

Attempts to define and categorize SSF have diverted, delayed and perhaps even stalled attempts to develop new approaches to improving their management. Allison and Ellis (2001, page 377) accept that the term “small-scale” is fundamentally relativist and opt for the imprecise definition: “those [fisheries] operating from the shore or from small fishing vessels in coastal or inland waters”, while FAO (2006) and Béné, Macfadayen and Allison (2007) adopt the lengthier FAO definition (FAO, 2005). Johnson (2006) offered a definition based on two dimensions: social organization of production and operations in time and space (see table below). The glossary in this document contains definitions of artisanal and small-scale fisheries largely derived from Johnson’s perspective

## Characteristics of small-scale fisheries

Fisheries-related characteristics	Categories		
	Small-scale	Domestic commodity production	Large-scale
	Subsistence		Industrial
<b>Social organization</b>			
<i>Socio-economic</i>			
Nature of fishing unit	Individuals and community based groups usually linked by ties of social reciprocity	Small groups, with some specialization and some division of labour, importance of household and community	Small and larger groups; higher specialization and division of labour
Nature of work	Part-time, multioccupational; catch shared	<----->	Usually full-time, professional; greater prevalence of wage-labour or salaries
Disposal of catch and market integration	Primarily household consumption but some local barter and sale	Household consumption and sale to local, national and international markets	Sale primarily to mass markets
Processing of catch	Mostly direct consumption	<----->	Mostly processed, including large quantities of fishmeal for non-human consumption
Ownership	Individual or group ownership and operation; occasional absentee ownership	Usually owned by senior operator, or operators jointly: some absentee ownership	Concentration of ownership, often by non-operators; often ownership is corporate
Investments	Capital investment low, although often high investment of labour time	Low-to-medium capital investment, large proportion borne by other than operator	Capital investment high, large proportion borne by other than operator
Operator/owner’s income level	N/A or minimal	Low or medium	Often high
Knowledge and technology	Premium on skill and local knowledge	Highest diversity of target species and techniques; thus high skill and knowledge needs	Skill and experience important, but supported by high technology
Craft	None or small and non-motorized	Small with low power engines	High power engines
Gear	Often hand-made and operator assembled; mainly non-mechanical.	Many machine-made components, often operator assembled, high diversity of gear types; manual and mechanized gears	Assembled by other, low diversity of gear types; electronics and automation
Catch capacity	Very low to low	Low to medium	Large to vast
<b>Management</b>			
Fisheries authority	Local community or kin-based	Regional community, or kin-based, with few scientists/managers	Comprehensive in scope, science driven; many scientists/managers
Management units	A great many small units	Usually many small units	One or few large units
Rules	Customary	Customary and State	Usually State regulated
Fisheries data collection	Often none due to difficulty of data collection	Difficult due to features of fisheries and authorities	Relatively straightforward but depends on authority’s capacity
<b>Space and time</b>			
Fishing bases	Highly dispersed	Dispersed	Concentrated
Fishing location	On or adjacent to shore	Relatively near shore	Exploits all marine areas
Fishing duration	Few hours	Few hours or few days	Few days to months
Seasonality	Seasonal	Extended seasons due to more robust crafts and gear	Ability to withstand rough weather and to go to the fish; all but eliminates climate related seasons

On aggregate, the long-term trend has been for global fisheries to shift to the right direction, but this trend is neither inevitable nor irreversible

Source: reproduced from Johnson, 2006.

## BOX 2

**Small-scale fisheries: a human development perspective**

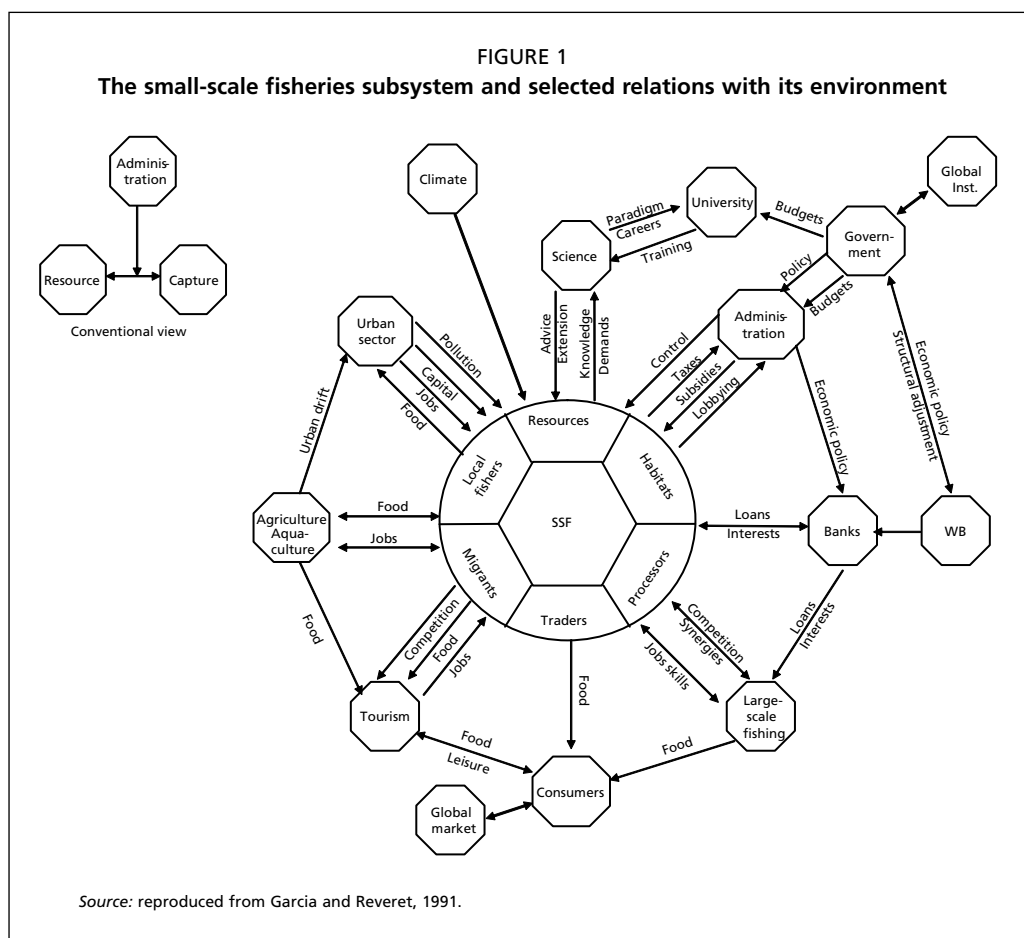
Small-scale fisheries in the poorest developing countries are simultaneously centres of dynamic economic activity and deep human insecurity. Emerging, scattered research findings (summarized in Andrew *et al.*, 2007) suggest that the income of fishworkers (fishers, processors and traders) may exceed the average rural wage labour rate, but seldom exceeds national poverty lines substantively, except where fishworkers own their own fishing gear and boats. Their income also supports ancillary industries and brings the monetary economy to otherwise remote areas. However, higher incomes do not always translate into greater security and better living conditions. Fishing incomes are highly variable and fishers and their dependents often face an unpromising institutional, economic and biophysical environment. They are often found to be socially and politically marginalized, to lack access to basic infrastructure (transportation, housing) and to social (health, education) and judicial services; they may be prey to rent-seeking officials and arbitrary and punitive forms of taxation. Their status is often that of migrants or ethnic minorities with respect to land-owning elites, so their social capital and bargaining power with officialdom may also be limited. They also live in environments that are highly exposed to physical risks from extreme climate events (storms, floods, droughts) and, in the case of inland fisheries, to water-borne disease vectors. As if this were not enough, the future of a fishery is often in the hands of upstream water-resource users, or competing users of coastal zones. These high vulnerabilities undermine their capacity and incentives to engage in participatory forms of resource management (FAO SFLP, 2005). Managing SSF in developing-country contexts is clearly more than an attempt at resource management alone. It is also an endeavour in social and economic development and so belongs to the wider class of problems and challenges in integrating resource conservation with poverty reduction – or integrated conservation and development (ICAD).

*Source:* Brown and Wyckoff-Baird, 1994; Brown, 2002; Berkes, 2004.

scale fisheries and towards the fisheries of countries with low gross domestic product (GDP) and human development indices, where many fishworkers and fisherfolk live in poverty.

Small-scale fisheries (gear technologist tradition) or artisanal fisheries (socio-economist tradition) generally emphasize smaller technologies and household- or family-based social units, respectively, compared with larger-scale and industrial or company-based fisheries. Importantly, SSF incorporate both subsistence and commercial fisheries. Purely subsistence fisheries are extremely rare, even in developing countries where a share of harvest is often bartered for other goods and services.

Compared with large-scale fisheries, which are often relatively distinct, SSF are more difficult to isolate. Wilson and Delaney (2005) stress that SSF are social units with porous boundaries that individual fishers can cross, unconsciously or deliberately blurring the divide between the various individual fisheries operating from a community. SSF are also relatively more diverse in terms of people, gears and resources and the processing and market activities more diffuse and informal. Effective SSF can create wealth, contribute to economic development, enhance social stability in rural and peri-urban areas, improve nutrition and food security and provide social safety nets for the poorest (Heck, Béné and Reyes-Gaskin, 2007). However, their vulnerability in the context of globalization, modernization and increasing pressure on resources means it is difficult for States and managers to resolve conflicting ecological, economic, political and social trade-offs in order to balance sustainability, productivity,



equity and social justice objectives (Smith, Pauly and Mines, 1983; Panayotou, 1988; Bailey and Jentoft, 1990). As early as the beginning of the 1990s Garcia and Reveret (1991) introduced a figure representing the key components of the SSF subsystem (see Figure 1), to try to focus attention on these external drivers. It is important that the wider community, researchers and practitioners recognize these multiple components and, by extension, appreciate the need for an integrated process for understanding, assessing and advising on these interactions and trade-offs, which will differ according to the context of the SSF.

The relatively high rate of failure of management interventions has already been stressed and analysed through the *Study of International Fisheries and Aquatic Research* (World Bank/UNDP/CEC/FAO, 1992). The challenges to effective management are particularly acute in SSF. One response<sup>2</sup> is this initiative to develop an integrated framework for assessment and provision of advice on management. There are numerous recurrent or emerging issues that affect SSF (Box 3), which clearly demonstrate the need for a broad, integrative framework of assessment to inform management of SSF.

There is thus increasing recognition that establishing appropriate pro-poor governance and better adapted strategies and institutions for fisheries management, which might include rights-based approaches, co-management regimes, fishing capacity reduction strategies and the support for diversified livelihoods, is central to improving the contribution of fisheries to poverty alleviation and food security (Béné,

<sup>2</sup> Other responses include a re-examination of the causes of poverty in fisheries (e.g. Béné, 2003), the recognition of the significance of vulnerability (e.g. FAO SFLP, 2005), the recognition of the need for new strategies for poverty reduction, a review of the potential role of fishery research and of the conditions and approaches to improved governance (Mahon, McConney and Roy, 2008).

## BOX 3

**Issues in the management of small-scale fisheries as articulated by the International Collective in Support of Fishworkers**

1. Fisheries management: protection of the SSF areas of operation from encroachment by industrial fisheries; elaboration of appropriate management regimes; fishing rights and the impacts of incentive systems, (e.g. quotas) on artisanal fishing communities; economic and other types of incentives; economic sustainability of fisheries operations (e.g. responsible modernization of gear, improved fuel efficiency and materials for boat building); banning destructive fishing practices; problems of coastal pollution, particularly from land-based sources; cross-border conflict between countries and communities.
2. Labour and social security: implications of international trade laws (from the International Labour Organization [ILO]) and other relevant instruments (e.g. human rights) on social security for small-scale fishworkers.
3. Access to land and sea resources: privatization of coastal zones leading to land alienation of coastal fishing communities.
4. Trade: impact of trade on small-scale fishworkers; ecolabelling initiatives and their implications for small-scale fisheries.
5. Aquaculture: appropriate forms of small-scale aquaculture that benefit wider communities and particularly women in these communities; aquaculture forms that can benefit fishing communities; unsustainable aquaculture practices.
6. Other concerns: advocacy (visibility of fishworker struggles); awareness building of rights and responsibilities among communities; increased visibility of women's roles in the fisheries and addressing gender-related welfare-disparities; strengthening of organizations; participatory research that draws on indigenous knowledge; migration of fishworkers and problems faced by migrant fishers; fisheries agreements and their implications for small-scale fisheries.

Source: ICSF, 2006.

Macfadayen and Allison, 2007). In addition, the commitments made by governments at their highest levels in the United Nations Convention on the Law of the Sea (UNCLOS), 1982, the United Nations Conference on Environment and Development (UNCED), 1992, the Convention on Biological Diversity (CBD), 1992, the Code of Conduct for Responsible Fisheries (CCRF), 1995, the Millennium Declaration and Development Goals, 2000, the Reykjavik Conference, 2001 and the World Summit on Sustainable Development (WSSD), 2002 call for a broader, more comprehensive and more environmentally conscious approach to fisheries development and management. Modern strategies need to be knowledge-based, combining the best scientific information available with all other relevant sources of reliable knowledge in highly participatory decision-making systems.

SSF representatives generally have a poor capacity to lobby and as a result are relatively more at risk from misinformed governmental policy. Fisheries management, in particular SSF management, is often characterized by a lack of understanding and information, both of the state of different system components and of the expected outcomes of policy and management action. However, it is acknowledged that improved knowledge on SSF alone will not be sufficient to reverse their present situation and that fundamental changes in governance and institutional arrangements are also required and are already progressively happening in many countries. Decision-making in the context of incomplete knowledge and associated risk-taking

are inherent challenges in SSF management. At the same time, improved knowledge used in appropriate decision-making processes is expected to assist governments, subsector managers and stakeholders in accelerating and optimizing positive change. Nevertheless, taking a comprehensive view of SSF, recognizing that they are (and operate within) very complex social-ecological systems (Berkes and Folke, 2000) raises significant information and assessment challenges. Beneath a superficial homogeneity in general characteristics, SSF demonstrate a bewildering diversity of dynamics and social and institutional settings that emerge from the interaction between the rich mosaics of cultures and ecosystems. In addition, SSF communities have developed strong relationships with other sectors of activity in the rural and peri-urban domains, which are essential to their own resilience and important to that of these domains. These relationships need to be understood and management systems that accommodate or strengthen them are needed (Ellis and Allison, 2004). Socio-cultural and ethical issues around values, equity, justice, rights and responsibilities are particularly relevant in SSF. Despite a wide recognition of this problem, there remains no unifying set of principles nor agreed structure for such a necessary approach, which integrates conceptual and methodological thinking from the natural and social sciences. Researchers, managers, policy-makers, donor agencies, fishworkers' organizations and NGOs are faced with an unrewarding clutter of theories, methods and heterogeneous case studies. This does not meet management needs. This document addresses one aspect of this by developing a conceptually comprehensive assessment and advisory framework that borrows from contemporary thinking and operationalizes ideas within the context of SSF.

#### **WHAT THE FRAMEWORK OFFERS**

The starting assumption is that a common framework for IAA will improve how SSF are managed and so will secure their future in changing policy and climatic contexts. The IAA is both conceptual and operational offering both a "mind frame" and a typology of approaches and tools applicable to SSF worldwide. Its intellectual foundations are made explicit in the following chapter. As such, the IAA framework contributes in many ways:

1. It intends to increase the understanding of policy-makers and their scientific and technical advisers about the characteristics of small-scale fisheries and the issues that confront them.
2. It aims to contribute to the empowerment of the communities concerned through developing an approach that puts the mechanisms of decision-making and knowledge-generation in their own hands.
3. It aims to enlarge the scope of policy and practical intervention in support of a more resilient SSF social-ecological system by broadening the analysis of the fishery system to encompass relevant aspects of its wider context.

The IAA is demand-oriented. While it might be useful as a basis for undertaking academic studies in SSF, it is primarily intended to be used for assessments in response to specific demand originating from government (policy- and decision-makers, fishery managers), fishery and coastal communities, NGOs and civil society organizations. Such demand may be of a strategic or operational nature (e.g. related respectively to policy development or problem-solving), a one-off instantaneous activity or a regular management practice.

The process needed to satisfy the types of demand listed above, providing a reliable assessment and the most appropriate advice, can be demanding for most research institutions, particularly in the developing world. However, IAA can, in principle, be undertaken within a wide range of budgets and human capacities. The process can be simplified while still following the principles, depending on the complexity of the issue, the value of the fishery, the potential risk of management failure, the resources and time available and the capacity of the stakeholders and managers involved in the IAA

framework. The assessors need, however, to remind themselves that simplifications have consequences, in terms of cost but also in terms of benefits.

Recognizing the diversity of possible demands and the varieties of methods available, the framework *is* process-oriented. Recognizing that specific responses cannot be provided at this level of generalization, it proposes processes through which such responses can be obtained.

The IAA process serves to respond to questions such as:

1. Why is an assessment needed (to clarify the demand)?
2. Who asked for it?
3. Who should be invited to participate?
4. What sort of assessment is needed?
5. What sort of advice is expected?
6. When is the response needed?
7. What is the management context/capacity?

The framework proposes a unifying, multidisciplinary, non-prescriptive architecture for IAA to be used for the governance of responsible small-scale fisheries. This capitalizes on opportunities arising through the growing acceptance of interdisciplinarity, multiple perspectives, values and knowledge and participation and more democratic processes of action. Integrating these conceptual ideals in an operational framework enables policy-makers and managers to cope better with the complexities and dynamics of SSF.

### **TARGET AUDIENCE**

The IAA framework aims to facilitate deeper understanding, more appropriate assessment and effective processes of advice and decision-making for SSF. It is therefore, intended for policy-makers, managers, subsector leaders, NGOs and fishing communities. It is also targeted towards individuals or organizations providing assessments, such as academics, scientists working for governments, environmental and development NGOs, industry analysts and investors, donor agencies, advisers and consultants.

Implementation of the IAA process should be driven by societal demand. The timing and expected outcome of the assessment are important considerations. The timing is imposed by the circumstances (e.g. recurrent planning or emergency issue) and the outcome should be a response to a specific set of questions that have serious consequences for the resource and the people.

### **EXPECTED OUTCOMES**

The aim of this collaborative process is to develop a comprehensive and legitimate conceptual framework that will be adopted by researchers and practitioners interested in and managing fisheries. The framework should enable a degree of flexibility, autonomy and versatility while still effectively guiding assessments of a diverse spectrum of SSF. The IAA framework aims to replace the conventional approach to fisheries assessment founded on “classical” fisheries science, in those cases when there is a need to deal with SSF in all its dimensions. It also aims to provide guidelines that improve on ad-hoc descriptive methods of assessment and the associated reactive and piece-meal approach to addressing the SSF sector’s needs, problems and opportunities that characterize most government fisheries departments in developing countries.

The IAA framework aims to raise awareness of the complexity and interconnected nature of the fisheries system in itself as well as its position within wider processes. The importance of SSF in contributing to food security and poverty alleviation is stressed and it is expected that the IAA framework, in action, should emphasize these contributions for those that implement it. Implementation and experimentation with the framework are also expected to build understanding of SSF in general. This will occur through the accumulation of interdisciplinary knowledge on SSF, case-study examples and best practice in their management.

The complexity of SSF and the need to account for it is likely to make comprehensive understanding and assessment difficult. Experience, capacity building and accumulative use of the framework should, however, optimize its contribution to decision-making for management. The framework does not deal explicitly with capacity building but recognizes that it is an essential component for the success of its application. A number of initiatives are ongoing and will certainly be undertaken in the future for capacity building, at the manager, adviser and assessor levels, and it is hoped that the framework will help in developing a national capacity to assess and manage small-scale fisheries better in a participatory mode.

### **STRUCTURE OF THE DOCUMENT**

This chapter justifies the need for an improved means of assessing fishery social-ecological systems, in particular small-scale fisheries. Chapter 2 highlights the conceptual background and fundamental principles underpinning the new IAA framework. Chapter 3 then introduces the framework itself and details the sequential steps and feedback processes that define the approach. The IAA process is then placed within the planning and management cycle utilized by most bureaucracies in one form or another (Chapter 4). Finally, Chapter 5 deals with a number of cross-cutting issues affecting framework implementation and concludes with the expected way forward in testing, refining, disseminating and operationalizing this approach. References and annexed information follow.