

Contribution from SIFAR¹ to thoughts on “Fisheries-related science and technology demands of the poor in developing countries over the next two decades”

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Introduction

Certain (perhaps obvious) assumptions need to be made when characterizing the “demands of the poor”. Research into the topics outlined below is intended more to respond to the “needs of the poor”, rather than actual (or tangible) “demand from the poor”.

In the context of this exercise, therefore, it is understood that “needs of the poor” are characterized in terms of the kinds of issues derived and articulated through rigorous participatory research and prioritization processes. Such processes reflect different facets of “demand”, translating these into strategic areas for action-research, such as those highlighted below that attempt to link knowledge to policy.

Information under the following headings is drawn from respective SIFAR activities in these areas. Links to additional information are included.

All of these research needs are interdependent in different ways and to a greater or lesser extent. Clearly, for example, any policy outcomes from research might depend on the level of better stakeholder participation at some stage in the policy process; policy that impacts on reducing vulnerability would benefit from better knowledge on the institutional causes underlying vulnerability; etc.

Sources: SIFAR documents.

Research and policy outcomes

As its name suggests, this is a more generic area related to how, and the extent to which, research may influence policy and sustainable resource management. The fact that it exists as a concept reflects an important weakness of much fisheries research in the past.

Successful policies for aquatic resource management, which lead to appropriate development outcomes, have at least three fundamental requirements:

- (i) Processes that *generate* knowledge able to inform policy options;
- (ii) *Uptake* of knowledge into policy-making processes which enable effective decision-making and the selection of a particular option;
- (iii) *Application* of knowledge to ensure effective policy implementation through appropriate institutional arrangements and resource management systems.

¹ Support unit for International Fisheries and Aquatic Research is a multi-donor Trust fund project based at FAO, Rome and responds to the recommendations articulated in the Study of International Fisheries Research (World Bank *et al* , 1992; see <http://www.sifar.org/SIFR%20Study.htm>
For more info and more on SIFAR see: www.sifar.org; and www.onefish.org

Research should first recognize its own inconsistencies. Much publicly funded formal scientific research on fisheries has been disengaged from the needs of policy and management and has failed to deliver the information needed for effective management in support of poverty alleviation and reduced vulnerability.

Research must recognize that however apparently or potentially relevant, accurate, timely or accessible it may, it may still remain totally ignored by those managers and policy makers who are intended to use it. As note below (Resource Valuation): “*Although the generation of information on the social and economic aspects of aquatic natural resources is important, it is doubtful if this alone will help to promote the development of appropriate policies for resource management in the future. This recognizes the fact that policy-making frequently follows non-linear models in developing countries.*”

Hence, effective management outcomes depend not so much on the *weight* of knowledge available, as on the *effectiveness of the institutions* involved both in the delivery and utilization of knowledge in meeting policy objectives.

Research should consider how to generate a better understanding of how institutions function, and how they might change and adapt to accommodate the broader knowledge base necessary for effective policy:

- what factors constrain -or facilitate- the translation of knowledge into effective action?
- how efficient are institutions in achieving their objectives?
- do realistic policy objectives exist?
- what policy making structures exist and how are policy implementation processes achieved?
- to what extent are civil society and the private sector involved?

The analysis of factors such as these requires the application of new (for fisheries) research methodologies using both political and political-economic perspectives.

A better understanding of policy making and policy implementation may lead to the design of more appropriate development institutions, stimulate more responsive research, and enable an improved utilization of knowledge. In the future, the design of appropriate policy will depend on a good understanding of these factors, and especially those which have affected the performance of current and past policy.

It is increasingly recognized that useful lessons are yet to be learned from current “best practice” not only for policy design, but also for policy implementation and fisheries management. Rigorous (and participatory) research should play a key role in the analysis of best practice, and in the distillation and generation of relevant / responsive messages to clients. Furthermore, research needs to examine the notion of best practice and foster a better understanding and clarification of people’s differing perceptions of what constitutes success and failure.

Participation in research

Participation has evolved from disparate roots in areas such as democracy theory, political empowerment, colonial development and planning. More recently, it has become an important component of development work. The use of participation is considered by many development practitioners to have provided a new paradigm in research and development, one that is completely different from the more conventional top-down approaches. This

paradigm shift not only changes the way in which development is viewed, but also the way it is addressed.

Participation is complex and often misunderstood. There are many ways of defining participation and many ways of participating. All too often the term is used to describe a situation where village people are merely co-opted into an outsider's activities. Participation in its more advanced form is much more concerned with fostering relationships, with ways of thinking, and with structures and processes - all of which can combine to create an integrated approach to the way development is practiced. Different interpretations of participation, and the different uses it is put to, have given rise to a diversity of approaches using different methods.

The motives for increasing participation stem from three broad roots: (i) functional motives (ii) empowering motives and, (iii) philosophical motives.

Knowledge Generation in Fisheries

A vital part of the development process is the generation and use of new knowledge. Generally, this has been taken to mean knowledge that is produced by formal scientific research. However, much literature now exists on traditional (indigenous) knowledge systems, and their efficacy in tackling the necessities of rural communities.

In spite of this trend, much of the rhetoric behind participation in research continues to be restrictive and often implies that agenda setting for research is still to be done by the formal research systems. New approaches to participation in research require a move towards a more balanced perspective on knowledge generation which gives due credit to alternative knowledge systems.

Whereas attempts have been made to bring formal scientific and indigenous knowledge generating processes together through participatory research, most has taken place in the agriculture sector and much less in fisheries.

Fisheries (especially small-scale) is one sector where the usefulness of the indigenous knowledge is arguably more important to the fishers than have been the outputs of formal research. Indigenous knowledge includes not only knowledge of the ecology and behaviour of fish, oceanography, navigation, fishing methods, and processing and preservation of fish, but also of the social, economic and governance structures and processes that operate at the community level. Fishers often possess accumulated knowledge in other areas such as health, agriculture, forestry etc. Whilst the majority of knowledge used by fishers to carry out their livelihoods is self-generated, there are examples where they do contract, or consult with, formal researchers while trying to solve a felt research need.

Formal scientific research in fisheries also has a long history (focus on species identification and taxonomy, ecology, behaviour and biomass estimates, to methods for expansion of harvesting capacity). More recently, emphasis has moved towards supporting more effective fisheries management research in response to over-exploitation. A recent but less pronounced move has been towards addressing information on social and cultural aspects of fisheries systems.

There is a growing number of studies on conventional approaches to fisheries research which question their effectiveness in informing policy in ways which benefit the development process either in terms of achieving national development objectives or assisting the development of artisanal fishing communities. There is a growing realisation that the focus, approaches and methods of fisheries research needs to change, but these conventional ways continue to form the main framework on which research is based in most countries.

Towards Greater Participation in the Research Process

A new way forward is required which involves a greater balance and quality of participation at different stages of the research cycle. Potential benefits of such an approach include:

- a research process which is able to call upon and combine existing knowledge from two parallel knowledge systems relatively quickly and cost effectively;
- research which can combine localised and practical knowledge and skills of the fishers with the theoretical, systematic and rigorous skills of the professional researcher to make research more relevant and reliable;
- research results generated which are more appropriate to the needs of the fishers, more closely linked to their aspirations and capacities, and validated by them during the research process;
- faster uptake and quicker impact of the research results as a result of the joint validation process; and
- more relevant information passing from research into the policy process thus generating greater appreciation of the value of the research and increasing the possibility of improved research funding.

Whilst these benefits are significant there are also constraints to the wider adoption of greater participation in research in fisheries.

If the benefits of greater collaboration are to be achieved then significant moves towards improvement in the balance and quality of participation in the research process must be made not only at the stage of research design and implementation but also in the analysis and interpretation of data, the dissemination of research results and how those results feed into the policy process. This offers the opportunity for the use of a range of participatory approaches within the research and development cycle. To be successful this will require fundamental changes in the awareness and orientation of both formal researchers and fishers to the knowledge systems of each other. It will also require changes in the institutional structures and processes within which research operates. It will need to adopt more interdisciplinary and multidisciplinary approaches to research and require changes in the way policy and research work together.

Resource valuation – with focus on inland river basins

In terms of poverty, food insecurity and vulnerability, fishing communities in developing countries represent one of the most vulnerable groups in the world according to (State of Food Insecurity, SOFI – FAO, 2000).

Large proportions of inland rural populations in developing countries are often dependent upon natural resources for their livelihoods. Many of the poorest and most vulnerable live in large river basin systems, where aquatic resources form an important component of their livelihood activities, typically centered around farming, fishing and sometimes forestry.

In general, the relationship between human society and the natural resources upon which they depend is often poorly understood. This tends to be reflected in national policy frameworks for the management and development of aquatic resource systems, which have emerged.

Riparian countries of inland basins typically pursue their own national policies for water usage, including dam construction for irrigation and power generation. These policies often fail to consider the true economic and social (and biodiversity) value of river / lake / aquatic systems in a natural (unmodified) state. As a result, the often massive negative impact of major hydrological modifications such as dams upon the livelihoods of affected user groups

through loss of access to natural resources, modification of flood regimes and other effects, is seldom recognised.

The need to understand the relationships between river basins and the people who depend on them for aquatic resources and to establish the value of naturally flooding rivers has been highlighted by a number of studies. However, to date there have been few attempts aimed at establishing “responsive” research programmes that could generate knowledge which could contribute toward a better understanding of the full value of the aquatic resources and inform and direct both policy and decision-making.

Firstly therefore, there is a need to understand:

- both national and basin-wide contexts of aquatic resource usage, and the inter-dependency of stakeholders at all levels;
- the contribution of the diversity of aquatic resources to rural livelihoods and to evaluate the threats to this role (with particular reference to poverty); and
- the impact of current natural resource management strategies and policies both on local populations and the environment and to use this as basis to develop appropriate strategies and policies in the future.

Natural resources of many river basins and floodplains offer huge potential for development at all levels if managed appropriately. They often play major roles in supporting livelihoods of millions of rural people. However, it is also possible that aquatic resources be used as a basis for economic development strategies which emphasize economic growth, the generation of economic surpluses and re-investment of revenues earned in other parts of national economies such as industry. For example, the generation and sale of electricity through hydroelectric dams may help to achieve this outcome. The design of appropriate policies in the future, which seek to optimise the usage of the aquatic resources in inland systems, will need to understand the impact and performance of current policies and management strategies. This will require a range of information, and in particular, social and economic information on the trade-offs between different resource usage strategies.

Secondly therefore, the implications of the above are that:

- Although the generation of information on the social and economic aspects of aquatic natural resources is important, it is doubtful if this alone will help to promote the development of appropriate policies for resource management in the future. This recognises the fact that policy-making frequently follows non-linear models in developing countries;
- The utility of the information generated might thus be greatly increased by a better understanding of the policy-making processes involved (if one assumes that the persistence of the non-linear policy-making model is in part dependent upon asymmetry of information access and flow);
- The fact that the non-linear model of policy-making is also characterized by a lack of participation in decision-making by a majority of stakeholders also needs to be addressed. Greater participation, in particular by primary stakeholders (e.g. fishers, farmers) is essential for the successful design and implementation of appropriate resource management policies.

Vulnerability analysis

Vulnerability to poverty and food insecurity refers to the propensity of people to slip from a position of security to one of insecurity as a direct result of one or many of a range of

dynamic factors that influence livelihood strategies. The vulnerability for individuals, households or groups is determined both by their *degree of exposure* to these risk factors, and by their *ability to cope* with them, and return to a condition of relative security.

Vulnerability studies can help identify the key risks within populations and how these are dealt with (and hence their vulnerability), by providing information on the *who, where, how many* and *why* related to these factors within fishing-dependent communities. The studies use a range of quantitative and qualitative indicators derived through secondary and primary sources, and at national, district and household levels.

The so-called “poverty profiles” emerging from these studies can be (and are) utilized by fisheries departments to reorient national fisheries policies to incorporate poverty-reduction elements into development strategies. Examples of countries where this research has responded to policy needs in support of sustainable development and poverty alleviation include the following: Mali, Ghana, Burkina Faso, Cote d’Ivoire, Orissa State, India and Bangladesh.

Identifying and characterizing the poor, vulnerable or food insecure can thus be central to the design and implementation of actions to improve their situation and reduce their number.

Because policies and programmes do not commonly target single individuals, it is necessary to cluster them into meaningful groups for policy and programme action. By choosing the livelihood system as a classifying tool, it is possible to capture similar factors and processes affecting people’s poverty, and to integrate various dimensions of vulnerability to food insecurity. These often derive from similar livelihood strategies enacted.

Livelihood systems have been adopted as the entry point for clustering individuals into meaningful groups and organizing the collection of information about them. Methodological work to operationalize this line of thinking led to the realization of Livelihood Systems Profiles (LSP).

The information output type required for decision-support systems (and indeed the nature of decision-making), differs according to whether the process involves for example, policy formulation, programme or project development. Information requirements also differ according to the institutional affiliation and responsibilities of the user, and the administrative level, whether international, national, provincial or local, at which the decisions are being taken. Thus, LSPs are able to respond to different needs by taking the form of policy briefs, analytical reports, or awareness-raising pamphlets, presenting information through textual analysis and visual aids such as graphs, maps, charts.

To better respond to different information needs in different countries, a set of methodological pathways is being developed. Although there are differences in thematic focus and unit of analysis, a series of key features are common to the approaches developed, making it possible to classify them as Livelihood Systems Profiling.