

ALTERNATIVE INFORMATION FOR SUPPORTING INLAND FISHERIES MANAGEMENT AND DECISION-MAKING IN THE SOUTHEAST ASIA

SUGIYAMA, Shunji

Regional Office for Asia and the Pacific (RAP)
Food and Agriculture Organization (FAO) of the United Nations

1.0 Inland Fisheries in the Southeast Asia

There is an increasing recognition that inland fisheries play an important role for food security and the livelihoods of rural people in the Southeast Asia. Given the situation that there are significant water resources, seasonal inundation and wet rice production, it is natural that people in this region rely on easily accessible aquatic resources for various aspects of livelihoods. Hence fishing and/or collection of aquatic organisms in inland water bodies are commonly observed throughout the region and the vast majority of rural households, regardless of whether they consider themselves as farmers or fishers, engage in some sort of activities to harvest aquatic resources at some sort time of the year. Fish/aquatic organisms of all sizes are utilized with little discard or wastage.

Although people's livelihoods and aquatic resources are seasonally and spatially highly variable, the consumption and sale of products derived from aquatic resource systems are critical to livelihood strategies of rural communities. It is particularly so when people have to cope with vulnerability. Food security is often considered rather narrowly in terms of food staples and does not fully address the complex coping strategies that are crucial to the rural poor. Fish can provide not only crucial food and income to rural communities in times of stress, but also more routinely have an important and often crucial function in the maintenance of nutritional quality in the diet.

In cultural terms, aquatic resources mean more than a mere source of food or income. Traditional fishery products such as fish sauce, fermented fish and fish-based condiments have been important ingredient of people's diet. People in this region are traditionally and culturally attached to such products and these are not easily substituted.

It is in this area that governments and international society are just beginning to appreciate the hidden role of inland fisheries in achieving livelihoods of rural sectors.

2.0 Recent Initiatives

International and regional organizations have recognized the importance of improving the quality of information on inland fisheries and initiated related programs. The Committee on Fisheries has agreed on the strategy for improving information on status and trends of capture fisheries (Strategy-STF). The project for implementation of the Strategy-STF has components on determination of national data requirements for fishery policy making and

management, and development of simple sustainable cost-effective data collection schemes for small-scale fisheries that include fisheries in their scope. The FAO Regional Office for Asia and the Pacific reviewed the current status of inland capture fishery statistics in the Southeast Asia (FAO RAP 2002). A regional project to address the quality of the information on inland fisheries¹ has been developed and waiting for financing. The Mekong River Committee has been conducting Fisheries Programme Component, in which the information on inland fisheries in the Mekong river basin is compiled. The results of the field evaluation of new approaches were presented at an adhoc expert consultation on new approaches for the improvement of inland capture fishery statistics in the Mekong Basin². The Southeast Fisheries Development Center also conducted a regional technical consultation meeting on fishery statistics³ and developed regional guidelines as a reference for improving fishery statistics, which puts special attention to inland and coastal fisheries.

There seems no use of inland fisheries statistics for management and the above two meetings coincidentally stressed the same point, namely the importance of revisiting four basic questions in order to ensure the validity and relevance of national statistical system. These questions are:

- 1) Are inland fishery statistics used for management?
- 2) Why do countries need the inland fisheries statistics? (What are the objectives of collecting information?)
- 3) What are the information requirements to meet these needs? and
- 4) How can data and information be obtained in efficient and cost effective way?

These are highly relevant when considering solutions for problems associated with data and information collection on inland fisheries.

3.0 Difficulties Associated with Data and Information Collection on Inland Fisheries

Information generation on inland fisheries has not been very successful in many countries in this region. FAO RAP 2002 has identified sources of error in the official statistics as well as constraints with existing statistics. It can be said that the poor status of inland fishery statistics is generally attributed to the chronic problems of fishery data and information collection system as a whole, namely a) insufficient budget allocated b) limited number of staff assigned c) lack of training opportunities for fishery officer, d) conflicts with other duties given to the field staff, etc. These problems, which are common in both inland and marine fisheries, are critical and serious enough to undermine the system. However, the unique characteristics of inland fisheries also bring additional challenges to tackle in order that the importance of the sector is properly valued. The first step in improving the quality of data and information on inland fisheries would be to clearly identify and recognize these specific difficulties associated with inland fisheries so

¹ Addressing the Quality of Information on Inland Fisheries (AQUIIF); a regional technical cooperation project

² Ad hoc consultation on new approaches for the improvement of inland capture fishery statistics in the Mekong Basin, 2-5 September 2002, FAO/MRC/ Government of Thailand/ Government of Netherlands

³ The Regional Technical Consultation Meeting on Fishery Statistics, 16-20 June 2003, ASEAN-SEAFDEC

that appropriate strategies can be formulated. The following sections attempt to summarize and categorize these problems.

3.1 Policy Aspects

Policy aspects are mainly concerned with process of improving relevance of fishery data and information.

Lack of Attention/ Prioritization

Inland fisheries are frequently given very little attention and hence low priority in the eyes of governments. This lack of attention/ prioritization probably stems from the fact that inland fisheries are not visible part of income generation and staple food production. Thus the information on aquatic resources use in inland areas is often limited and the quality of that information is very poor. This situation further leads to the absence of proper policy development. There is also possibly a feeling that nothing can be done with inland fisheries and that they cannot generate significant revenue.

Weak Linkage Between Management Objectives and Information Generated

The linkage between data and information currently collected on inland fisheries and policy and management objectives of the fisheries is very weak in many cases. This suggests that national efforts to clarify information requirements specifically for inland fisheries management may be insufficient or that types of data and information collected have been simply adopted from those used for other sub-sectors. The expert consultation on new approaches⁴ identified information needs for inland fisheries management and policy and also reiterated that the information on inland fisheries are often not collected or adequately analyzed. National statistical systems need to provide information which are more relevant to current policies and in particular those that adequately issues of sustainable livelihoods, rural poverty alleviation, the environment and biodiversity.

3.2 Institutional Aspects

Institutional aspects have major influence on how effectively and efficiently the system can collect the data and information

Invalid Framework of the System

Until fairly recently, fishery policies in many countries in the region focused on the increase of gross production or expansion of fisheries sector. National data/ information on collection systems that were designed during the time typically focused on how much could be caught. During this time, little attention was given to inland fisheries. Fishery information systems need to be reviewed when there is a major shift in national policies and priorities. It is necessary to ensure that the system framework as a whole including strategies to collect data and information are still valid and capable of handling current needs for the fishery data and information.

⁴ See footnote 3

Disproportional Allocation of Resources

Given limited human and financial resources available, it is reasonable that governments distribute their resources according to priority areas where “apparent” significance of fisheries is recognized. The “Invisible” nature of inland fisheries may have worked adversely in securing a share of these resources. As a consequence, there are limited numbers of field staff stationed in inland areas assigned with demanding tasks of covering vast inland areas of limited capacity of transportation and communication. This is also a reflection of the low priority given to inland fisheries.

Lack of Training/ Instructions

Data and information collection systems cannot function properly if there are no sufficient competent staffs to run the systems. Field staff, for example, are not supposed to simply collect or compile fishery data from data sources, but they are also expected to critically examine the way data and information are produced and to validate them if the quality of data is questionable. To capably handle such task, not only general knowledge of fishery statistics is required but also complete understanding of fishery practices in the area. At the same time, field staffs need to bear in mind that it is their job to improve the quality of data and information. In this regard, proper instructions and training of staff should be provided in order for the system to effectively function. This aspect is particularly important in the case of inland fisheries where accumulation of practical knowledge and experiences in the field of data and information collection of the sector within the institute is relatively weak.

3.3 Environmental Aspects

Environmental factors are external elements that are beyond the control of fishery officers. The only way to deal with environmental difficulties is to find the best way to cope with them.

Wide Variety of Inland Water Environments

It is known that there are a wide variety of water resources in the region. They range from man-made water bodies such as rice-field, irrigation and navigation channel, canals, dams and ex-ming pool to natural water bodies such as rivers, lakes, floodplains, estuaries and deltas, etc. Regardless of their size and form, they all provide opportunities for exploitation of aquatic resources. Since each type of inland water environment present distinct characteristics, diverse approaches may be required to produce accurate data and information.

Monsoon Climates and High Seasonal Changes

The Southeast Asia region can be characterized as being under influence of monsoon climates, which alternate distinct wet and dry periods and hence cause significant seasonal changes in inland water environments. Biology and ecology of fish and other aquatic species and the ways of people depending on those resources are usually tied closely with these seasonal changes. Ignorance of such seasonality of inland fisheries in data collection strategies can lead to generate biased information.

3.5 Socio-economic and Cultural Aspects

Considerations of the socio-economic and cultural aspects are always essential in order not to overlook important dimensions of rural livelihoods. Fishing and collection of aquatic species are human activities and hence focusing attention on “people” is as important as looking at fish.

Indiscriminate Nature of people’s Participation and Dispersed Activities

Generally, marine resources are not easily accessible except in cases where people harvest them from shore or in very shallow coastal waters. It is essential for the people who wish to exploit marine resources to obtain some sort of mobility to access fishing grounds (fishing boats) and means to extract marine resources (fishing gears) from the sea. In contrast, inland water environments do not always pose such difficulties to fishers in terms of assets requirements. Some inland waters are shallow or narrow enough to access without using boat and aquatic resources can be harvested with very simple methods or gears. Such fact encourages a wide range of people to participate in inland fisheries. Regardless of possession of boats and fishing gears, or age and gender, anyone including women and children can participate in fishing or collection of aquatic resources. In this regard, the data/ information collection system may need to incorporate greater disaggregation of the data in order to provide a clearer picture of the way people engaging in subsistence fisheries and utilizing resources.

“Informal” Nature of Inland Fisheries

Fish or other aquatic species harvested from inland waters contribute more to local or domestic consumption as compared with either marine fisheries or large-scale aquaculture. Production for such subsistent purposes or local consumption is always very difficult to monitor. In the case of marine fisheries, the harvest has to be brought to shore where they are traded or consumed. Marine landing sites are fairly organized as landing facilities are necessary for offloading from the boats. In this sense, areas to monitor are limited to coastal areas (yet they could be still very expensive to deal with). In inland waters, on the other hand, harvest can occur at any place where there are waters and aquatic resources available. Furthermore, they are often consumed or traded within very small local areas. Such localized activities pose additional difficulties in monitoring.

“Farmers” and “Fishers”

There has been a tendency for fishery policy to view fishing as a full-time occupation taking place within a single, well-defined economic sector. Similarly, there was a necessity for statistical purposes to put rural households into certain categories such as agriculture households, livestock households or fishing households. However, it is not always easy to categorize rural livelihoods with clear definitions. People in rural areas would switch, at any time, from their main activity to another if necessity arises. “Fishers” in wet season, for example, become “farmers” or migrant laborers in dry season. This is a natural and reasonable coping strategy to achieve livelihood security. Therefore care should be taken to the fact that any activity with apparent significance at a time can be merely a part of their livelihoods.

3.6 Technical Aspects

Highly Diversified Fishing Methods Used in a Variety of Environments

Numerous types of fishing gears and methods have been developed and used in this region. This could be in response of the people to accommodate wide variety of inland water environments and their seasonal changes. It is often simply beyond national agency's capacity to handle all the variety of fishing gears/methods used in various inland water environments.

Adoption of Inappropriate Methods

Inland fisheries sector has been viewed as insignificant and therefore not many considerations are given in the process of formulating data collection strategies on the sector. As a result, the framework of data collection mainly developed for marine fisheries might have simply been extended to inland areas. It is apparent from problems described above that inland fisheries require special attention and traditional gear-type/boat-size/catch related approaches originally developed for marine fisheries may not always be applicable to inland fisheries.

4.0 Need for New Approaches and Framework for Cooperation

Having recognized all the constraints described above, the next step is to consider practical measures to clarify the situation.

4.1 Breaking the cycle of Inappropriate Knowledge and Low Priority

Inland fisheries are given little attention and low priority in the eyes of governments. This lack of attention/ prioritization is reflected in allocation of financial and human resources and hence data and information collection activities on inland fisheries are seriously inhibited. This resulted in generating very poor quality of information and in some cases non-existence of information. The resulting incomplete understanding of the sector further led to the absence of proper policy development. Here, there is a reinforcement of the situation that lack of proper knowledge and priority and resources. This "self-reinforcing cycle" has probably hindered adequate valuation of inland fisheries for many years. Unless some efforts are made to end this vicious cycle, inland fisheries will continue to be undervalued. Most often, development decisions are made that favor other sectors, such as agriculture or hydroelectric development, at the expense of inland fishery sector. Appropriate attention needs to be directed to this sector at least to the degree that represents their importance in food production and the number of people depending upon the production.

Financial and human resources are scarce in many developing countries and are not easily increased or enhanced in a short-term. It is fair assumption that limitations on those resources would continue to persist for some time. Therefore it would be important to bear in mind when considering strategies to improve the quality of information on inland fisheries that cost-effectiveness and best use of existing data collection mechanisms would be the key aspects of the strategies.

4.2 Indicative Information to Secure Political Attention and Appropriate Policy Support

Measurements of production, effort and number of “fishers” are the basic data, which provide information on the status of the fishery. Their critical weakness is that the collection of these data for inland fisheries may be too expensive and too demanding to monitor when applied for inland fisheries. Therefore, it is necessary to explore the potential of new approaches that would provide alternative information to indicate the importance of inland fisheries. Possible approaches presently in consideration are those relying on proxy indicators or those involving more qualitative aspects of fisheries practices. The use of alternative information is practical when some sort of justifications is needed to draw political attention to persuade relevant authorities to allocate necessary resources. Such an initiative can be regarded as a first step to obtain continued support to the sector. Once relevant authorities are successfully influenced and adequate support for the sector is secured, selection of variables and indicators can be reviewed with provision of additional resources so as to further improve the quality of information.

4.3 Partnership with the Non-fishery Sectors

Because of geographical overlapping with other sectors in the area of activities and the competing use of water resources, which are a common property utilized by multiple users, inland fisheries cannot exist in isolation from other sectors. This inert-related situation often brings problems to inland sector but also provides opportunities in terms of sharing the burden of data and information collection. Fishery authorities may not have to produce the full spectrum of the necessary data by themselves, as relevant data might already be available from other sources. Other governmental agencies, universities, research institutions, aid projects and NGOs are potential data and information sources. In this respect, it is important to establish good partnership with the non-fishery sectors so as to promote the use of existing information and improve the cost-effectiveness in data collection.

4.4 Regional Cooperation for Sharing Information and Division of Labor

Use proxy indicators may offer an opportunity to promote better understanding of the sector. However other problems of the sector, namely the complexity of inland water systems and associated fisheries practices, still remain. It would be a demanding task for national governments to develop appropriate approaches to suite different settings of environments single-handedly. It is therefore, reasonable for countries in this region to take part and help each other in their efforts to improve the quality of information on inland fisheries and share experiences and knowledge.

5.0 New Approaches and Alternative Information

Some examples of new approaches to gain better understanding of inland fisheries are provided below. Detailed explanations on the technical aspects are not described in this paper as they can be found in related publications.

5.1 Use of Agriculture Surveys

It is unfortunate for fisheries authorities that other agencies such as agriculture departments and general statistics offices are usually equipped with more financial and human resources. However, with geographical overlapping in the areas of activities, there are opportunities for inland fisheries sector to take advantage of the agriculture surveys to obtain valuable data on inland fisheries. This can be done by incorporating fishery related questions in the survey framework. One example of the case is to include simple screening questions asking whether the household harvests aquatic resources or not, in agriculture census questionnaires so that the level participation to inland fisheries can be indicated. National censuses have an advantage in that they have comprehensive area coverage with possible complete enumeration and they reach very remote areas of the country, where fisheries officer usually have difficulties to access. The level of participation can be regarded as more indicative variable in terms of describing real features of inland fishery practices as compared to simple counting of number of “fishers”.

The agriculture census that aimed at providing structural information on agriculture sector could also provide comprehensive listings of households engaged in fishing or collection of aquatic resources. Such information can be used as the frame information for further detailed surveys.

5.2 Use of Household Surveys

Household surveys targeting rural areas provide detailed inside views of local communities that rely on inland water resources. Consumption studies as a component of household surveys indicate the level of fishery product consumption in the area, which will then be used for estimation of regional and national consumption of aquatic resources. This information is useful to validate national fishery production figures. Income and expenditure studies also provide useful information for the purpose of indicating people’s dependence on inland fisheries as well as estimation of fishery production.

5.3 Livelihoods Approaches

Increasing attention has been recently given on issues of sustainable livelihoods, rural poverty alleviation, the environment and biodiversity. Inland fisheries in this region are highly relevant to these issues. Hence the necessity arises for the data and information collection systems to incorporate more qualitative aspects of fisheries practices. Livelihoods approaches provide a framework to view inland fisheries within a wider context of rural livelihoods that usually interact actively with various non-fishery factors.

5.4 Participatory and Co-management Approaches

The framework of co-management or community-based management can help producing quality data on various dimensions of community activities. In co-management arrangement, local communities as the users of aquatic resources take charge of management of their resources. With this arrangement, communities can be more motivated to understand the status of their resources and the critical factors affecting their livelihoods strategies. Therefore it would be worthwhile to explore the possibility of

incorporating the data collection mechanism into the framework of co-management. Structural advantage that “producers” of the data are the “user” of the information is expected to contribute to improve the quality (e.g. accuracy and relevance) of the data and information and to widen the scope of information generated. Furthermore, this approach can be highly cost-effective and timely in producing necessary data since it will require less government staff both in terms of number of staff and frequency of their field visits. Government officers will not necessarily engage in data collection directly by themselves but simply request and assist communities to collect and process data and provide them to authorities periodically.

6.0 Conclusions

Data and information collection on inland fisheries has a long list of problems and there is a self-reinforcing cycle of unfavorable situations that hinders the system to produce quality information. The use of alternative information is expected to provide a breakthrough to the situation. Conventional sector specific approaches are found to have limitations when applied to inland fisheries. New approaches that intend to involve proxy indicators and more qualitative aspects of inland fisheries are very much needed. These approaches even have potential to evolve into more integrated way of collecting data and information on the rural livelihoods in the future.

The alternative information can be valued in the sense that they can be produced in a cost effective manner by utilizing existing systems and frameworks readily available and that they can be reliable enough to draw initial political attention to the sector and persuade relevant authorities to allocate necessary resources. Yet generation of alternative information will not be an easy task. Significant efforts still need to be inserted to accumulate experiences and knowledge as to how best to generate this information. In doing so, cooperation with the non-fishery organizations as well as cooperation between countries that share similar inland water environments becomes paramount importance. Frequent communications and mutual consultations are also needed for this purpose.

It should be mentioned that recently agreed Strategy-STF provide a good opportunity for the countries to initiate a move in improving the quality of inland fishery information with the provisions of technical and financial supports by the project. It would be recommended that countries make good use of such opportunity.