CURRENT ISSUES OF FISHERIES PROJECT DESIGN

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ABSTRACT

Despite the importance of fish as a source of protein, and frequently as a source of export income in developing countries, fisheries development projects have a very poor record of success. Lending to the fisheries sector by international banks and aid agencies has therefore declined in recent years and fisheries development is in crisis. This paper examines the lessons to be learned from previous projects and discusses the principle areas of project design and implementation which need improvement. These include, project preparation and formulation, management and supervision of the project, design and selection of fishing vessels, the need for hard information on the fisheries resources, conditions for fisheries credit and loan repayments and the two-way enviromnental aspects of fisheries projects – those of the fishery on the environment as well as those of such factors as pollution on the fishery. The paper concludes with some comments on the current thinking of major banks with regard to their support for the fishery sector.

1. INTRODUCTION

1.1 Importance of the sector

Fish is the largest single source of animal protein and• one of the fastest growing food commodities entering international trade. The harvesting and processing of these resources is a source of income for over *150* million people, the majority of whom are in the low income groups. Fish represents the primary source of animal protein for over a billion people and is also one of the animal food items least influenced by religious principles. Recent research also shows that its regular inclusion in the diet helps to prevent cardiovascular diseases and other health disorders. World fish production peaked to 100 million tonnes in 1989. This dropped to some 97 million tonnes in 1990 because of the decline in pelagic catches by Japan, Chile and the Soviet Union. Preliminary indications are that there was a slight growth in 1991. Over *50%* of this production came from developing countries. World fish production has exceeded that of beef, pork, sheep, poultry and eggs. In many developing countries, such as in Asia and the Pacific region, fisheries is also a major source of foreign exchange and is an important contributor to Gross Domestic Product. The importance of fisheries commodities, traded fisheries and technical staff, has greatly increased but has been hampered by the inflexibility in implementation of plans for future development. These factors are further discussed in the following paragraphs for fishery administrators to be fully aware of the major problems, and to safeguard against them in the future design and implementation of fisheries projects.

1.2 Important general issues in the fisheries sector

Harvesting of some commercial stocks has reached or will soon reach the top level of rational exploitation at a time when developing coastal states are stepping up their efforts to increase domestic food supplies, generate foreign exchange, improve the fishery sector's added value and diversify their economies. This level has been reached as a result of free and open access to the sea, lack of good resource management practices and sustained increase in demand and prices. At the same time technological improvements have led to over capacity, particularly in the industrial

nations' distant water fleet, which despite their own extended jurisdiction, still operate under licences and other agreements or illegally, off the coasts of many developing nations because the developing nations lack the means to develop their own capabilities. Indiscriminate sale of licences to foreign vessels leads to overfishing of the coastal state resources, and many of these coastal states do not receive a fair share of the catch value because catches are often landed in foreign bases, or transhipped mid-stream to other destinations without a correct declaration of the catch weight to the coastal state authorities.

Developing countries lack the skills and means to manage the resources within their EEZ. Poor or non-existent surveillance and enforcement facilities put many Third World nations in a weak position to manage the operations of the foreign fleet in accordance with established agreements. This also applies to the local fleets which normally violate regulations. Coastal nations rely on the good will of the foreign interest which more often give very little or no importance even to the preservation of resources. At the same time the high costs of resource management programmes, makes it difficult to persuade Governments to implement such programmes and enforce established regulations.

Moreover, the international market is still growing. More than one third of the world's fish production enters international trade, the highest proportion of any basic commodity. In 1991, world fish trade amounted to around *US$35* billion, of which an estimated US$18—l9 billion in net foreign exchange earnings went to developing countries. Despite its importance on world markets and to the economies of the industrial and developing countries, Government's support, and allocation of adequate resources to the sector have been unsatisfactory. Fish production, other than from aquaculture, is still basically a hunting and gathering activity. The ability to increase national fish harvests depends on the national productivity of fish stock which is in urgent need of rational management and not just the level of effort applied to it.

1.3 **Trends** in investment

It is widely recognised that the record of success in fisheries development projects has been very low. Over the last decade, international financing of fisheries projects throughout the world, with the exception of those is a few countries, appears to be going through a crisis. There is widespread dissatisfaction with lending to the sector, in particular to capture fisheries, and commitments are falling. Lending to the fisheries sector by multinational banks and bilateral donors peaked worldwide in 1983 at around US$500 million. This dropped to nearly US$150 million in 1985. Since then there has been a declining trend in the number of projects fmanced annually. There are of course fisheries investments taking place other than through international fmancing, and these investments, which are not normally subject to detailed feasibility studies of a certain standard, are by public and private sector financing from entirely local sources. Statistics on such fmancing are scanty, but there is reason to believe that it exceeds the amount of official development assistance. The main problems encountered in these projects could be attributed to technical inadequacies, with weak project concept and design, administrative and managerial weaknesses of the implementing agencies. Poor supervision by financing institutions, due to lack of in-house resource management programmes, makes it difficult to persuade Governments to implement such programmes and enforce established regulations.

1.4 Changes in opportunities and requirements

Highly significant changes in global fisheries have occurred since the end of the Second World War. Two major changes are, first a shift from a period of rapid growth in total catch to a period of slow growth and, second, the general extension of national jurisdiction over fisheries.

Several other developments have also occurred. Notable among these were:

i. the oil crisis of the seventies which had a paralysing effect on the fishing fleets, leading to an enormous drive to improve efficiency of fuel utilisation;

ii. the mounting external debt and the chronic shortage of hard currency, which brought some of the fishing activities in developing countries to a virtual halt, since importation of spare parts and other essential imports were particularly difficult;

iii. the law of the sea with its 200 miles extended jurisdiction and the responsibility of the coastal states for its management;

iv. increase in catches from 40 to 100 million tons/year and doubling of the gross registered tonnage of the world's fishing fleet (5—10 million);

v. the large number of licensing arrangements and joint ventures between foreign fleets and developing countries;

vi. the virtual overfishing of most commercial species as a result of unsatisfactory property rights, free and open access, sustained increase in demand and prices and poor resource management;

vii. the substantial growth in aquaculture, particularly of high value species through private initiatives such as in China, Thailand, Indonesia and elsewhere;

viii. Pollution of coastal and inland waters and general environmental degradation. As a result, fisheries are facing new challenges and opportunities.

One other issue is the frequent conflicts between artisanal, semi-industrial and industrial fishing interests both local and foreign. To resolve these conflicts in open access fisheries is a problem and since goodwill between the interested parties is often lacking it is a challenging task.

Population growth, coupled with economic and social development are placing a heavy burden on coastal resources, often resulting in depletion of natural resources and their environment. Therefore, appropriate planning and integrated management of resource use and allocation becomes an essential task.

Post-harvest technologies and marketing systems have not kept pace with the increased catches. The loss resulting from discarding by-catch, and incidental catch from single species fisheries and spoilage as a result of bad handling and poor preservation represent millions of tonnes yearly. Of primary importance, therefore, is how to devise and implement cost effective programmes to reduce this waste, and improve the uses of the incidental and by-catches.

Poor and fragmented technological research has prevented the development of fish products from species that for economic and market reasons are not used for food production. At present they represent one third of total world catches. Better use of these resources should be of primary concern, bearing in mind the social and cost implications of such a measure.

Aquaculture, other than seaweed culture, still represents around 10% of the total world fish production, which reached 100 million tonnes in 1989. Development of aquaculture in third world nations faces severe technical and management problems, and it is still a long term process to bring these nations to the required level of management. Therefore, resources from the wild will continue to dominate world fish supplies for several decades. If aquaculture is expected to become a significant source of food fish products in the near future, strong support to research into culture techniques, feed formulation and fingerling production, training and extension should be provided.

1.5 Lessons from experience in project design and implementation

Sometime ago the FAO/Investment Centre reviewed the performance of some 70 projects in agriculture and related sectors that were implemented during 1980—1990. This study unfortunately dealt with only a few fisheries projects which were all financed by the World Bank. The objective of this study was to identify the extent to which projects ran into performance difficulties, which could be attributed to faulty design, and on the basis of this analysis to suggest improved approaches to project preparation. In this assessment some 22 types of general problem were identified, and grouped into several major categories as shown in Table 1.

In the limited number of fisheries projects, it was found that the most common problems were of an institutional nature followed by conceptual shortcomings. The institutional problems were mainly caused by assignment of insufficiently qualified staff to managerial positions, a problem compounded by frequent staff changes, and considerable delays in fielding, or poor quality of, technical assistance that was deemed necessary at the preparation or approval stage. It is possible for instance that the design of the project placed an unrealistically high demand on managerial and technical skills contributing to the non-sustainability of the project. Among the conceptual problems, unduly tight scheduling set at the appraisal stage, was one of the main problems in over 80% of the projects reviewed. The time over-run problems normally stem from consistently excessive optimism during project preparation. Because of this, loans have been cancelled due to excessive delays in disbursement.

Technical problems included production shortfalls, in some cases as much as 75% of the projected vessel catch, and the introduction of a fishing vessel type and design which was unacceptable to fishermen, and hence the credit component and the shore based processing facilities did not achieve their objectives. Often technologies on which a project is based have not been tested on a significant scale in the project environment.

Among financial problems the main one was the investment cost over-runs, again due to inadequate time available to collect realistic unit costs of equipment, material and labour. Overestimates of output prices and returns were mainly confined to export marketing where the availability of exportable quality fish, ease of access to markets and producers and price levels

had been too optimistically assessed at preparation and appraisal. In local marketing it was observed that real prices were sometimes above appraisal projections, possibly reflecting a relatively increasing scarcity of fishery products or import restrictions.

Often projects are not integrated into the sectoral and general economic environment. Projects tend to be prepared and financed in an *ad hoc* fashion, to enhance the visibility of special donors' assistance, and may not be consistent with national development plans and priorities. The result is a number of individualistic approaches, often sharing the same resources within the sector. This lack of coordination and sharing of experience between donors themselves and within Government, though recognised and often discussed, has not been remedied so far. Improved donor coordination has not yet been successful, because of the intense competition between donors for projects. It leads therefore to the importance of coordination at Government level, which would require strong institutions able to hold their own professionally, against the power of international donors, and supported by realistic and well prepared sectoral development plans. Another initiative to deal with the problem of *ad hoc* projects is the use of fisheries sector studies as a basis for potential sectoral involvement by various agencies.

Table 1.
Problems faced by fishery development projects.

Problem category	Problem type
Conceptual	Too many or unbalanced components
	Too big
	Schedule t00 tight
	Non-sustainable
	lnfiexible*
Technical	Production technology deficiency
	Poor engineering
Financial/Economic	Under-estimated costs
	Counterpart and recurrent budget shortage
	Low output prices or market problems
Social	Inequitable benefit distribution
	Slow adoption
Institutional	Bad management or staffmg
	Unsuitable organisational structure
	Ineffective technical assistance
	Procurement difficulties
	Land acquisition difficulties
	Poor monitoring and evaluation
Environmental	Natural disaster
	Resource degradation
Political	Turmoil or war
	Insufficient Government commitment

* Or, expressed differently, an absence of mechanisms intended to enable the project to respond to changing circumstances.

2. SOME COMMON ISSUES RELATED TO FISHERIES PROJECTS

2.1 Project Formulation

There have been gross inadequacies in the process of project identification, preparation and appraisal, due primarily to two reasons: inadequate time and funds available for this work, particularly when large construction work such as fishing ports and shore facilities are involved and where pre-investrnent studies are to be made; secondly, the limited range of technical experts deployed, and the lack of relevant technical experts in the various fmancing institutions. Areas which require major emphasis during project preparation and appraisal relate to:

- the fish resources and their level of exploitation,
- the market and its capacity to absorb increased catches at realistic prices,
- the fleet, fishing gear and fishermen's level of competence,
- the infrastructure needs,
- Government policy and institutional capability,
- catch and resource monitoring for sustainable development.

Unless all the relevant technical, institutional, financial and economic issues pertaining to a project proposal are fully covered during preparation and appraisal, the project is unlikely to perform satisfactorily or to attain its targets. Though good preparation still cannot guarantee success it can minimise the risk of failure. In most countries the fisheries administrations are weak in technical capability, and therefore their contributions are limited, although it is better if locally available knowledge and experience can be used for project preparation.

2.2 Project management and supervision

Project management which is the country's responsibility has not always been effective. As said earlier, these organisations are often weak in technical management skills and as government departments they are subjected to various rules and regulations and are vulnerable to shifts in political direction. Institution building under certain projects has been very effective, especially in relation to national development banks. Project management has also suffered from conflicts between various implementing agencies such as banks, port authorities, irrigation departments etc. and the local fisheries department. This to some extent has been overcome by allowing all agencies to participate in the project through coordinating committees.

Supervision on the part of financing institutions has not been as effective as it should have been, particularly as regards technical coverage. Given that the responsibility for implementation of projects must be shouldered by Governments, financial institutions must respond rapidly to changes in special circumstances of the situation. Often there is a lack of continuity of supervision mission members, and certainly a deficiency in technical supervision. Lack of continuity of supervisory personnel has caused serious problems in projects where views and ideas of different people have had to be implemented, causing severe cost overruns, and operational problems.

It is, therefore, necessary that when projects are complex adequate technical and managerial guidance should be provided on a more regular basis. As an example all fisheries harbour design and works require substantial civil engineering and fisheries operational expertise to avoid costly errors and to minimise problems such as siltation, wave erosion, faulty breakwater designs etc. and to take full account of the needs and practices of fishermen, fishing vessel captains, fish traders and others who are to use the new port facilities.

23 Fishing vessel design and selection

Most fisheries lending to date has been directed at the design, construction and sale of fishing vessels to fishermen, often with the aim of replacing obsolete craft and modernising the fleet. The aim in most cases was the production of standard types of vessel to be built under competitive bidding, with better standards of construction. Choice of vessel design and engine specification are of paramount importance and experienced fishermen have their own ideas about vessel specifications, and therefore a standard design should be based on a thorough analysis of fishermens' needs, likes and dislikes, fishing methods, local sea conditions, kinds of boats fishermen are accustomed to using etc. If such an analysis is not made at the outset, the slightest mishap will destroy the confidence of the fishermen. In cases where there is a major departure from existing vessel design, such changes should be carried out before the project, and fishermens' acceptance of the new design features should be studied after a long period of trial fishing.

2.4 Fisheries resources and statistics

The state of knowledge about fish resources has been one of the major problems in project design, and has been raised as an issue very frequently during project preparation. The response of Governments, banks and other donors to this consideration has been quite inadequate. Catch forecasting is difficult, as there are a number of variables which can influence catch rates. However, economic performance depends largely on the ability to forecast catches. This in turn depends on the country's organisations, physical resources and scientific capacity for study of the resources, calculating biomass and sustainable yields and thereafter monitoring the impact of a progressive increase in fishing effort. Very few developing countries have the people or the means to perform this job properly and continuously. Bilateral and other donor assistance to develop this capacity in the developing countries has not been very successful. The process of fisheries resources evaluation and monitoring also depends on the existence of a reliable system for the collection and analysis of fisheries statistics covering catches and fishing effort. Often statistical coverage is inadequate and its reliability sospect. Therefore increased support should be given to innovative research programmes, resources assessment and management and for developing reliable statistics.

2.5 Fisheries credit and loan repayments

Providing loans in cash or in kind to fishermen, particularly to artisanal fishermen, has given rise to more difficulties than there have been for any other area of development. Most countries which have established fisheries credit schemes of one sort or another have experienced difficulties with repayments and high rates of arrears or default. A majority of lending to fishermen still continues to be handled by the informal market. There are advantages and disadvantages in this system, but overall it appears to provide more benefits to the lender than to the fishermen. Where

local banks were the instruments of lending, eventual losses were covered by cross-subsidization from the bank's more profitable operations or direct contract from the treasury.

The essential drawbacks of most fisheries credit programmes are that they impose rigidities both on the lenders and borrowers, and the lenders lack of understanding of the fishermen's way of life. The lenders problems are the interest and maturities that are not in line with market conditions and of margins which do not cover transaction costs and risks. On the borrowers side, there have been difficulties because compliance was required with cumbersome formalities to obtain a loan, with restrictions imposed on fishermen to accept, for example, a newly designed boat which they did not like.

Often the fishermen's way of life is not appreciated and taken into account. The main points to consider are that fishermen have to move to wherever the fishing is good. Their earnings derive from daily sales of a highly perishable catch and sometimes amount to a very small proportion of the value of their boats and gear. Their earnings fluctuate widely from one season of the year to another depending on seasonal changes in the abundance of fish. Their earnings depend on going to sea each day, and a day ashore, for whatever reasons, costs a day's income. Therefore, lending agencies should be more flexible in the frequency and amount of repayment instalments, and avoid insisting on regular semi-annual payments at the office, monitoring the accounts, requiring fishermen to make long journeys, sometimes at the loss of one or two days earnings. Another important factor is the banks' familiarity with the sector which is the key to making fisheries credit competitive, with credit to other activities. The better the sector is known the lower are the banks' transaction costs and risks, and the means to achieve this acquaintance with the sector include special training of staff, continuity of bank personnel dealing with the fishery sub-sector and clients in fishing communities, collective group lending, and the improvement of bio-economic and socio-economic data.

2.6 Environmental aspects

Environmental considerations enter fisheries projects in two ways: the influence that a changing environment has on fisheries and the manner in which fisheries projects in turn affect the environment. Regarding the former, fisheries like other natural resource exploitation are threatened by destruction of the natural habitat through industrialisation, urbanisation, oil pollution, destruction of coral reefs and agricultural intensification. On the other hand, fisheries projects can damage the environment by cutting mangroves for shrimp farms, changing currents and siltation patterns by breakwater construction, depleting resources by excess fishing effort, and indiscriminate use of fishing gear such as trawling. A changing environment increases project risks and in the past this aspect was not been given much consideration during feasibility studies. There are cases where, due to severe environmental changes, facilities have been abandoned, or had to be redesigned and constructed at very high costs. In the future, risks attributed to environmental factors will no doubt gain in relative importance. Virtually all preparation and appraisal of fisheries projects contains a detailed evaluation of this aspect, to indicate side effects of a project on other sectors and to make a judgement on the sustainability of the project itself. Some areas of environmental concerns are given below.

In capture fisheries the major direct negative environmental impact is over exploitation. Over

fishing not only degrades the target fish population, but affects other fish species linked to its food chain. Trawling is of special concern because dragging nets along the bottom can damage benthic communities. Damage to coral reefs by anchors and divers can be significant. Use of explosives and poison would killl fish indiscriminately and destroy habitats.

Clearing of forests and increased agricultural activity will affect the quantity and quality of water entering rivers and streams, which in turn will have an impact on aquatic populations. The construction of flood control measures and irrigation schemes interrupt seasonal flooding and alter water quality, which in turn has a direct impact on fish breeding and growth. In culture fisheries the most obvious effect is the clearing of land for the establishment of ponds. This can be destructive in coastal areas such as mangrove swamps and wetlands which are particularly sensitive to disruption. Water management in areas affected by fish ponds is crucial as ponds can reduce the water supplies available for competing demands such as irrigation, domestic or industrial uses. Other problems relate to depletion of wild fish populations when fingerlings from the wild have been indiscriminately fished, and the spread of disease. The discharge of effluent from processing into waters that cannot adequately dilute and disperse the waste can result in severe pollution.

Coastal areas are extremely important in the socio-economic development of the third world countries. The highly productive and complex ecosystems that characterise these areas provide support to a large number of economic activities and it is imperative that they are conserved.

2.7 Inadequate management framework

Most countries which have a substantial fishery possess a poor, if not totally inadequate, management framework with which to manage their fisheries resources. The ability to carry out this task, depends on the Country's organisation, physical and financial resources, and scientific capacity for studying the resources, calculating realistic biomass and productivity estimates and thereafter monitoring the impact of a progressive increase in the fishing effort to avoid any over exploitation. On regulations and enforcement, while most countries have an appropriate and legal framework, they lack institutional manpower and financial resources to enforce it.

3. CURRENT THINKING OF MAJOR BANKS ON THEIR SUPPORT TO THE SECTOR

The banks' support will be guided by the need to achieve a sustainable management regime, with respect to the fisheries resources. In this respect Banks will support the development of a policy and institutional framework including community based management, which will support the sustainable management of the fisheries resources. It would also support in-depth environmental impact assessment and mitigation measures for effective resource utilisation and management. Banks will promote active community involvement with the assistance of fishery associations, in projects which target small scale fisheries and encourage the delegation of the management of localised waters to relevant lOcal governments and communities. Banks will support strengthening of local and central government administrative capacities to monitor resource status, landings etc. as well as activities which contribute to amelioration of environmental pollution and resource degradation. They will promote rationalising fishing

activity, domestic or foreign, in offshore areas and establish resource management and information systems. Aquaculture, infrastructure development and reduction of post harvest losses would also be given high priority.