Fisheries and Economic Growth

FMSP Policy Brief 2

MRAG DFID

Key messages

- Fisheries are potential sources of significant wealth and, depending on their management and on wealth distribution, they contribute to both economic growth and poverty reduction.
- Economic contributions of industrial-scale fisheries are visible and include exports and revenues from licensing. In contrast, the economic importance of a small-scale fishery may only be recognised if it collapses and the resulting costs of food substitution and unemployment are felt.
- Developing countries face decisions about how best to realise the economic potential of all their fisheries. Do they develop their own fishing industry, or allow foreign fleets to exploit their resources? Do they prioritise resource rent from industrial fisheries, or the socio-economic benefits of smaller scale fisheries?
- Managing the resources in order to sustain their productivity is essential, otherwise any benefits will only be realised in the short term. The FMSP has developed a range of tools and guidelines to support fisheries managers in their decisions and to promote sustained economic growth from fisheries over the long term.

This brief examines the potential ways in which fisheries can contribute to economic growth at national and local levels, with examples from the Fisheries Management Science Programme (FMSP), and considers the implications for fisheries policy in developing countries. This brief is one of a series of five concerning fisheries and development issues produced by the FMSP.

Realising the economic value of fisheries

Fish and fish products are among the most widely traded goods worldwide. The global value of formally traded fish exports was US$58 billion in 2002. Nearly half of fisheries trade originates in developing countries and 85% of the total is destined for developed countries. Globally, developing countries are net exporters of fishery products and this is a major source of foreign exchange for many of them. Net export revenues from fish exports earned by developing countries reached US$17.7 billion in 2001, more than coffee, cocoa, sugar and tea combined [1].

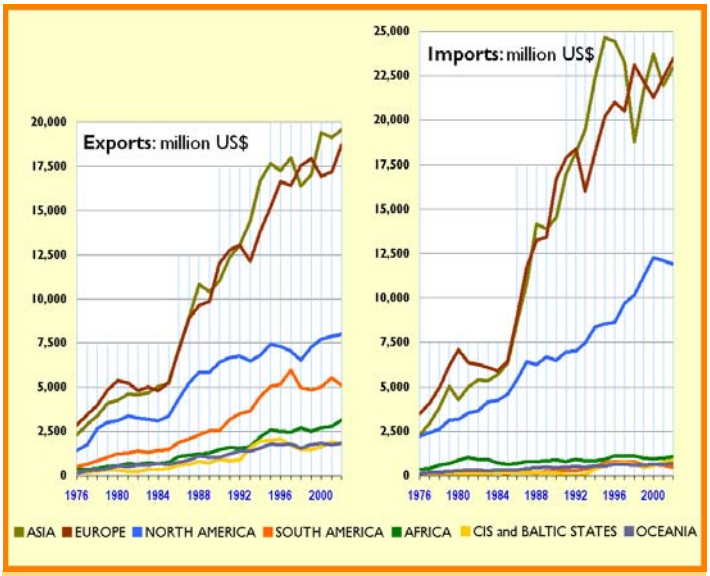

Figure 1: Value of fisheries imports and exports by continent, 1976 to 2002. Source: FAO

Industrial fisheries can generate large economic revenues for the state. This purse-seine vessel targets tuna in the Indian Ocean, a fishery valued at roughly US$2 to 3 billion annually (Indian Ocean Tuna Commission). Photo by: R. Gater

Export revenue is primarily derived from industrial fisheries, but both industrial and small-scale fisheries contribute to national economies in different ways.

Industrial fisheries provide:

- government revenue through the collection of taxes on fishing activities, such as licences, which can then be reinvested in the economy;
- revenues from the export of fish and fishery products;
- employment for fishing crews;
- protein for the population.

Although economic growth *per se* can reduce poverty through 'trickle down' benefits to the poor [2], more focussed 'pro-poor' actions can increase this impact. For industrial fisheries to contribute to poverty reduction, the distribution of the generated revenue must be addressed. This may be through provision of services for the wider population, or for actions specifically directed at the poorer segments of society.

Small-scale fisheries provide:

- employment to the large numbers of small-scale fishers often present in developing countries;
- cheap and accessible protein for the population, including the poor;
- food and job security to fishers themselves (see also Briefs 3 and 4).

Small-scale fisheries often involve large numbers of people, such as at this fish landing site in Mozambique. Photo by: S.F.Walmsley

Some of these benefits, particularly those related to small-scale fisheries, are difficult to quantify economically. This makes them less 'visible' to decision-makers, who consequently may not take into account their full importance when designing policies. The problem is compounded by the widespread lack of information about this sector (see also Brief 5).

When a fishery's importance is not recognised, or where the resource is seen as valuable but fishing activities are not controlled effectively, over-exploitation often follows, which may result in the collapse of the fishery. The expected cost if a fishery were to collapse can provide a measure of its value. This includes the cost of import substitution (e.g. import of replacement protein sources such as chicken), the social cost of increased unemployment (quantified in developed countries as the cost of unemployment benefit) and the loss of other livelihood benefits provided by fisheries.

In an analysis of 50 case studies, recognition of their value was identified as a key issue affecting fisheries management performance [3]. Sub-optimal use of fisheries means potential benefits to a country's development may be lost. This loss can be avoided by policy design and implementation that recognises the potential economic value of fisheries and their socio-economic importance.

The need for sustainable management

The productivity of a fish stock depends on the fish reproducing to replace the numbers extracted by fishers as well as those lost to predators, disease and age. If fishing pressure is too great and too many fish are extracted, the population can fall below the level at which it can replace itself and the fishery may collapse. Management must control extraction to ensure this does not happen.

When a fishery is heavily exploited, the chances of it collapsing are much higher. The productivity and resulting yield of the stock are reduced (Figure 2). The chance of the fishery collapsing can be reduced by decreasing the fishing effort, which may also increase the productivity. However, tackling over-exploitation involves a short term cost of reducing the amount of fishing in order to alleviate the pressure on fish stocks and allow them to recover. During the transitional period, economic benefits are reduced as the pressure on stocks is relieved, for example by reducing the number of boats given access to a fishery. However, management that maintains the productivity of a fish stock will increase total economic benefits in the longer term.

Effective stock assessment is intrinsic to responsible and sustainable fisheries management. The FMSP has developed a range of stock assessment tools, software applications and guidelines that support fisheries managers at various levels to develop and implement fishery management plans for both industrial and small-scale fisheries, and also to design strategies that maximise benefits from foreign fishing fleets.

Cost / Benefit	FISHING EFFORT (numbers of people, boats, gears etc)		
	LOW	**MEDIUM**	**HIGH**
Biological	High biodiversity; many large fish		Overfishing, loss of biodiversity, greater risk of stock collapse
Social		Maximum food provision	Large numbers of people employed
			Resource user conflicts
Economic	Efficient: high return (in exports and profits) per unit effort		Inefficient: low return per unit effort , and greater risk of stock collapse
Management	The costs of regulating access can be high		Minimum management costs but effects undesirable
Trend in open access systems →			

Figure 2: Biological, social, economic and management costs and benefits from different levels of fishing effort

Industrial fisheries – maximising the benefits

Developing countries face tough decisions on how best to benefit from their fisheries resources. They must decide on trade-offs between maximising revenue from fisheries exports, or ensuring their fisheries provide food for the population.

Where income is earned from exports, this can be used to import cheaper protein sources, or to invest in improving services for the population, such as health, education and transport infrastructure.

Industrial fisheries can provide significant benefits when managed effectively. Their main contribution is often through economic revenue to the state from licences and exports, the latter of which can be maximised through value-added products. However, effective management is essential to sustain these benefits.

In those cases where developing countries intend to develop an industrial fishery, they must decide to what extent their own fishing industries should be developed, or how far they can benefit from licensing foreign fleets. Sometimes developing countries can generate more financial resources if they allow the fishing to be done by foreign fishers. However, this requires them to decide how many boats to licence, at what level licence fees should be set and what fines should be imposed for illegal fishing. It also requires them to carry out surveillance and control activities to catch illegal, unreported and unregulated (IUU) fishing. FMSP has developed guidance to help developing countries decide on these issues (see Box 1).

Box 1: FMSP and control of foreign fishing

The FMSP commissioned a series of projects looking at the potential economic benefits to national economies from licensing foreign vessels fishing within their national Exclusive Economic Zones (EEZs). Economic models were developed that assess the benefits of foreign fishing from the sale of licences, and the costs of developing monitoring, control and surveillance strategies. These models allow coastal states to explore their options and identify an optimal combination of fee level, surveillance expenditure and magnitude of legal penalties that would minimise the risk of illegal fishing and maximise the benefits accruing to the state.

Case studies indicated that in the short term, total state revenue from foreign fishers is more likely to be gained from improving compliance and increasing the number of licences sold, rather than increasing the licence fee. However, over the medium to long-term the priority should be to acquire more precise data on the variability and value of the resources taken within the EEZ, by both licensed and illegal vessels, in order to improve management of the stock.

A case study in the Seychelles that applied the FMSP model to the tuna long-line fishery resulted in increases in revenue of up to US$ 2 million per year, four times the previous income from the fishery.

Small-scale fisheries – supporting local incomes

Small-scale fisheries support a wide range of livelihood benefits for fishers, their families, fish traders and the wider community (see Brief 4). They can also act as a ‘safety net’, providing a source of income when other employment opportunities are limited. Although small-scale fisheries do not provide the visible economic benefits to national economies that industrial fisheries do, their contribution to local economies should not be underestimated. Small-scale fisheries provide employment and a source of income for some 22 million people worldwide, the majority in developing countries.

Data and information about the sector is often lacking because it is difficult to collect. This means the contribution to incomes and food security is underestimated at the national level. National statistics on fish protein consumption per capita are usually based on official fish production and imports minus exports, and do not take account of the often significant production from small-scale fisheries that is often not registered in national statistics systems.

Incomes and food security of people dependent on small-scale fisheries can sometimes be increased through enhancement of a fishery. For example, the release of hatchery fish (stocking) is widely used in inland fisheries and can generate significant benefits for fishing communities. Stocking may be implemented with the aim of increasing production, thus increasing the amount of food available. Alternatively, different species of fish with a higher market value may be stocked, with the aim of increasing income from the fishery.

Women processing the fish catch before taking it to market. Small-scale fisheries like this one provide benefits to fishers, fish traders, processors, distributors and consumers. Photo by S.F.Walmsley

FMSP has contributed to increasing economic benefits from small-scale inland, marine, capture and enhancement fisheries through supporting fisheries managers in maximising production while ensuring sustainability. FMSP has also developed tools and guidelines for small-scale fisheries management and enhancement that have increased household food security and community income (see Box 2).

Priorities for future work

Fisheries can provide significant economic benefits at national and local levels, but the existing and potential economic contributions of industrial and small-scale fisheries are still rarely fully recognised. Further support is needed in the following areas:

- Encouraging recognition of the contributions that fisheries make to national economic growth as well as to local livelihoods and employment.
- Developing coherent policies that maximise the benefits that developing countries obtain from their fisheries.
- Establishing governance structures, and associated data collection and information systems, that can improve the decision-making and management process.
- Supporting small-scale fisheries to improve their management and enhance productivity.

References

[1] FAO 2003. Status and Important Recent Events Concerning International trade in Fishery Products Including the World Trade Organization, Committee on Fisheries: Sub-Committee on Fish Trade: Ninth Session; Bremen, 10-14 February.

[2] Dollar, D. & Kraay, A. 2001. *Growth is good for the poor.* Washington, DC: World Bank Research Group.

[3] SIFAR/FAO 2003. Feasibility Study Report for a proposed programme on "strengthening fisheries management in African, Caribbean and Pacific countries" (ACP Fish IIFSR).

Box 2: FMSP tools to support small-scale fisheries

FMSP tools to support small-scale fisheries management and enhancement include quantitative assessment methods for optimising stocking and harvesting regimes for fisheries that are based on fish culture, and fish aggregating devices to support increased revenues for small-scale marine fisheries.

Some examples are:

- In Lao PDR, villages doubled their profits through stocking juvenile fish, increasing funds available for village development and providing additional benefits for poorer households (Project R7335).
- In India, species that do not require regular re-stocking are important to the poor, and FMSP strategies were successful in increasing their production, thus ensuring food supply for poorer households (Project R7917).
- In Indonesia, river reserves where fishing was forbidden were established according to identification and selection criteria developed by FMSP, and resulted in higher daily catches (Project R7043).
- In Tanzania, fish aggregating devices (FADs), which attract fish to them and provide a focus for fishing effort, gave small-scale fishers the opportunity to target higher-value species including pelagics such as tuna, that they would not otherwise have access to (Project R8331).
- A methodology for Participatory Fisheries Stock Assessment (ParFish), enables stock assessments to be carried out for fisheries where data are limited, and takes into consideration the fishers' socio-economic priorities in identifying appropriate levels of control (Project R8464).

For more information:

Further information about fisheries and development issues can be obtained from the Fisheries Management Science Programme (FMSP) and Marine Resources Assessment Group (MRAG) Ltd.

Fisheries Management Science Programme:

The FMSP website has a searchable database where full-text project documents and reports can be downloaded:

www.fmsp.org.uk

Marine Resources Assessment Group Ltd:

18 Queen Street
London
W1J 5PN
United Kingdom

Tel: +44 (0) 20 7255 7755
Fax: +44 (0) 20 7499 5388
Email: enquiry@mrag.co.uk
Web: www.mrag.co.uk

This FMSP Policy Brief is one of a series of five. Other briefs in this series are:

1. Fisheries and Poverty Reduction
3. Fisheries and Food Security
4. Fisheries and Livelihoods
5. Fisheries and Governance

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