FISHERIES SUBSIDIES IN AN LDC: EXPERIENCE OF BANGLADESH

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Objective

The objective of the study is to review Bangladesh's existing trade and trade related policies in the marine fisheries sector as well as their impacts, while also assessing the state of the marine fisheries sector in Bangladesh in quantitative terms. On the basis of the results of the quantitative exercise, the study presents a series of practical policy proposals to promote the sustainable management of fisheries in Bangladesh.

The study adopted three approaches. The first is the historical review of the policy evolution, regulatory framework, the intervening factors and the consequences. The second approach is the performing a statistical analysis on the basis of a quantitative technique to examine the sustainability of the sector. The third one is the participatory approach, which includes consultation with a broad cross-section of stakeholders.

Data has been collected both from primary and secondary sources. Filed level data from four marine fishing sites in the Chittagong coastal district. Information have also been gathered through debriefing of leaders of the trade bodies such as Bangladesh Marine Fisheries Association (BMFA), Bangladesh Frozen Food Exporters Association (BFFEA), Chittagong Chamber of Commerce and Industries (CCCI) and Apex Foods (a leading private enterprise).

Secondary data were collected from published government documents of the relevant ministries and departments, in addition to other sources. The dearth of adequate

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information from the secondary sources led the study to rely, to a large measure, on primary sources.

Marine Fisheries in Bangladesh

The economic potential of the marine fisheries sector in Bangladesh is considered to be enormous in recognition of the country's 710 kilometre coastline and Exclusive Economic Zone, which spreads over an area of 164,000 square kilometres. Marine capture currently accounts for about 20 percent of the total fish production in Bangladesh. The remaining amount is inland capture and culture fish. The production of marine fish grew at an average annual rate of roughly 3.6 percent during the 1990s.

The marine fisheries sector is a source of employment and income for a large sector of the population, particularly in rural areas. According to the Ministry of Fisheries and Livestock (MOFL), employment in this sector has increased from 123,562 in 1984 to 916,539 in 1999, implying that the annual growth of employment was 14.3 per cent during 1984-1999 (GOB, 2001a). This growth rate is faster than that of marine fisheries production, which was 3.9 percent annually between 1984-1999, and indicates that an increasing number of people have found their livelihoods in the sector. The fast employment growth in the sector potentially results from limited employment opportunities in other sectors. The contribution of the fisheries sector to total domestic export earnings is also significant, representing about 5 t0 6 per cent (Table 1). Unfortunately, no direct estimate of the country's export of marine fish is readily available. The export of fishery products such as frozen shrimp, dry fish, salted fish, fish maw, shark-fin, tortoise and turtles is increasingly emerging as a prominent economic activity in Bangladesh, amounting to US $303 million in the fiscal year 2002, or 4.76 per cent of total exports.

Table 1
Export of Fish and Fish Products, and its share in Total Export Earnings

Year	*Total Fish Exports (mt)*	*Value (taka mln)*	*Value ($ mln)*	*Percentage if total export earnings*
1992	22080	5243.4	137.44	6.91

1993	26607	7002.9	178.91	7.57
1994	31835	9209.6	230.24	9.12
1995	41686	13069.4	325.10	9.38
1996	38929	13409.4	328.34	8.44
1997	41549	14574.1	341.31	7.75
1998	30158	13878.1	305.28	5.93
1999	28477	13793.3	287.00	5.41
2000	35134	17813.2	354.07	6.28
2001	38988	20328.0	376.72	5.77
2002	41482	16371.0	303.39	4.76

Source: DOF, 2002.

In Bangladesh production in the marine fisheries sector is generally carried out by small mechanised and non-mechanised boats. A current calculation by the MOFL (GOB, 2001a) suggests that there are about 21,830 mechanised and 28,707 non-mechanised boats engaged in fishing in the country. In addition, 67 officially approved trawlers are conducting industrial fishing, of which 48 are engaged in shrimp fishing and the remaining 19 in other forms of fishing (GOB, 2001a).

Trade Policies in Bangladesh

Bangladesh has been an active reformer of trade policy during the mid 1980s and early 1990s. Trade reforms in Bangladesh have primarily entailed: (a) reducing tariff levels; (b) narrowing differences among tariffs; (c) dismantling import bans; and (d) eliminating import-quota restrictions on most items. The shift towards a more liberal trade policy regime beginning in the 1990s has contributed to the expansion of the export sector. During this time, real growth in exports was about 14 percent, or about three times the average real GDP growth rate. Bangladesh's Export Policy provoked important structural shifts in the country's exports, with respect to both products and markets. The share of non-traditional exports that include readymade garments, frozen foods, shrimp and leather products registered a secular rise compared to traditional exports such as raw jute, jute products, bulk tea and raw leather. The ratio between traditional and non-traditional exports changed from 40:60 to 10:90, between 1991 and 2001.

Policies for the Marine Fisheries Sector

According to both fishermen and fish exporters in Bangladesh, the sector does not receive any special benefit from the government. The only identifiable incentive given to the sector is a value added tax refund from fuel at the rate of 15 percent per litre, or US $ 0.04, subsequent to the export of fish (based on 1998 diesel prices of taka 12.67 per litre) (GOB, 2001a). However, the sector does enjoy general incentives applied to the export sector as a whole, which include duty-free imports of capital machinery and raw materials, fiscal incentives for export, income tax-rebates, fast customs clearance and subsidised credit.

However, exporters of frozen food and fisheries products in Bangladesh stress that fishing is different from other export-oriented industries, and that treatment accorded to these sectors, which is similar to other sectors, will not generate equal benefits. For example, in the case of an exporting factory that produces ready-made garments, the producer and exporter may be the same entity that benefits from a lower bank rate. In the case of marine fisheries, the exporter and fisherman are two different entities. Consequently, the beneficiary of incentives is the exporter but not the fisherman who is the primary producer. Furthermore, it is often the fisherman who needs the support more than the exporter, namely to support the catch and preservation of exportable fish. Small fishermen do not have access to credit facilities provided by the government. They must instead rely on informal sources, such as relatives or other money lenders for financial support with a very high interest rate and on condition that they will sell their fish at a lower price to those who provide the needed loans.

Due to the absence of fish-procurement centres, fishermen are forced to sell their fish to middlemen immediately following the catch at relatively low prices. The procurement system is segmented as well. Due to poor dock security and the risk of robbery, most exporters do not buy fish on site from fishermen. Moreover, the existence of a class of middlemen delays the procurement process by six to eight hours, during which time the freshness of the fish deteriorates sometimes even to the point of decay. Bangladesh is thus unable to sell into the lucrative Japanese market for fresh fish. Similarly, Bangladesh

has failed to break into the markets of Eastern Asia, where there is high demand for live fish, due to the lack of appropriate technology to keep the fish alive for extended periods. There is no cold storage near the sea and the price of ice is exorbitantly high, sometimes two to three times more than the actual cost. Fishing trawlers are also inadequately equipped with cooling facilities. Most of the trawlers are old and are purchased in second-hand condition.

The exporters maintain that due to lack of proper infrastructural facilities, a large amount of relatively cheap fish is being wasted. It is a very common practice in Bangladesh that when fishermen catch high-value fish, they throw away low-value fish, as there is not an adequate supply of cold storage facilities near the beaches to preserve both. According to the Bangladesh Frozen Food Exporters Association, the amount of low-value fish wasted in this manner ranges from 35,000 to 40,000 tonnes a year.

The government can take initiatives to reduce this waste in two ways: firstly, by establishing the required number of cold storage facilities and, secondly, by increasing the presence of well-equipped vessels. At present, there are an insufficient number of such vessels, as the ownership and licensing procedure of mechanised boats are restricted mainly in order to control the smuggling of commodities. It has furthermore been reported by certain people interviewed that some businessmen are avoiding customs duties by transporting commodities in fishing trawlers. The boats involved in fishing are mostly country boats which are not equipped with facilities required to meet occupational safety standards, much less the quality and food-safety standards of importers. Many of these lack even a radio to listen to weather reports.

Estimation of Exploitation Status of the Marine Fisheries

A bio-economic model based on that developed by Schaefer (1954; 1957) is used to estimate sustainable economic rent and the share of the subsidy in total marine fisheries GDP. On the basis of these results, the study presents a series of practical policy proposals to promote the sustainable management of fisheries in Bangladesh. The study has also estimated the sustainable production level in the marine fishery sector.

Though the Schaefer model is applicable only to single species stocks, this study has applied it to explain the dynamics of the marine fisheries sector as a whole. The assumption behind doing this is that the effort and yield level are the same for all types of species. In order to estimate the effort and yield at the maximum sustainable yield (MSY) for each species, it requires data on the current amount of effort exerted. In the absence of such information, values can be assigned to the level of effort in terms of horse power for each type of specie according to the share of catch, assuming that the effort level per unit of each type of fish stock is the same for all types of species. In such a situation the exercise would have to be performed separately for all types of species making the estimation complicated. In order to avoid such complications the study chose to apply the Schaefer model for the whole marine fisheries sector keeping in mind that the results are only indicative.

Despite these limitations, the model addresses the rent dissipation issue and provides a relatively uncomplicated framework for an econometric study of catch and effort data. The reason for using the model in this study is additionally that it can be conducted with a limited set of data, as is the case in the fishery sector. The model has been applied by a linear regression of the yield function using time-series data for the period 1984 to 1998.

The MSY in this model is reached when the annual yield is 642,130 tonnes at an effort of 101,442 horsepower. The estimated catch per unit of effort, or horsepower, is about 6.33 tonnes while economic rent per unit of effort is about taka 205 million (US $ 4.27 million). The actual catch (310,000 tonnes) is estimated to be just under half of the MSY.

Table 2
Estimated and Actual Results

MSY: 642,130 tonnes	Actual Yield, 1998: 310,000 tonnes (48.27% of MSY yield)
Effort at MSY: 101,442 horsepower	Actual Effort, 1998: 71,184 horsepower (70% of MSY effort)
Total Cost at MSY: US$ 337.7 mln	Almost half of total MSY revenue (US$ 648.8 mln)
Total Revenue at MSY: US$ 648.8 mln	2 times higher than the total export of fish and fish products (US 287 mln, in 1998)
Economic Rent at MSY: US$ 311 mln	4 times higher than marine fisheries GDP (US $75.80), 1998
MSY Yield per unit of Effort: 6.32 tonnes	Actual Yield per unit of Effort: 4.35 tonnes
MSY Rent per unit of Effort: US$ 4.27 mln	Actual Rent per unit of Effort: US$ 3.9 mln

The finding is interesting, as it would imply that even when the issue of sustainability is accounted for in estimating the potential limits of exploitation, the present level of exploitation of marine fishery resources in Bangladesh could theoretically be doubled. The results of the study also coincide with the views held by the MOFL that pelagic and deep-sea fishery resources in Bangladesh are still abundant (GOB, 2001b).

However, given the criticality of the policy implications which would emerge from such a conclusion, the interpretation of the analytical results needs to be made with due caution. As was pointed out earlier, the analysis had to be based on limited information and suffered from a lack of comprehensive longitudinal data. This has constrained the robustness of the results. In parallel, the exclusive use of the MSY model (in absence of any other appropriate model) applied to the whole marine fisheries sector, has also considerably constrained the rigor of the analysis.

Although our findings allude to the possibility of doubling of the present level of exploitation of marine fishery resources, our analysis cannot claim to answer whether

increasing subsidies in terms of attaining this enhanced level of production would either be the best or the most effective policy. The level of subsidies, as was pointed out earlier, is not significant when expressed in absolute terms and this level has also not undergone any noticeable change over recent years. Thus it is difficult to establish any causal link between subsidies and the level of production in the context of Bangladesh fisheries sector.

The study indicates that subsidies have not played a significant role in enhancing marine fishing effort in recent years. One could argue that the fish effort could have been lower in the absence of subsidies, though this is difficult to prove. On the other hand, trade policies have had important implications on employment, income and overall economic activities. As was pointed out earlier, trade policies pursued by Bangladesh in the 1990s removed the anti-export bias of previous economic policies and stimulated export-oriented activities in the country. In the fisheries sector, the rise of shrimp exports, and to a lesser extent other frozen fish, are direct outcomes of these trade related policies and incentives. It should, however, be noted here that the rise of commercial fishing, a direct result of trade policy incentives, has had negative implications on the lives and livelihoods of artisanal communities. In many coastal areas commercial fishery farms have displaced traditional rice farmers, and led to deforestation, increased salinity, health hazards, reduction in land fertility and bio-diversity loss. These negative effects, particularly related to export-oriented shrimp culture have been well documented in several studies (UNEP, 1999).

Thus, while the analysis would tend to indicate that in the given context of Bangladesh, there is further scope for sustainable exploitation of marine fisheries, the extent to which the relevant policy conclusions should be derived from this needs to be carefully evaluated.

Policies to Promote Sustainable Management

Given the criticality of the policy implications that emerge from this conclusion, the interpretation of the analytical results needs to be made with due caution. The analysis had to be based on limited information and suffered from a lack of comprehensive longitudinal data, which constrains the robustness of the results. Although our findings

allude to the possibility of doubling the present level of resource exploitation in marine fisheries, our analysis cannot claim to answer whether increasing subsidies in terms of attaining this enhanced level of production would either be the best or the most effective policy. The level of subsidies, as was pointed out earlier, is not significant when expressed in absolute terms and this level has also not undergone any noticeable change over recent years. Thus it is difficult to establish any causal link between subsidies and the level of production in the context of the Bangladesh fisheries sector.

The study does reveal that the general incentive package initiated under Bangladesh's trade liberalisation programme has, until now, not had any detrimental effect on the country's fishing capacity and fishing practices. The findings of the study show that the potential revenue from the marine fisheries sector could be increased. This calls for the implementation of a proper management regime to ensure that the substantial potential within the sector be exploited on a sustainable basis to the benefit of a large segment of the population whose livelihoods are dependent on fisheries production. In achieving this objective, a number of specific measures need to be undertaken. Most importantly, these include:

First, the management information system for the fisheries sector should be improved in order to dynamically assess the state of the sector, and the costs and benefits resulting from adjustments in fishing capacity. The marine data collection and research cell should be strengthened to provide the government with the necessary information to manage and optimize catch from trawl as well as inshore fishing.

Second, the management of the fisheries sector should be informed by an integrated approach that takes into account the economic, environmental and social factors affecting fish supply, fish stock and fishing capacity. For example, prior to any initiative to increase productivity through modernization of the sector, it should first be understood what integrated impacts might result, such as environmental degradation and employment loss.

Third, given the sector's low level of development and lack of any effective guiding mechanism, there is a case for time-limited government support to promote the sector's sustainable management. This could be in the form of developing supportive marine sector infrastructure, such as port and docking facilities, cold storage facilities, or repair and maintenance services. Additionally, in order to avoid overfishing in the long-run Bangladesh should review regularly the state of its fish stocks. Procurement, processing and marketing support programmes for the small and marginal fishermen involved in marine fishing could also help reduce rent-seeking behaviour within the market. The country should also encourage dissemination of improved fishing practices to minimize by-catch, waste and discard. To this end, investment should also be directed to necessary trade-supportive infrastructure.

Fourth, Bangladesh needs to strengthen its monitoring, control and surveillance capacity in its territorial water with a view to stopping illegal, unregulated and under-reported fishing as these affect sustainability.

Fifth, the sustainable exploitation of fishery resources can only be ensured through close regional cooperation since fisheries resources, in essence, are 'regional commons' among neighbouring countries. The design of a regional strategy to exploit the common marine resources of the Bay of Bengal could be helpful in this regard.

Impact of the Study and Follow Up at CPD

The findings of the present study have been shared by the stakeholders, generated new knowledge and provided analytical insights, which subsequently went into policy recommendations for the government in various forms. The present study on marine fisheries has been able to create some amount of awareness among the policy makers and other stakeholders, which is reflected through the importance put in on the fisheries sector in some of the policy studies and strategies. The Poverty Reduction Strategy (PRSP) has underscored the importance of fishery resources as one of the most important exhaustible natural resources. PRSP is being formulated currently by the government of Bangladesh (GOB) with a broad policy framework for national development. The process

of this policy formulation involves consultation with stakeholder. Members of the Centre for Policy Dialogue (CPD) have been providing inputs to the process on various issues including fisheries. The Fisheries Sector Review 2003 has made a number of policy suggestions on marine fisheries. A number of new fisheries projects undertaken by the Department of Fisheries (DOF) have put emphasis on community based fisheries management with focus on livelihood aspects of the poor fishermen and environmental dimensions of fisheries production.

CPD has been providing policy inputs and advice to government agencies on various trade, environment and fisheries issues. CPD's researchers are invited to serve as members of the WTO Advisory Committee set up by the Ministry of Commerce and are providing policy support on WTO related issues including fisheries subsidies. CPD is also active member of the various committees at the ministries of Environment, Agriculture, and Fisheries and Livestock to advise on policy issues.

A Task Force was formed in 2003 involving a number of experts in order to address issues of urgent public concern where concrete and doable policy agenda could be identified for implementation. The task force on rural economy has consulted the UNEP/CPD study on marine fisheries in order to formulate strategies for the fisheries sector.

CPD collaborates with fish related apex trade bodies such as BFFEA, Shrimp Farmers' Association and BMFA. This include participation in seminars organised by these bodies, participation of the trade bodies at CPD's dialogues, providing data and information on fisheries related issues, and helping them formulate strategic response to fisheries related developments.

As part of its continued interest on issues related to the fisheries sector recently CPD has accomplished a study on the impact of fish trade liberalisation which examined the possible impacts of Sanitary and Phyto Sanitary (SPS) measures and eco-labeling on shrimp exports from Bangladesh. On the basis of both primary and secondary

information the study has analysed the possible effects of trade liberalisation process on the people who are directly involved in the industry including farmers, fishermen and processors (Khatun, 2004). CPD remains interested to carry out further work on the fisheries sector and help the policy makers in formulating appropriate policy for sustainable development of the sector.

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