

# Redirecting Benefits to Genuine Fishers: Bangladesh's New Fisheries Management Policy

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## Background

Bangladesh is a deltaic country of the Ganges and Brahmaputra river systems situated at the Himalayan foothills off the Bay of Bengal (Fig. 1). The deltaic topography, changing courses of rivers and yearly occurring floods have resulted in four major types of fishing environments. These are: 1) flowing rivers; 2) dead rivers or ox-bow lakes (baors) resulting from the loss of flow when rivers change course; 3) beels and haors or natural depressions in lowlying deltaic topography; and 4) floodlands that get inundated during monsoon rains.

Excluding the floodlands, these water-regimes number more than 10,000 and occupy over 8% (12,200 km<sup>2</sup>) of Bangladesh. Floodlands reach 5.5 million ha during the peak flood season (July-September). Over 60% of the country's yearly supply of fish come from these environments, harvested mainly by fishers drawn largely from the poor and landless population. The government itself earns some one million dollars per year in revenues by leasing out harvest rights in these fisheries.

Historically, two distinct classes of people were involved in the organization of fishing activities: the ordinary fishers who depend on fishing for food, income and livelihood; and an entrepreneurial class engaged in bidding for lease and supplying capital at usurious rates of interest to fishers.

Under the traditional system of management, individuals not directly connected to the fishery lease fishing rights from the government and then resell them to ordinary fishers (Fig. 2a). Both the government, as seller of the lease, and the entrepreneurial class (leaseholders and their agents), as sellers of fishing rights to ordinary fishers on cost-plus terms, were able to secure their interests under this system. On the other hand, the system tended to be biased against the welfare of the fishers as well as against the sustainability of fishery resources. These effects were evident from the gradual deterioration of the socioeconomic condition of fisher communities and the declining catches.

## Change of Policy - Objectives and Guidelines

In 1986 the government decided to pursue a new fisheries management policy (NFMP) that would allow fishing access only to the genuine fishers with the following main objectives: to free the fishers from exploitation by

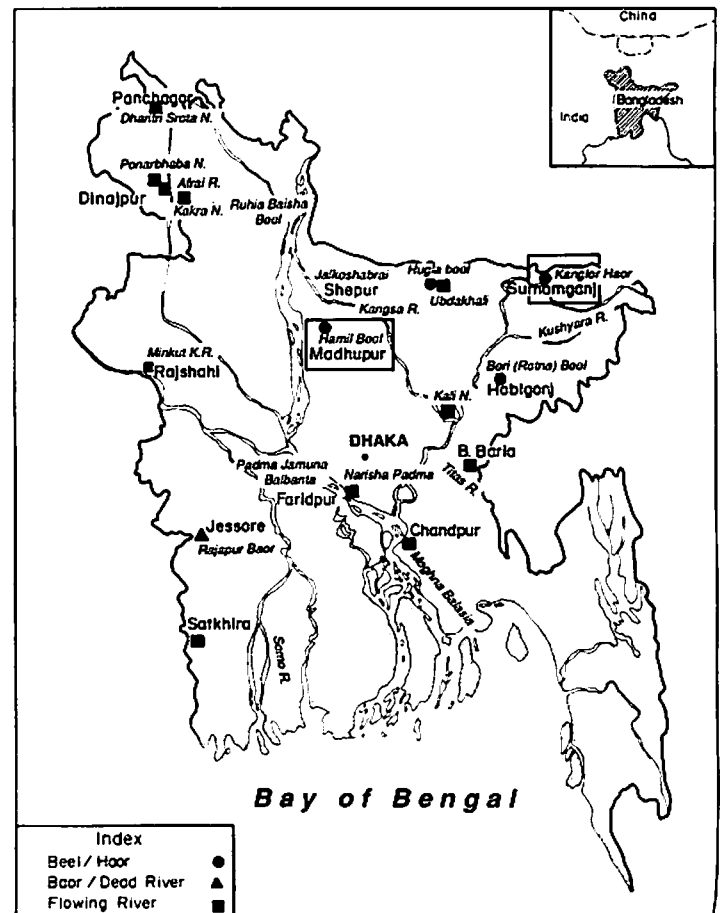
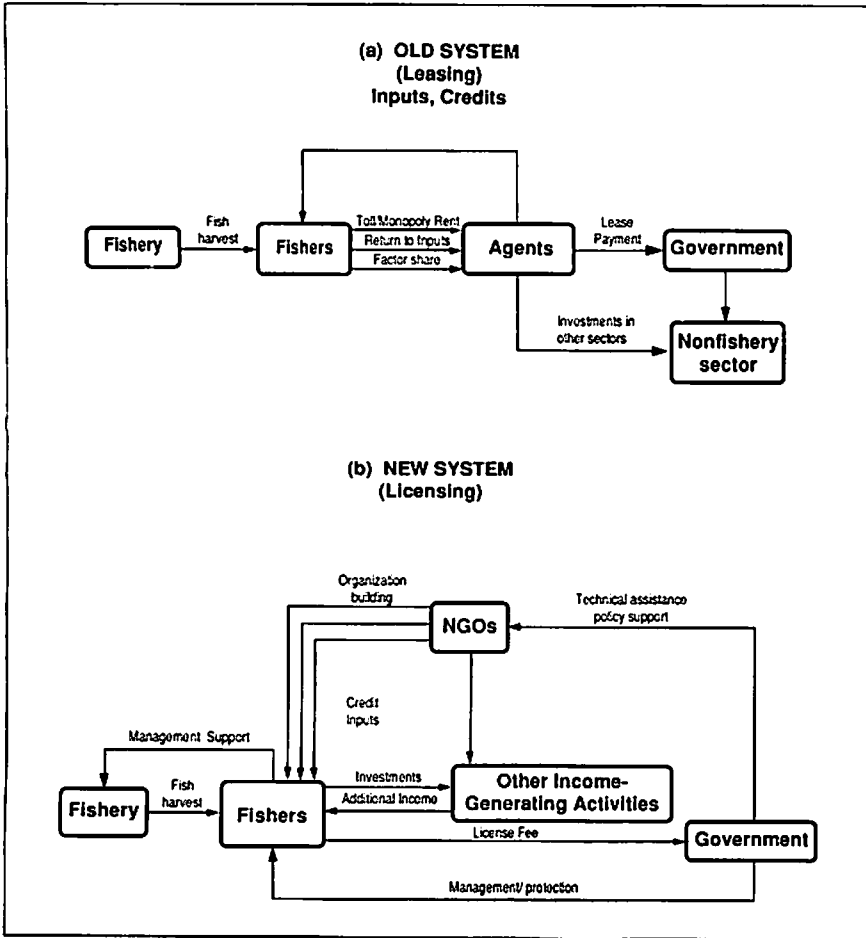


Fig. 1. Locations of various waterbodies under the project improved management of openwater fisheries in Bangladesh.



**Fig. 2. Production relations, benefit distribution and management implications: Old (leasing) vs. new (licensing) systems of fisheries management in Bangladesh.**

the agents, leaseholders and financiers; to redirect the major benefits of the fisheries to the genuine fishers; and to ensure the conservation and propagation of fisheries resources.

The main idea of the NFMP was to abolish gradually the system of *leasing* fishing rights in open auction and replace it with a gear-specific *licensing* system. Accordingly, in 1986, ten waterbodies covering rivers, baors and haors were transferred under NFMP for direct licensing. This was extended to 150 waterbodies in 1988. Presently, about 300 waterbodies have been placed under the NFMP.

**Implications of the NFMP**

**Conservation**

Under the NFMP, the government is expected to provide direct management support for conservation of resources. Emphasis has been given on the motivation and organization building of fishers to ensure their participation in conservation. As such, effective measures to conserve

and protect resources will be easier to implement.

**Efficiency**

Efficiency will be increased under NFMP as efforts are expected to be diverted into upstream (input supply) and downstream (postharvest) activities to reduce uneconomic investment in fishing.

**Redistribution**

Implementation of NFMP will enable fishers to become direct beneficiaries to fishing. Necessary institutional support can protect fishers from payment of usurious rates from borrowed capital and equipment.

**Early Experiments in Management Under the New Policy**

In the absence of any operational model, the Government of Bangladesh in collaboration with ICLARM and with support from the Ford Foundation, has been experimenting with several fisheries management strategies to achieve best the objectives of NFMP. Three strategies were chosen for testing in nine fisheries sites that were brought under the NFMP in 1986:

- Department of Fisheries (DOF) providing direct fishing license and implementing fishing regulations with additional manpower and infrastructural inputs;
- DOF providing fishing licenses and implementing fishing regulations without additional manpower or infrastructural inputs; and
- Nongovernment Organizations (NGOs) providing management inputs and credit support to licensed fishers through group organization.

In the first two cases, the assumption was that collateral-free credit for fishing inputs would be readily available to fishers from rural banking institutions such as the Bangladesh Krishi Bank. These strategies were compared with the traditional agent-managed fishers under leasing arrangements administered through the Ministry of Lands.

Results reported during the initial years of performance monitoring showed a better economic performance in terms of returns to capital, labor and profit by the fishing units operating under licensing compared to those under leasing. Unfortunately, licensing management through NGOs and group organizations of fishers could not be implemented due to difficulties in resolving the transfer of authority to NGO management. Therefore, no conclusive results on NGO management could be drawn. However,

the case for NGO involvement, particularly in the provision of credit and creation of motivation and awareness, remains strong.

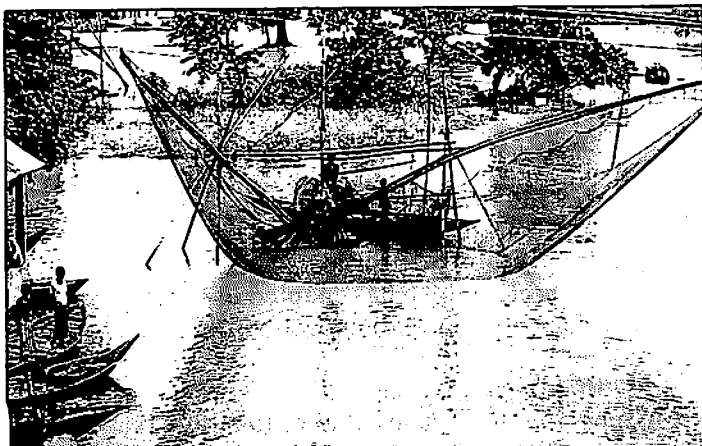
Three main problems were found to remain:

- Licensed fishers still needed to rely on agents for equipment (e.g., boat and gear) and operating capital in the absence of institutional financing. As a result, a disproportionate share of revenue went to compensate the owners of capital.
- In the absence of any adequate assessment of the exploitable biomass and allowable fishing pressure in various fisheries and fishing environments, the question of limiting fishing pressure to a sustained level of bioeconomic production remained unsolved.
- There remains a lack of alternative and supplementary income-generating sources to divert pressure on direct fishing, which is generally in excess of what is required to sustain the current level of production.

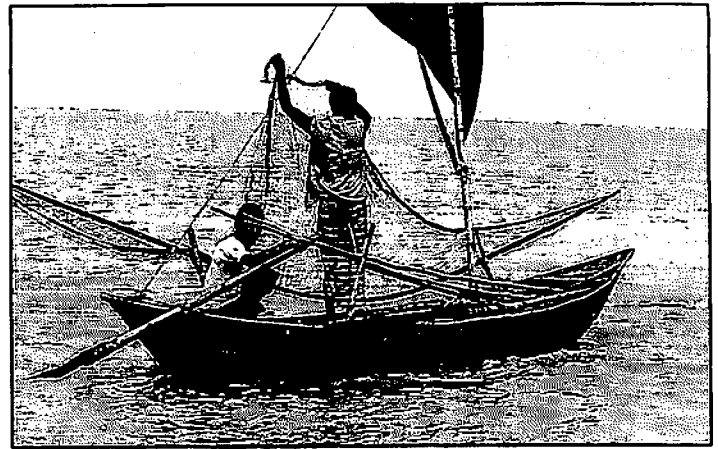
### Current Experiments

Based on the results and feedback from these early experiments, a new phase called Improved Management of Openwater Fisheries (IMOF) is currently being implemented by DOF, again with technical assistance and funding from ICLARM and the Ford Foundation, respectively. In this phase, the government seeks to work in partnership with NGOs and the fishing communities in order to: increase participation of local fishers in managing the fisheries; utilize NGO resources for input support to fishers in place of agents; and mobilize NGO experience in human development training and organization building to create alternative or supplementary income opportunities for fishers and thereby reduce pressure on the fisheries.

The current phase also expands the coverage from the nine sites in the first phase to 21 sites, thus including a wider range of fishing environments all over the country (Fig. 1).



*Small-scale fishing in the Jamuna river in Bangladesh.*



*A fisher setting liftnet in a river in Manikgong district, Bangladesh.*

Modified production relations, benefit distribution and management of fisheries under NFMP through the involvement of NGOs are shown in Fig. 2(b).

Emphasis is also being given in this phase to improve the understanding on the biological and socioeconomic dynamics of fisheries in various openwater environments. Studies of population dynamics of few important species, currently underway, within the designated water environments (see article on hilsa, p. 34), including training of national scientists on methods of such studies will provide helpful guidance to setting up limits of exploitations in the future. Similarly, socioeconomic studies, currently being conducted, on problems and opportunities in fishing communities will prove useful for human development and community-based management planning for inland fisheries of Bangladesh.

### Emerging Trends

Several trends have appeared in apparent response to the incentives associated with the current policy. In Kanglar Haor, for example, cooperative arrangements have evolved both to safeguard the fisheries from overexploitation as well as to spread the benefits from fisheries harvest and conservation (Fig. 1). Fishers are practicing self-regulation; they are adhering to a fishing schedule arrived at by consensus and recognized to be consistent with harvest rates that will maintain the productive capacity of the waterbody. They have also agreed to compensate for the cost of inputs according to their marginal contributions and any excess income is distributed equally to the group members as dividends from the fisheries stock.

A similar trend of self-regulation has been observed in the beel environment. In Hamil Beel (Fig. 1), where more than 150 fishers operate in a 30-ha water area, the practice of seasonal closure of fisheries sites emerged through a process of consensus. Fishing areas are closed during the early monsoon season to allow the fish to breed and to

allow the young to grow to market size. Fishers in organized groups have also started artificial stocking to enhance and replenish fish stocks in the beel.

The involvement of NGOs is expected to strengthen further and support these trends. Their role in organization building, skills development, credit financing, and creating alternative and supplementary income-generating activities would enable fishers to practice better management, derive greater benefits from fisheries, and diversify into nonfishing and nonfishery activities. All these are expected to lead to the more sustainable use and management of fisheries resources. At the same time, NGOs are also expected to contribute to furthering socially desirable ends. These would include empowerment of fishers as a class through their increasingly effective control of the fisheries and provision of inputs which agents used to provide at usurious rates.

### Conclusion

The scattered pieces of evidence point to a process of evolution from what used to be open-access, overexploited fisheries into community-managed common property

fisheries which have the potential of becoming sustainable over the long term. Since licensed fishers under NFMP would become the sole beneficiaries of fisheries, they can be motivated to increase their sense of ownership of fisheries resources. This will facilitate both the conservation of resources and the protection of community interests.



Further information on the work can be obtained from Dr. M. Ahmed, ICLARM Bangladesh Office, House 20, Road 9/A, (New) Dhanmondi R/A, Dhaka 1209, Bangladesh.

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# Management-Oriented Research on the Hilsa Fisheries of Bangladesh

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Hilsa or Indian shad (*Tenualosa hilsa*, Fam. Clupeidae) is the most important fisheries resource of Bangladesh, contributing about 40% of the freshwater catch.

The hilsa resource is presently overexploited. To rehabilitate it and ensure its sustainable use, the Government of Bangladesh (GOB) recently initiated a Hilsa Fishery Development and Management Research Program, sponsored by the International Development Research Centre of Canada (IDRC) and executed in collaboration with ICLARM, which will support Bangladesh's new fisheries management policy (see article by Ahmed et al., p. 31).

Hilsa is widely distributed in the river systems and coastal waters of Bangladesh.

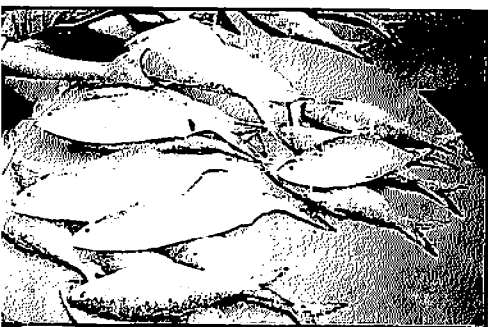
Indeed, hilsa of various sizes - including mature adults - may be found almost anywhere, anytime in the southern half of Bangladesh, and this has to date hampered a clear understanding of the biology and of the impact of various fishing gears on this resource.

Working with Dr. Daniel Pauly at ICLARM, from 5 to 27 October 1992, we have therefore attempted to review the status of hilsa and of research on hilsa, in Bangladesh, by life stage (Fig. 1) and "stocks" (Fig. 2).

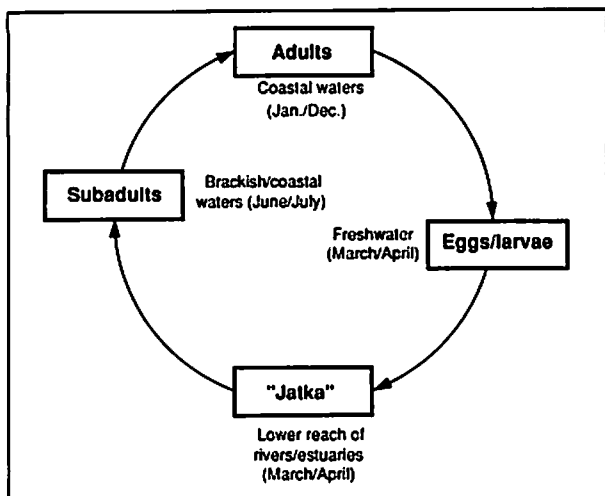
Four "stocks" (or populations) were tentatively identified, based mainly on morphometric and ecological information collected from November 1986 to October 1991.

Although identification of these "stocks" is preliminary, they lead, when linked with the four stages in Fig. 1, to a set of 4 x 4 tables which has enabled us to separate well-studied from little-known aspects of the life history of hilsa.

Growth, for example, seems to be known well enough for management purposes, thanks to otolith readings by Dr. Edward Brothers from Ithaca, New York, who confirmed studies on length-frequency data done in Bangladesh

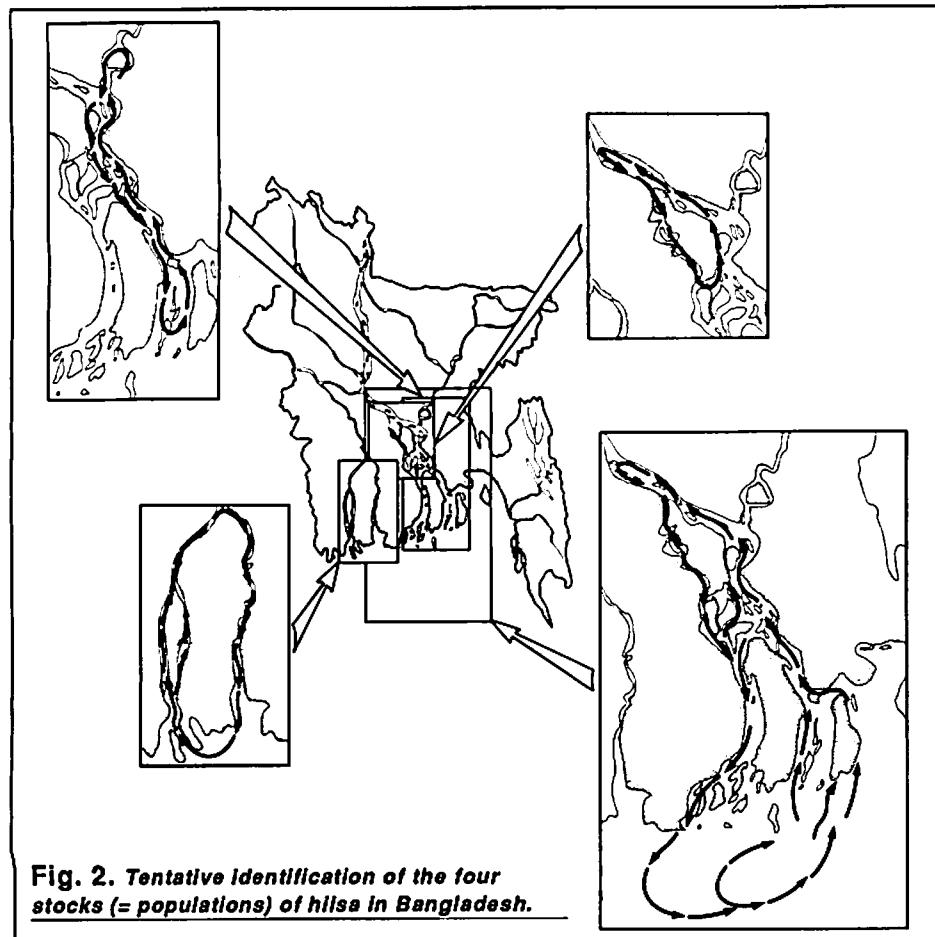


Hilsa, the major fisheries resource in Bangladesh.



**Fig. 1.** Framework used to structure the available information on the life history of hilsa in Bangladesh, illustrated by ways of the "main stock" (adapted from Fig. 1 in Bakun et al. 1982).

with ELEFAN. These suggested for a value of  $TL_{\infty} = 60$  cm, a range of  $K = 0.8-1.0$ /year for hilsa in Bangladesh as a whole. Also, gill net selection curves were applied to the available length-frequency samples and catch curves were then constructed. These confirmed that the mortality experienced by hilsa in Bangladesh is extremely high. On



**Fig. 2.** Tentative identification of the four stocks (= populations) of hilsa in Bangladesh.

the other hand, stock identifications, as mentioned before, remain an open issue and morphometric and electrophoretic studies are still required to resolve this. The results may change the stock definitions presented in Fig. 2, but will not affect the usefulness of the matrix approach we adopted.

The major research gap that was identified for all stocks and stages (except eggs/larvae) is the need to obtain and analyze catch-and-effort data. These, analyzed by stock, and using a length-based version of virtual population analysis, will tell us which of the gears used to exploit hilsa has the most deleterious effects for the fishery as a whole, and what mix of gears would maximize yields.

We expect to obtain these results in 1993. They will be presented, along with the supportive evidence, in a publication on the freshwater resources of Bangladesh.

In the meantime, we conclude this with the suggestion of four measures which, if implemented, would already lead to higher overall catches:

- i) reduce effort on "jatka" in nursery grounds, especially in March/April;
- ii) reduce effort on spawning grounds during the peak spawning season (September/October);
- iii) ban "gara jal" (bamboo fencing) entirely blocking rivers; and
- iv) reduce catch of hilsa below 35 cm by restricting the use of small-meshed nets.

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#### Further Reading

Bakun, A., J. Beyer, D. Pauly, J.G. Pope and G.V. Sharp. 1982. Ocean science in relation to living resources. *Can. J. Fish. Aquat. Sci.* 39(7):1059-1070.)

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