Inland fishermen

Traditional access denied

Rich moneylenders in Bangladesh exploit official policy to deny artisanal fishermen access to traditional waters

Beaten by a combination of misdirected government policy and the wealth power of moneylenders, traditional fisherfolk of the riverside villages of Bangladesh are struggling for a just and satisfactory livelihood.

The government's present water body management policy was introduced in 1986. It is meant to provide access to waterbodies (locally called jalmohals, *haors* and *beds)* only through leases to fishermen's co-operatives.

But, according to the poor fishermen themselves, the whole programme has been hijacked by rich moneylenders *(inahajans). In* connivance with the police and local officials, these powerful interests have become the *de facto* leaseholders of these waterbodies.

According to a survey by a local newspaper, The Daily Star, Bangladesh has about 10,000 waterbodies of various sizes, totalling around 2.53 million hectares of the country's perennial waters.

Fisheries play an important role in the economy of Bangladesh, contributing nearly four per cent of the country's GDP. It accounts for about 10 per cent of export earnings. Nearly two million people (or about seven per cent of total employment) work full time in fisheries-related activities.

According to Brian O'Riordan of the Intermediate Technology Development Group, an estimated 1.3 million people are engaged in fishing and fish culture, and a further ten million people work during the seasonal floodplain fishery. It was during the martial law regime of Ayub Khan that the jalmohals first came under state control. Until then, they were under local landlords who would tax fishermen for using the waters.

Although the fishermen organised to fight for their rights during the late 1960s, only after Bangladesh's independence did the government abolish the old auction system. In its place it introduced regulation of access through co-operatives. But these were no match for the power of moneylenders.

There is a strong and inevitable link between the fishermen and the moneylenders. Since bidding amounts for leasehold rights are high, the fishermen's co-operatives are forced to approach moneylenders. These are influential people who, often enough, engineer splits and factions within the co-operatives to gain control over them.

Since 1986, when the new policy came into effect most waterbodies are controlled and regulated by the government's Ministry of Land. The policy aims to replace leasing with open auctioning and ultimately, a licensing system.

Difficulties in reforming

Yet, as experience has showed, reforming the system is riddled with difficulties. Identifying genuine fishermen is not easy. Nor is the regulation of catch by inexperienced officials. Also, the fishermen are greatly hampered by the lack of marketing infrastructure. Further, the laws of cooperative enterprise, including the means of appeal, are heavily loaded against the fishermen.

With mast co-operatives functionally weak and disorganised, the real fishermen find that they are now effectively barred from their own fishing grounds. A typical case is that of the BenglaCharabahda

jalinohal. At one time, this fishery used to provide a means of livelihood to the folk of 15 villages. In April 1991 the government leased out this 2,400-acre closed waterbody for three years in return for 805,600 Taka in annual revenue.

But the leasing policy permits only the 120 members of a particular co-operative society to fish there. Similarly, the Chotra-Uttara river which flows into this water-body, has been segmented and leased out to other societies.

The smaller co-operatives found themselves unable to compete in bidding since the royalty amount was suddenly raised fourfold over the previous term's level.

But even when they formed a consortium to win the bid, one moneylender encouraged a rift in their ranks, say the local fishermen. The moneylender's group wanted to maximise profits by fishing twice during the lease period. According to The Daily Star, in the skirmishes that followed, one villager was shot dead and several others injured.

Intimidation and coercion by the moneylenders' musclemen are now common, complain the fishermen. One fisherman said, "We can fight the robbers and the looters who try to take away expensive nets and other fishing gear, but we are helpless against the 'legal robbery' by the *mahajan's* men supported by police." ■

This article borrows extensively from a series of reports in The Daily Star by Masud Hasan Khan

Bangladesh

Shrimp culture

Expanding farms, shrinking lives

The trend in Bangladesh towards increasing the area under shrimp farms does not result in tangible local benefits

As a country with a large deltaic floodplain, Bangladesh has a long tradition of fishing and fish culture and enjoys enormous potential to produce all kinds of aquatic products. In recent decades, due to an increased demand in the international market, shrimp has become one of the most important export products. Seafood ranks third in export earnings, 85 per cent of which comes from shrimps.

The government has declared shrimp cultivation a priority industry and to boost its production, specific support programmes (both technical and financial) have been designed. However, there are many people who are critical of this policy of expanded shrimp cultivation. They are mainly concerned about the ecological and social impacts.

Shrimp cultivation is undertaken both inside and outside polders (areas protected by embankments from tidal inundation) in areas, which have access to saline water. Shrimp fields need to be protected with *bunds* (embankments, usually of earth). Once the *bunds* are ready, fields are flooded, and the water brings with it post-larval, juvenile shrimp and various fish species.

Cultivators used to depend completely on this natural intake of shrimp and fish. Nowadays, with a growing number of shrimp fields and prospects of greater profits, cultivators also buy post-larval and juvenile shrimp to increase stocking density in the fields.

This change in practice has opened up many new avenues for employment. Catching of shrimp larvae in the river with different types of nets is a common sight in the south-west of Bangladesh. Direct transactions between catchers and growers do not normally take place. Traders of shrimp fry, who often also trade in adult shrimp as *farias* (middlemen), have emerged. Various kinds of credit and patronage relations are involved within a hierarchy of catching, trading and cultivation of shrimp.

Depending on the species, shrimp culture starts at the end of April or early May and continues until October. The harvest starts around August and continues until December. The production cycle of shrimp interferes to a certain extent with the production cycle of paddy.

This has several important implications. In the area of this study, the first commercial shrimp field of around 55 acres was established in 1979. Since then, shrimp cultivation has continued to expand, taking over new polders. By 1993, about 3,750 acres of land, divided into 70 fields, had been brought under shrimp cultivation.

From 1986 onwards, there was a massive increase in the number of shrimp fields. By end 1986, the number of fields was more than four times the 1985 level. This increasing trend continued until 1989, after which it showed a gradual decline.

Rising demand

In terms of increase and decline of the number of prawn fields, the specific years of 1986 and 1989 are particularly relevant. The demand for shrimp in the world market rose sharply from 1985 onwards. The expansion of shrimp cultivation between 1985 and 1986 was more a result of this increased global demand than local factors.

The impact of shrimp cultivation has three dimensions: economic, social and environmental. Many people believe

shrimp cultivation to be highly profitable. It is also said to stimulate employment in related areas, for example, the catching of shrimp fry, and trading.

However, this narrow perspective only compares the profitability of shrimp cultivation to paddy cultivation. No account is taken of sustainability, the total household economy, or the farming system as a whole.

A more comprehensive cost-benefit analysis shows that, while shrimp farming brings fortunes to some, it incurs significant loss of opportunities for almost every household. The opportunities lost include those for rearing poultry and livestock, growing fruit trees, kitchen gardening, culturing fish in homestead ponds, availability of cow dung and firewood for fuel, and access to fresh drinking water.

The consequences of this for each individual household and for the society at large are far-reaching. For example, the loss of livestock has multiple effects: loss of draft power for tilling, threshing and transportation of goods, and a decrease in milk production.

In many areas, shrimp farms replace agricultural crops like jute, paddy, sesame, mungbean, and pumpkin. If all the benefits, which a peasant household derives from these sources (in terms of direct consumption, cash income and employment) are taken account of, then shrimp cultivation is far less profitable than is claimed.

There are also increased costs to health from a rise in certain water-borne skin diseases (resulting from stagnating and polluted saline water) and undernourishment due to the lower yield or total loss of the *aon* paddy (that grown during the dry season of September to December) because of delayed planting, and water salinity.

In shrimp culture, income distribution is heavily biased in favour of the owners or controllers of the field. Control over land is the crucial factor in cultivation of shrimp. According to a recent report, 70 per cent of the shrimp fields in the greater Khulna district are owned or controlled by outsiders, 20 per cent by local rich landowners and the remaining 10 per cent by small and marginal farmers.

Maximizing profits

Shrimp entrepreneurs tend to maximize profit by expanding, rather than intensifying, the area under cultivation. This is clearly reflected in low yields. Often expansion of shrimp farms is achieved through coercion of the poor. Not only do they lose their land (in exchange for very low rent), but they are also unable to find enough work for their

Getting women involved

Next to agriculture, aquaculture plays a very important role in the economy of Bangladesh. The country has 1.7 million ponds covering about 160,000 ha. About 1.3 million people are employed full-time in fisheries or related activities and another 10 million people work seasonally. Among the total persons employed, 10- 12 per cent are women.

Of Bangladesh's population of over 120 million people, women make up 48 per cent. Most of the rural women are engaged in different agricultural work in addition to their domestic responsibilities. But their participation in aquaculture activities is hampered by several constraints, mainly social and religious. The more important constraints are: the traditional thinking that aquaculture is a male-dominated work; difficulty for women to manage ponds far away from the house; unwillingness of the male-dominated society to accept the fact of women's involvement in income-generating activities; iliteracy; religious rules and cultural norms; and lack of access to funds and resources.

Yet, the fact is that pond fish culture needs less labour and involvement, which women can easily provide in addition to their family duties. The economic returns they get within a short period can help uplift them as well as empower them within the family and society.

Keeping this issue of women in mind, donors, several national and international NGOs and government agencies have come forward to eradicate poverty, create employment opportunities and associate rural women in the mainstream national economy through aquaculture practices.

The International Centre for Living Aquatic Resources Management (ICLARM) is executing a programme called Aquaculture Technology Transfer Through NGOs and Feedback to Research. Led by M .V Gupta, Senior Aquaculture Specialist and Team Leader of ICLARM, the project is in collaboration with the Fisheries Research Institute, Department of Fisheries, Bangladesh Agricultural Research Council (BARC).

Five national NGOs are implementing the programme, which covers 24 districts representing different agricultural parts of the country.

Under the programme, the participating NGOs demonstrate the technologies of fish culture in seasonal and perennial conditions. They also raise fry in 853 nursery ponds, covering an area of 93,908 ha. In the demonstration programme, 3,563 farmers are involved, of whom 54 per cent are women. ICLARM gives the technical support for implementing the programme and developing linkages between government organizations and NGOs.

The following are sketches of two women's groups, which have been participating in the technology transfer programme of the project:

RAHMA BEGUM, led by nine group members of TMSS, an NGO, operate a 0.12 ha pond. At the rate of 9,000/ha, they stocked fingerlings of catla, rohu, silver carp, mrigal, grass carp, common carp and thai sharputi during June 1994. After stocking, they fed the fingerlings daily with rice bran and agriculture by-products readily available from their homestead. They also applied cattle manure at the rate of 1,000 kg/ha/month and urea and TSP at the rate of 25 kg/ha, every 15 days. After five months, they started harvesting table-size fish, which they sold in the market. In nine months, they harvested 402.7 kg of fish from the pond (3,356 kg/ha) and earned a net profit.

Another womens group, ASHA MOHILA SOMITY of Banchte Shekha, consisting of 30 members operated five nursery ponds of 1.056 ha area. They started by stocking 15 kg five-day old carp hatchlings. After one month of rearing, they re-stocked the fry in separate ponds to produce fingerlings, which they started selling too. During the rearing period, they used a mixture of powdered rice bran and oil cake twice daily as feed. They supplemented this with cow dung. After a month of spawn stocking, they started selling the fry and, subsequently, fingerlings to hawkers and neighbouring fish farmers. In this way, they managed to take home a net profit as high as 280 per cent on the initial investment.

These two case studies show women's ability in carrying out all kinds of aquaculture operations by themselves.

—by Debashish Mazumder, Aquaculture Officer, International Centre for Living Aquatic Resources Management (ICLARM), Dhaka

family members. Compared to paddy cultivation, labour requirements for shrimp farming are low. Furthermore, most of the labour is hired from outside. Consequently, many (especially men) are forced to migrate to seek employment. This forced migration not only creates emotional tensions in the family, but also places additional responsibilities and burdens on women.

Shrimp cultivation also influences the process of social differentiation by directly affecting the land ownership pattern. Our study investigated the extent of land transfers among the villagers whose land is under shrimp cultivation, and found that for the period 1989-1990, almost 60 per cent of land sales were made by farmers owning less than three acres. A strong link was found between the sale of land by small-holder households and non-receipt of rent from the shrimp cultivators.

When fields are flooded with saline water, most of the vegetation begins to die, and salinity of the soil increases. Shrimp fields are under water for almost eight months. Consequently, the soil remains soft, and does not require tilling for planting. Over time, this increases the salt content of the soil, and replaces some of the nutrients. Monsoon rainfall and the reduced tillage are not sufficient to wash or work the salt out of the soil. Microbiological systems, which regenerate soil fertility through fixing nitrogen from the air can not function during the long inundation periods. This hampers the mineralization process and decreases the soil fertility significantly.

Long-term inundation destroys traditional fish populations in lakes and canals. This has a major impact on the incomes of the poor, whose livelihoods and subsistence depend on these common property water resources. Fish stocks are also depleted by the increased catching of shrimp fry in fine-meshed nets. This also creates ecological imbalances, affecting species composition, since only the shrimp larvae are retained. All the other species are discarded on the ground, dead.

Finally, the rapid expansion of shrimp culture has had a major impact on the mangrove ecosystem. Aerial photographs taken in 1975, 1981 and 1983 dramatically depicted the changes in the Chakaria Sundarban area. To offset some of these

Health Warning: Prawn Farming can Seriously Damage your Community and the Environment

Pak Phanang Bay is located on the eastern side of Thailand's southern isthmus. The region comprises a deltaic habitat with rich coastal resources. It is perhaps typical of Thailand's southern coastline, suffering from economic under development, with a per capita income-less than half that of the rest of the nation. In 1991 CORIN (Coastal Research Institute of the Prince of Songkhla University) made a study of the Pak Phanang region. Some of their findings are summarized below.

Rice had been the staple crop for centuries, but paddy production is no longer very profitable. Increasingly, farmers are switching to vegetable, fruit and shrimp farming. Deforestation due to rubber plantation development in the mountains, and increasing use of agrochemicals in intensive paddy cultivation, are straining fresh-water supplies.

In the past, the region was also very dependent on the fish economy. As much as 95 per cent of the population were dependent for their incomes on fishery-related activities. However, catch size and revenues have decreased drastically over the last 10 years. For example, a reasonable catch from a lift-net in 1980 was 10 kg for two to three hours work. In 1990, it could take a whole day to catch just two or three kg. It is claimed that the loss and degradation of the coastal environment, and of crucial habitats like mangrove areas and wetlands are major causes of declining fish production.

The rapidly expanding shrimp farming industry has brought with it much-needed jobs and wealth. However, it has also brought environmental and social problems, following as it does a cycle of boom and bust. In 1979, shrimp farms numbering 3,378 covered some 25,000 ha. By 1989, this had risen to 10,374 farms occupying 78,209 ha. Much of the land for shrimp farms was derived from rice paddy and mangroves. The intensive farming method and the nature of the environment mean that each pond has a profitable life of only fives years before its production is reduced by infection or other difficulties. These include market-related difficulties. Rapidly increasing supply has outstripped demand, bringing prices crashing down and rendering many shrimp farms unprofitable. After five years, ponds are generally abandoned, leaving salt-laden scars on the landscape.

The pollution caused by the shrimp farms is considerable. Shrimp farm effluent, consisting of toxic and organically loaded sludge, is released into the irrigation canals, polluting rice fields and the downstream coastal environment. Salt water is brought into the shrimp ponds by canals, and this has intruded into the fresh-water systems. Reduced river flows (brought about by siltation and increased irrigation) has facilitated salt-water intrusion through tidal effects. Drinking water now has to be collected from rainfall. In drought years, it has to be collected from an inland river.

The cycles of boom and bust, degradation of local resources and conflicting development objectives create many social and economic problems. Shrimp farmers, rice farmers, mangroves and urban settlements all compete for limited land and water resources, The end result is a depleted ecosystem, and a divided community in conflict.

*— from Coastal Resource Management **in Pak Phanang Bay, Thailand by** Somsak Boromthanarat, Bussabong Chaijaroenwatana and John Rowe*

negative impacts, the government and the donors have started to include NGOs in shrimp projects.

However, NGOs, while minimizing local conflicts through socio-economic activities, are not able to halt the process of environmental and socio-economic degradation.

This article by Anjan Datta is based on his paper presented at the European Network of Bangladesh Studies' Fourth Workshop In the Netherlands, 25 to 27 August 1994

Aquaculture

Innocent victims

The women of Bangladesh are paying a heavy price for resisting the powerful interests in the shrimp farming industry

Paikgacha and Batiaghata are not the most famous of places in Bangladesh. Only local people have heard of these remote areas in Khulna, a district located 350 km south-west of Dhaka, the capital of Bangladesh. In the early 1990s, however, these names kept cropping up in the local newspapers as violence related to commercial shrimp cultivation erupted.

From 1995 onwards, these villages have achieved national prominence, following several reports of a number of violent incidents and indiscriminate abuses of human rights in commercial shrimp cultivation areas. In the minds of local people as well as other citizens of Bangladesh, these incidents have raised serious questions about human rights, sustainable human development and the obligation of the government.

The problems have been compounded by the fact that the local administrative officials and the police, who are supposed to maintain law and order, and implement their own stated policy of "protecting the innocent and punishing the criminals", have allegedly done just the opposite: protecting criminals, while punishing the innocent.

Violence erupted in Horinkhola village within *polder* 22 (a *polder* is an embankment) of Paikgacha in the early morning of 7 November 1990. Wajed Ali, a rich shrimp farm owner and businessman, arrived with his armed hired hands, intending to forcibly breach the embankment and establish shrimp farms there.

Polder 22 had been maintained as a shrimp-free zone at the insistence of local people, who wanted to protect their environment and agriculture-based, traditional livelihood. When Wajed Ali and his hired hands arrived at the *pokier* in speedboats, the villagers mobilized and rushed to the area to resist. They marched to the river-bank, women and children in the lead, believing that this would ensure a peaceful, bloodless confrontation.

Instead, Wajed Ali's men hurled bombs and opened fire with rifles and machine guns. Fifty women and men were injured. A 45-year old woman, Korunamoi Sardar, was killed in the firing.

Ali and his men had to subsequently flee in the face of the strong resistance by the villagers. The body of Korunamoi Sardar was taken away by Ali's men, while a tuft of her hair and a portion of her brain remained on the battlefield for two days.

Rahela Khatun, a landless woman from Paikgacha, describes what happened: "On 7 November 1990, on learning that Wajed Ali had arrived with goons to breach the embankment and flood land for shrimp cultivation, we rushed to the spot to resist the attempt."

"As we were marching toward the embankment," continues Rahela, "with the women and children in front, the hoodlums opened fire and hurled bombs at us. Korunamoi Sardar was killed on the spot and more than 50 men and women were severely injured."

Police lethargy

"The body of Korunamoi Sardar was taken away by the attackers," recalls Rahela, "while a tuft of her hair was hanging from the nearby *babla* tree and a portion of her brain remained on the ground for two days, until the Paikgacha police finally took these away for examination. Korunamoi's body was never found.

We have built a memorial on the spot she died. Every year we organize a large meeting on 7 November to remember her martyrdom. People from various areas come and pay respect. They are encouraged by our struggle and some managed to liberate their land from the illegal occupation by the *gher* owners."

Rupabhan Bibi, a 46-year old widow and one of the 50 injured on 7 November 1990, was also taken away by Wajed's men and later left on the river-bank, on the assumption that she was dead. When the *gher* owners came with their hired hands and firearms to forcibly gain control over land for shrimp cultivation, about 4,000 women and men of Koria village gathered on the river-bank. This joint protest forced the intruders to leave.

Later, in Koria village, police and armed guards came looking for villagers who were in hiding. They entered households where there were only women and children. They used obscene language and assaulted the women. This enraged the women, who started to fight back with brooms and sticks. The police were stunned by this unified resistance and fled.

Amina Khatun, a woman of Koria, was asked later about her courage in resisting police and armed men with her broom. She remained silent for a while, then replied with tears in her eyes, "My husband has been in hiding for the last few days and I have no food in my house. On top of everything else, the police came into my household, used obscene language and pushed me around. I have no place to hide. I have been pushed against the wall. I have no choice but to defend my children and myself with whatever I have, So, I picked up my broom and beat the policeman with it."

After the news was flashed in the national newspapers, the police finally arrived at the scene. Although the villagers filed suits against Wajed Ali and 34 others, Ali's membership in the ruling political party ensured his immunity from prosecution.

Wajed Ali filed suits against 50 villagers. Some of them were arrested in their hospital beds, as they recovered from the wounds inflicted by Ali's attack, and placed into detention without bail.

At the time of the incident, Nijera Kori, an NGO, was working with landless women and men of Khulna. Nijera Kori's legal aid cell helped the arrested villagers obtain bail. Though the villagers' murder suit against Wajed Ali is still pending, they have won one battle of environmental justice through their activism and sacrifice of *life—polder* 22 (surrounded by shrimp-cultivating areas) is still a shrimp-free zone.

On 17 September 1994, Jabber Sheikh of Batiaghata Thana was seriously injured by bombs, thrown at him by unknown assailants. He died in the hospital four days later.

Jabber Sheikh was a member of the Amirpur union council. He was against commercial shrimp cultivation in his area and had mobilized the local people to resist such aquaculture. As an elected official, he tried to get help from the local administration, and was a targeted enemy of the shrimp cultivators.

The murder of Jabber Sheikh enraged the villagers, who mobilized and repossessed the lands illegally occupied by the shrimp farmers. The shrimp farmers attacked the villages many times to reoccupy the shrimp ponds, but the villagers successfully resisted these incursions.

However, valuable land areas still remain barren, as villagers try to cultivate agricultural products, but are foiled by shrimp farmers, who forcibly breach embankments to flood land with salt water and ruin crops. The villagers allege that the local administration and the police do not protect them. Instead, they side with the shrimp farmers. Thus, the people's movement for basic rights and environmental justice goes on.

Indelible mark

The violence from shrimp farmers has left indelible marks on the bodies and minds of the people in the coastal area. In one incident in the Buzbunia village in Botiaghata, the shrimp farmers forcibly dug into Sadiq Ali's courtyard and family graveyard to take out soil for constructing

embankments around shrimp ponds. When Sadiq Au objected to this sacrilege, the armed guards beat him as well as his wife and adolescent son. Their bodies still bear the marks of the beatings. Violence left grievous wounds in the minds of Hameeda Begum, Manjira Akhtar and Anjira Akhtar of Buzbunia village, who were also assaulted by the armed guards.

Violence by armed guards and harassment by police forced the men of Koria village into hiding between February and April 1995. The men were afraid and could not participate in the prayer for Id-ul-Fitra - one of the biggest and most important religious festivals. When a child died in the violence; only children attended the funeral as a sign of solidarity. Even the activities for national immunization day on 16 March 1995 had to be cancelled because of the violence by shrimp farmers.

As a result of Bangladesh's current development priorities, the majority of the people tend to lose access to, and use of, the common property resources appropriated by wealthy corporate and individual interests.

Often, the State has supported influential business interests through legal, illegal and/or violent means. It is ironic that enhanced production of these food crops has contributed to decreased food security at national, local and household levels; deteriorated human and environmental conditions; escalated social injustice and violence.

In recent years, commercial shrimp cultivation has increased tremendously in the coastal areas of Bangladesh. About 2.5 million hectares of coastal land have potential for shrimp farming. In 1995, a total of 124,000 ha of coastal land in Khulna, Satkhira, Bagerhat and Cox's Bazaar were under shrimp cultivation. This represented an increase of about ten per cent per annum since 1980.

Export earnings from shrimp have increased from 145 million taka in 1977-78 to 6,997 million taka, or close to $175 million, in 1992-93. Thousands have found employment in the shrimp cultivation and processing industry. This has had some impact on the economy of Bangladesh.

Livelihoods destroyed

Unfortunately, profit-driven, unplanned, indiscriminate and illegal shrimp farming is destroying the livelihoods of small, marginal farmers, fisherman, dairy farmers and the landless poor. The law and order situation has deteriorated in these coastal areas and the long-term environmental consequences of unregulated shrimp cultivation include the irreversible degradation of land, water systems, biodiversity, forest and vegetation.

It is unfortunate that while, nationwide, leaders of the women's movement are mobilizing for gender equality and empowerment of women in every aspect of their lives, the women in the shrimp cultivation areas are deprived of even the basic human rights provided for by the Constitution of Bangladesh and different United Nations Conventions. These women regularly face physical and sexual violence and abuse from the *gher* (shrimp farm) owners and their hired hands.

Like in other rural areas in Bangladesh, the communities in Batiaghata and Paikgacha are fairly conservative. The women usually remain secluded within the household. However, due to the atrocities committed by the *gher* owners, especially the murders of Kornnamoi Sardar and Jabber Sheikh, women are forced to come out of seclusion to resist the *gher* owners.

This new attitude was typified by Maimon Bibi, a 60-year old woman who testified at a public hearing. She described how she had picked up the broom and run with the others to the riverbank to resist the goons. In a tearful voice, she asked again and again, "Is Batiaghata truly a part of Bangladesh? If yes, why are the government and police not protecting us from the *gher* owners?"

This article is by Nilufar Ahmad of Nijera Kori, an NGO working in Bangladesh

Small is Nutritional

A recent workshop in Dhaka, Bangladesh, focused on the role of small indigenous fish species in ensuring incomes and nutrition for the rural poor

The Regional Workshop on "Production and Conservation of Small Indigenous Fish Species (SIS) for Improved Food and Nutrition Security and Livelihoods of Rural Populations of South and Southeast Asia" was held during 3-4 December 2008 in Dhaka, Bangladesh. Its purpose was to bring together stakeholders to share knowledge and develop guidelines for sustainable technologies for production, management and conservation of SIS for the benefit of the people of the entire region. The workshop attracted around 40 participants from seven countries of South and Southeast Asia.

The one-and-a-half-day workshop, co-organized by the Department of Fisheries Management, Bangladesh, the Bangladesh Agricultural University and the Department of Human Nutrition, University of Copenhagen, Denmark, was a follow-up to an earlier workshop held in 2003.

The Director General, Department of Fisheries, Bangladesh, inaugurated the workshop, and Shakuntala Thilsted, Department of Human Nutrition, Faculty of Life Sciences, University of Copenhagen, Denmark, delivered the keynote address.

Fish is an important part of the daily diets of the populations of South and Southeast Asia. The age-old saying "Rice and fish makes a Bangladeshi" emphasizes that fish is an important constituent in Bangladeshi diet, next only to rice. Thilsted pointed out that international discussions on malnutrition stress the need to increase the availability of protein for the rural poor. Though protein is important from a nutritional point of view, micronutrients are the real growth limiting factors, she said.

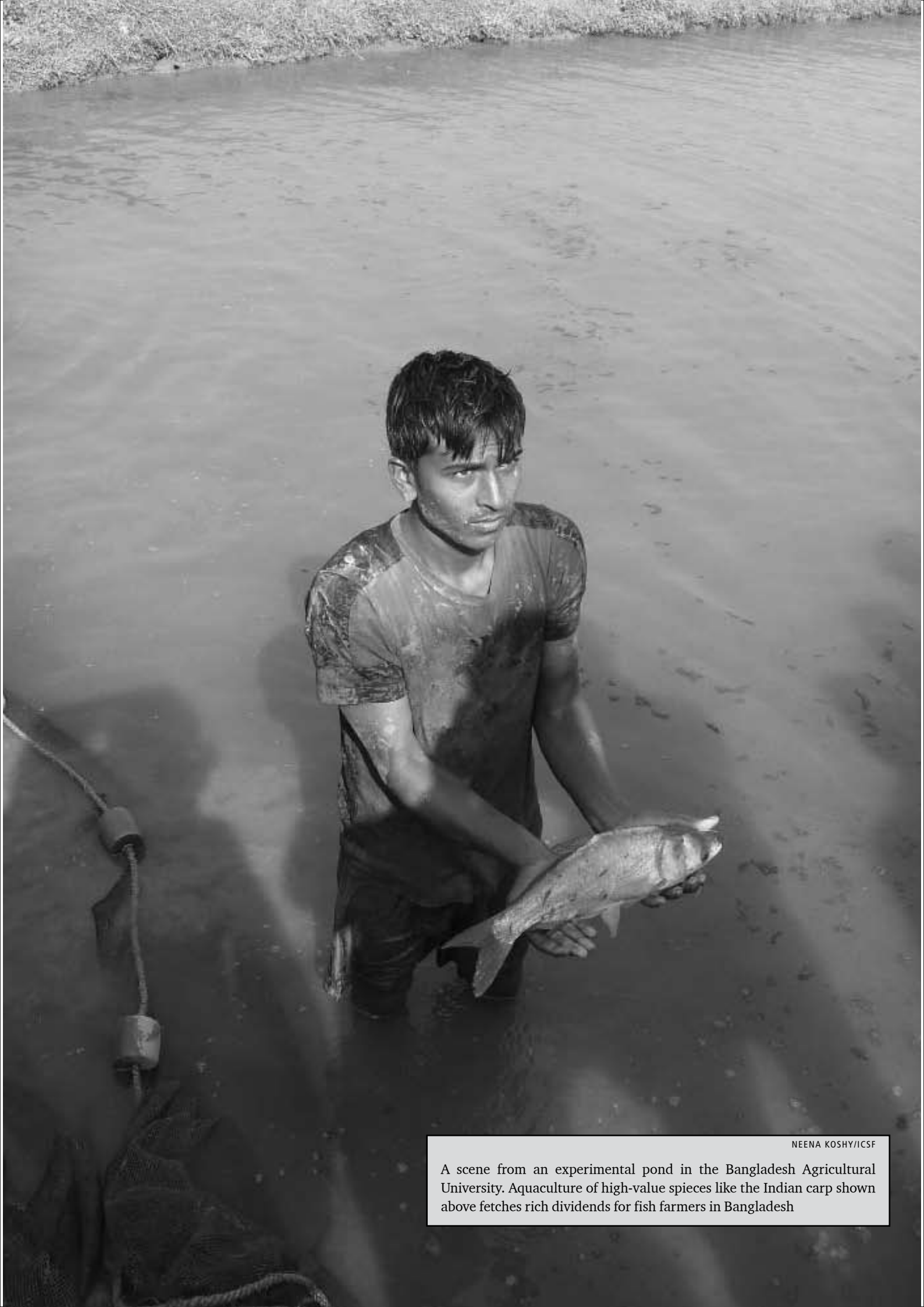
Fish is generally seen as a rich source of both protein and micronutrients. SIS are especially important as a source of micronutrients as they are mostly eaten whole, along with the bones and sometimes the gut contents as well. They are rich in Vitamin A, zinc and calcium. The Dhaka workshop, Thilsted added, was also an opportunity to share the results of 10 years of research and extension on the contribution and production potential of culturing SIS in pond polyculture in Bangladesh. Such projects are now undertaken in countries other than Bangladesh, like Cambodia, India (in the Sundarbans region of West Bengal) and Nepal (in the Terai region). The projects are important for these countries whose populations figure high in the list of those suffering from malnutrition, she added.

Fish is generally seen as a rich source of both protein and micronutrients.

Interventions on nutrition should understand local food patterns, Thilsted said. According to the Food and Agriculture Organization of the United Nations (FAO), countries of the Lower Mekong basin report an average per capita fish consumption of over 20 kg per year, while in India and Bangladesh, it is 4.7 kg and 13.6 kg per year, respectively.

Past projects, Thilsted pointed out, had focused mainly on the contribution of meat and milk to nutrition. Evidently, those projects were based on consumption patterns of the West.

This report has been written by ***Neena Koshy*** *(icsf@icsf.net), Programme Associate, ICSF*



NEENA KOSHY/ICSF

A scene from an experimental pond in the Bangladesh Agricultural University. Aquaculture of high-value spieces like the Indian carp shown above fetches rich dividends for fish farmers in Bangladesh

Fish and fish products, an important dietary component of the people of South and Southeast Asia, were largely ignored.

To be a meaningful source of nutrition, a food item should be nutrient-rich and frequently eaten. It is seen that in countries like Bangladesh and Cambodia, SIS constitutes 50-60 per cent of the fish eaten during the production season, which could be the case for other countries of South and Southeast Asia. The high intake of SIS by the local population of Bangladesh qualified it to be the target species for studies on malnutrition and the contribution of SIS in alleviating it.

However, analysis often fails to take note of the fish that are caught and consumed locally and those that contribute greatly to the nutritional intake of the local rural poor. SIS figures high in the fish intake of the rural poor, and about 140 of the 260 freshwater fish species in Bangladesh come under the category of SIS; yet they continued to be regarded as trash fish and thus failed to figure in the production statistics.

The Dhaka workshop saw many presentations on the role of SIS—especially the readily available and locally preferred mola (*Amblypharyngodon mola)*—in ensuring nutrition and livelihood security of the local population. The workshop also stressed the importance of conservation of SIS.

The various presentations at the workshop indicated that freshwater polyculture using nutrient-rich mola, along with other high-value species cultured for the market, like the Indian major carps (*catla, rohu* and *mrigal*) and the giant freshwater prawns (*Macrobrachium rosenbergii*), is very profitable. Since mola is a self-recruting species, its culture does not incur recurring costs on fingerlings. The short time span between the fingerling stage of mola and its harvest stage, unlike the case of other high-value species, which take about eight to nine months to achieve harvestable size and thus permit only an annual harvest, allows mola to be harvested thrice a year. This scale of mola production has disproved the belief that introducing SIS in fish polyculture will decrease the output of high-value species. On the contrary, it was seen that production of mola actually increased the total output from the ponds by 10 per cent.

Polyculture with SIS is not only profitable in terms of income generation, but also contributes to the health of the rural poor through the supply of nutrients and micronutrients. One of the workshop presentations noted that while 90 per cent of the high-value 'marketable' species were sold, 90 per cent of SIS went for household consumption. The lower price of mola also allowed poor households to afford the nutrient-rich fish.

The general lack of awareness of the advantages of SIS polyculture, combined with the misconception that culturing SIS will hamper the growth of larger species through feed competition, has been a major hurdle to the spread of SIS. Farmers used to clean the ponds of SIS before introducing the high-value species. This, over time, has drastically decreased the number of the once-abundant mola.

Polyculture with SIS is not only profitable in terms of income generation, but also contributes to the health of the rural poor through the supply of nutrients and micronutrients.

Efforts are now on in Bangladesh to conserve the nutrient-rich SIS through techniques like breeding. Wide extension work is also being carried out to spread the message of the importance of SIS as a source of cheap and readily available protein in rural diets.

Efficient extension

The Department of Fisheries (DoF), Bangladesh, and the Bangladesh Agricultural University (BAU) are complementing each other's work. While BAU carries out research on the importance of SIS, the DoF is instrumental in implementing SIS projects in the field through efficient extension officers who have strong bonds with the fish farming communities and have found great acceptance among them.

Notes on a Field Trip

The SIS workshop was followed by a one-day field trip. A three-hour drive along a little bumpy but scenic road took us to the beautiful village of Mymensingh, situated on the western bank of one of the greatest rivers of the Indian subcontinent, the Brahmaputra. Several ponds, varying in size and shape, dotted the road to Mymensingh. The existence of so many ponds made it very clear that fish culture was being practised extensively in Mymensingh.

Mohammed Kamaluddin, the owner of one such pond, gave a short account of the type of fish culture he practised, the advantages and difficulties of mola polyculture, and the role played by the species in providing nutrition to his family. Kamaluddin's farm was divided into two portions, one small and the other, larger. In the smaller portion, he cultivated the exotic catfish from Thailand (*Pangasius sutchi*) using intensive monoculture, while the bigger portion (comprising about an acre of land) was used for carp and mola polyculture. Primarily agricultural land, the area was converted for aquaculture. Kamaluddin said that his earnings from aquaculture were about 10 times of what he used to earn from agriculture. He said that adding mola in polyculture with carps or other species did not require any additional feed inputs than what was already being fed to the bigger species. Mola does not hamper the growth of the larger species, he pointed out. Once recruited, mola can be cultured without incurring recurrent costs for stocking, as it is a self-recruiting species.

One problem that Kamaluddin faced in polyculture with mola was the mass mortality of the fish during winter. Professor Abdul Wahab, the country manager of the project on SIS in Bangladesh, indicated that further research needs to done to understand this phenomenon.

However, the other advantage of mola in polyculture is the easy availability of fingerlings to stock the pond in any eventuality like the abovementioned mass mortality. Mola, though perfect for polyculture with carps and giant freshwater prawns, did not survive in intensive polyculture, where the ponds are heavily stocked with species like the exotic catfish, Pangas.

NEENA KOSHY/ICSF

The mola fish species cultured in the ponds of Bangladesh is an affordable source of protein for the poor

If the ponds are managed well, a harvest of around 40-60 kg of mola is possible every month, said Kamaluddin. The harvest was usually sold in local markets. Since mola is cheap and is part of the traditional diet, the rural poor favour it. Kamaluddin also added that a threefold increase in the intake of SIS by farming households has been observed after the introduction of SIS in freshwater polyculture.

The market demand for mola has been increasing, he added. In some cases, mola was sold for as high a price as 200 takka (US$3) per kg, while carps were priced at 150 takka (US$2) per kg. Retailers also purchase mola for the larger markets in Mymensingh. This increasing market demand is good news for the proponents and practitioners of mola polyculture. However, the flip side of the situation is that the increase in prices that normally follows an increase in demand could result in the rural poor being denied access to their main source of micronutrient supply, the SIS.

NEENA KOSHY/ICSF

Workers at a pond in the Bangladesh Agriculture University, where research on polyculture using small indigenous species is being carried out

The inclusion of SIS in polyculture not only increases the availability of protein and micronutrients for the culturing family but also increases their incomes (see box on field trip). Thilsted pointed out that the fish farming community would not accept a project if it guaranteed only nutritional security, while negatively affecting the total output of those species that are major income earners. Adding SIS to polyculture offers nutritional advantage without hampering total production; it actually allows for increased output of greater nutritional value.

The model of SIS in polyculture could also be replicated in the Great Lakes area of Africa, where various SIS like *daaga* are found. Such projects are pertinent to other areas that face similar issues of poverty, livelihood and food security, large-scale versus small-scale fish culture, and export-oriented fish production and production for household consumption.

For more

www.fao.org/fishery/aquaculture/en
Aquaculture Gateway: FAO

www.enaca.org
Network of Aquaculture Centres in Asia-Pacific

www.worldfishcenter.org/wfcms/HQ/article.aspx?ID=64
WorldFish Centre: Expanding Sustainable Aquaculture

www.bau.edu.bd
Bangladesh Agricultural University

Pitiful Plunder

The social, environmental and economic destruction that results from the plunder of land in Bangladesh by the shrimp industry is pitiful

Around half a million acres (203,071 ha) of Bangladesh are inundated by shrimp farms. Almost half of these are located in the Greater Khulna region, comprising Khulna, Bagerhat and Satkhira Districts, with the remaining spread over Bhola, Noakhali and Cox's Bazaar Districts.

The easy availability of farmland in these poor southern districts and the lure of quick profits initially motivated farmers to shift from traditional agriculture to industrial shrimp cultivation. Successive governments and the shrimp industry associations have extolled the great benefits and money that the shrimp industry brings to the nation. Shrimp farming is the second-largest earner of foreign exchange in Bangladesh.

Long-term inundation of saline water and the extensive use of chemical fertilizers, pesticides and insecticides in shrimp cultivation have significantly diminished the fertility of the soil. Non-shrimp areas too are affected: the yields of most of the crops grown in the shrimp districts have declined drastically. The yields of wheat, jute and sugarcane have met with a similar fate. Fruit trees and vegetable gardens have gradually disappeared. Traditional practices like kitchen gardening, poultry and livestock rearing have waned where shrimp farms flourish. The lack of grazing land and fodder, and widespread, contagious cattle diseases arising from saline water have reduced the numbers of livestock. Cow dung, which is used both for manuring and as a household fuel, is now in short supply.

The salinity in the soil has totally destroyed the habitat for earthworms, which are 'natural farmers'. Shrimp-processing industries drain their production wastes into the rivers and other natural water bodies and, consequently, pollute the natural ecosystems in the areas. Wildlife like snakes, birds, lizards and mice have vanished from the affected areas.

Prior to shrimp cultivation, sweet-water fish like *rui* or *rohu (Labeo rohita)*, *katla (Catla catla)* and *koi (Anabas testudineus)* were found in abundance in these areas. Cultivation of fish in homestead ponds has now become impossible due to the salinity of groundwater.

Prior to shrimp cultivation, sweet-water fish were found in abundance.

The nets used to catch shrimp fry are very fine-meshed and, consequently, their use depletes fish stocks: fry collectors retain the shrimp larvae while discarding the rest, dead. The harvest of shrimp seedlings from nature is considered to be very harmful for the marine environment and is banned in many countries. The practice is rampant in Bangladesh—wild shrimp fry is more resistant to virus attacks compared to its hatchery counterpart.

Mangroves destroyed

Several types of reeds, grasses and weeds, like *durba*, *baju*, *thankuni* and aquatic plants like *kachuripana,* have completely disappeared due to the high salt content of water and soil. Thousands of hectares of mangrove forests have been cleared to make way for shrimp farms. The destruction of the Chokoria Sunderban, a unique

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mangrove patch in Chokoria Thana of Cox's Bazaar District, stands as a testimony to the severe consequence of shrimp cultivation. Mangrove forests control flooding, preserve water quality and protect shorelines from storms and erosion. Arguably, the physical impact of Cyclones Sidr and Aila would have been less had the mangrove forests been left standing.

The nature of work in shrimp farms requires workers to stand for long periods in stagnant, saline water, which results in skin ailments and infections.

People draw water from unsafe drinking water sources, due to the acute shortage of safe drinking water. Even the water from deep tube wells in most areas is too saline for drinking. As a result, cases of diarrhoea and dysentery in the local population have increased. Childhood malnutrition may have become more prevalent due to the lower yield of local varieties of paddy and the impoverishment of marginal and landless farmers.

The social costs have been equally devastating. According to a recent report, as many as 70 per cent of the shrimp fields in the greater Khulna District are owned or controlled by outsiders; 20 per cent by local rich landowners; and the remaining 10 per cent by small and marginal farmers. Local farmers and landowners fall prey to the shrimp mafia and end up leasing or renting out their land at very low rates. Some lands are forcibly seized. Often the government *khas* land, allotted to poor landless farmers, is grabbed by the local shrimp mafia. Protests are countered with false lawsuits, death threats and violence by hired goons. Under such pressure, marginal farmers are often forced to sell their lands and migrate to urban areas to seek a livelihood.

In essence, the growth of the shrimp industry has been made possible by systematic and organized intimidation, fear and the violence perpetrated by powerful shrimp farmers and businessmen. While there has been much concern voiced by civil society organizations, there has been very little government intervention of significance to regulate the sector and prevent the grave social and environmental abuses that are synonymous with it.

The highly profitable export of shrimp in Bangladesh has hit major economic setbacks in recent years for a number of reasons. In 2009, the European Union countries imposed a trade embargo on shrimp from Bangladesh, when harmful levels of the antibiotic nitrofuran were detected in 50 consignments exported from Bangladesh. The global economic recession has brought about a dip in the demand for shrimp as a result of which the price of shrimp in the United States and European countries has fallen by 40 to 45 per cent. The use of low-cost Indian and Burmese shrimp seedlings, which are of much inferior quality and are easily afflicted by virus attacks, has lowered yields and reduced quality, and subsequently fetches lower profits. The PCR laboratory set up by the government to detect shrimp viruses, at a cost of Taka 1 crore (US$145,096), has not been able to function effectively. As a result, only 52 out of the 84 government-approved shrimp-processing companies are in operation. The rest have temporarily closed due to the lack of orders from importing nations.

NATASHA AHMAD/ASIA

Women and men of fishing communities protesting against the shrimp industry in Bangladesh. Many belive that aquaculture and shrimp farms have ruined their lives

Cyclone Aila

Further complicating matters, the recent cyclonic storm Aila washed away

50 to 55 per cent of shrimp enclosures, especially in Bagerhat, with the loss estimated at over TK 150 crore (US$22 mn). The shrimp cultivators are now in a dire situation, with the additional burden of bank loans taken in the hope of a boost in production this year. The sector was just in the process of recovery from the heavy blow from Cyclone Sidr in 2007. The farmers are now expecting help from the government in the form of low-interest loans and speedy repairs of ravaged embankments to guard against tidal waters.

A large number of the labourers in shrimp-processing activities are women and children. The majority of these women are single mothers who are now helpless as there is no alternative source of livelihood in these areas. As a result, they struggle to scrape together the minimal subsistence income. A coalition of different shrimp workers' organizations in Khulna District is spearheading a movement to demand basic rights for shrimp-processing labourers. In spite of being such a large economic sector, a minimum wage for shrimp-processing labourers has not been standardized. The workers now demand a minimum wage of Tk 7,450 (US$108) per month as against the current scale between Tk 1,600 and Tk 4,000 (US$23 and 58), based on skills and experience. They are also demanding overtime pay for their 12 hour-a-day input. The demands also included appointment letters, maternity leave, congenial working environment for all, including the children involved, and medical compensation. The benefits of shrimp cultivation accrue to a privileged few, while its high socioeconomic and environmental costs are borne by landless and marginal farmers.

In a sign of the bad times afflicting the shrimp sector, disillusioned shrimp farmers, especially those in the Dakope, Paikgacha and Batiyagacha areas of Khulna District, are reverting to the cultivation of paddy and other crops. However, this has not been without problems. The high salinity of the soil, delayed rainfall and lack of adequate amounts of freshwater required for paddy cultivation, has hit the yield of *boro* paddy in Khulna this year. Opening sluice gates to allow saline water into arable land is banned by law. However, unscrupulous shrimp cultivators continue this practice with impunity. The return to paddy farming by shrimp farmers has also been hampered by the lack of knowledge of paddy cultivation among the new generation of farmers who have been engaged in shrimp cultivation for the last 20 years or so. It is this new generation of paddy farmers who, in association with some non-governmental organizations (NGOs) and the Agricultural Department are trying to raise awareness against shrimp cultivation. They are hopeful of better yields in the coming years, in the expectation that the salinity in the soil will lessen with rainwater and repeated cultivation of crops.

A large number of the labourers in shrimp-processing activities are women and children.

The economic justification for shrimp cultivation will cease to exist if a comprehensive cost-benefit analysis is carried out. The reported annual revenue of around US$ 360 mn is pitiful compensation for the social, environmental and economic holocaust that the shrimp industry has perpetrated.

The local community in Bangladesh believes that this 'rape-and-run' industry has ruined their lives, taken away their livelihoods and left them with no food or drinking water. The dream of profit has left them with nothing in hand. The local community is now coming together to gain control over their lost lands. The local political leaders have joined them in this movement but the local administration is still working for the rich gher owners. The situation in these areas is very tense but the people are hopeful that they will be able to win this battle and return to agriculture again.

For more

www.idrc.ca/en/ev-5533-201-1-DO_TOPIC.html
Shrimp Culture in Bangladesh

www.fao.org/fishery/countrysector/naso_bangladesh/en
FAO's National Aquaculture Overview for Bangladesh

www.usaid.gov/bd/files/gendered_analysis_shrimp.pdf
Gendered Approach to Shrimp Culture

www.usaid.gov/our_work/cross-cutting_programs/wid/pubs/Bangladesh_Shrimp_Value_Chain_Feb_2006.pdf
A Pro-poor Analysis of the Shrimp Sector in Bangladesh

http://asia-solidarity.org/
Asia Solidarity against Industrial Aquaculture (ASIA)

A Voice for the Coast

A countrywide consultation was held in Dhaka, Bangladesh, on the proposed FAO International Guidelines on Small-scale Fisheries

A national consultation process on the International Guidelines for Small-scale Fisheries (IGSSF) of the Food and Agriculture Organization of the United Nations (FAO) was recently organized in Dhaka, Bangladesh. The Coastal Association for Social Transformation Trust (COAST) organized the consultation to gather recommendations from stakeholders on the proposed guidelines. The International Fund for Agricultural Development (IFAD) provided financial support, while the International Collective in Support of Fishworkers (ICSF) rendered various resource services.

The consultation was the first of its kind to be held in Bangladesh. National-level programmes on fisheries, especially on small-scale fisheries, with the participation of members of the fisher community, are rare. There are few effective local or national platforms that fishers can use to raise their voices, which is why the Dhaka consultation process was taken as an opportunity to highlight the challenges facing small-scale fishers in the country.

They depend mainly on ponds, *beels* (small water bodies), lakes, canals, rivers and estuaries, which together cover 4.57 mn ha and employ 1.4 mn people. Bangladesh has a coastal area of 2.3 mn ha and a coastline of 714 km along the Bay of Bengal, which is also a great source of fish. About 296 fresh- and brackish-water fish species (including freshwater prawns) and 511 marine species (including shrimp) are available in the waters of Bangladesh. Most of the members of the country's fishing communities are illiterate and poor. They enjoy few basic civic facilities, are not organized, and are not even aware of their rights as a result of which they are often exploited by moneylenders, musclemen and politicians.

In Bangladesh fishing has traditionally been the occupation of members of the Hindu Jaladas caste. Given the low social status associated with fishing, these communities historically occupied the lower rungs of the social hierarchy in rural communities. Even within the country's Muslim society, where caste is not recognized, groups traditionally involved in fisheries have been generally accorded a low social status.

National-level programmes on fisheries, especially on small-scale fisheries, with the participation of members of the fisher community, are rare.

The problems facing fishing communities in Bangladesh include:

- natural disasters like floods, cyclones, tidal surges and droughts that damage crops and assets;
- social problems like dowry, polygamy, divorce, sexual harassment and land disputes;
- health problems that erode incomes due to unexpected medical expenses for the main wage earners; and
- financial problems resulting from high-interest loans from informal sources of credit, theft of assets like fishing gear and harvest, accidents, death of wage earners,

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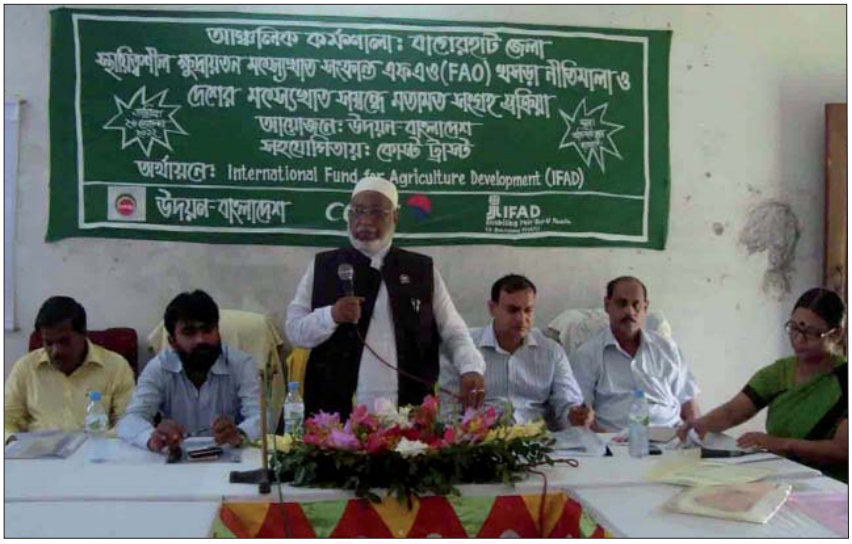
SHEIKH ASADUZZAMAN



A local Member of Parliament from Sathkhira, Bangladesh, speaking at the regional workshop held to discuss the FAO IGSSF

lack of alternative employment opportunities, legal expenses for dispute settlement, and so on.

In recent years, the impact of climate change has been increasingly felt on the small-scale fisheries sector. Fishers are more vulnerable to natural disasters than others of the coastal area as they are the ones who depend primarily on rivers, estuaries and littoral waters for their livelihoods. Coastal fishers contribute to between 22 and 25 per cent of the total fish production of the country, although they are the first victims of natural disasters. Each cyclone or tidal surge kills hundreds of fishers (as happened in 2007 with the super-cyclone Sidr), and force many others to seek out the coasts of foreign countries, where they often face harassment and even imprisonment.

The effects of climate change can be seen in the coastal areas of Bangladesh in the form of sea-level rise (which can destroy mangrove forests and fish nurseries), a reduction of freshwater availability due to salinity intrusion, and an increase in the frequency of cyclones. Increasing salinity affects freshwater fish production, while rising sea temperatures may affect the distribution patterns of some fish species. These days Bangladesh's fishers find it increasingly difficult to fish near the shore, and have to venture into deeper waters.

In the face of natural disasters like storms and cyclones, many small-scale fishermen in Bangladesh have had to abandon their fishing trips in order to safeguard their lives, often losing their fishing nets and boats in the process. A successfully completed fishing trip generally requires about 14 days. If a 'potentially dangerous' Level 3 signal is sent out from a fishing port to warn of extremely rough sea conditions, the fishers, who normally spend 14 days at sea for a complete fishing trip, return to shore and take shelter. In 2007, around 22 warnings indicating a disaster intensity above Level 3 were issued.

Fishing trips that are abandoned during the peak seasons cause a significant erosion of incomes, and drastically affects the livelihoods of fishing communities. Yet there is little support from the Bangladesh government to help the small-scale fishers in crisis. On the contrary, some of its recent policies have been designed to support the large-scale sector, with water bodies being leased out to influential persons rather than bona fide fishermen.

It was in this context that the Dhaka consultation sought to:

- bring together under one roof all government agencies, non-governmental organizations (NGOs) and private-sector parties involved in small-scale fisheries;
- develop co-ordination among the groups working with the small-scale fisher community;
- ensure interaction with national-level policymakers on IGSSF, and engage in advocacy for the betterment of the lives and livelihoods of the small-scale fishers of Bangladesh; and
- prepare recommendations on IGSSF and also on how to engage in greater networking and advocacy for sustainable small-scale fisheries in Bangladesh.

Ensuring participation

To realize these objectives and to generate maximum and effective participation of fishers and related stakeholders, COAST organized the

Dhaka consultation in a different manner. To ensure participation from all possible regions of the country, COAST selected five sample regions of fisher communities—one from the coastal area, three from the riverine area (one sweet-water, one mixed-water and one saline-water) and one from a *haor* (a large water body) area.

In each area, two focus-group discussions (FGDs) were arranged with 15 participants in each FGD. Regional workshops were also arranged in each area to validate the FGD findings and to make a wider assessment. To complete the regional-level FGDs and workshops, a national-level workshop was organized in Dhaka with representatives from all the five regions, followed by a seminar to sum up the grass-roots consultations and presentations for the benefit of national policymakers.

A two-day orientation programme was held for the field resource persons in which 25 participants from five regions participated. Of the five from each region, three were small-scale fishermen community leaders and two were NGO officials who led the FGDs and district-level workshops. The regions represented were Bhola, Cox's Bazar, Khulna, Bogra and Sunamganj.

A total of 500 persons participated in the Dhaka consultation—300 fishers, 17 government officials, 19 political leaders, 35 journalists, 26 NGO workers, 40 businessmen, 34 academicians and 29 representing other professions.

One of the key objectives of the consultation was to create an effective platform for the marginalized fishers of Bangladesh and to identify who small-scale fishers are and what comprises small-scale fisheries. The participants defined small-scale fishers as those who earn their living and ensure their livelihoods by capturing fish from rivers and the sea. Other characteristics of small-scale fishers are: social and economic marginalization; the use of small fishing gear and vessels; nearshore (not deep-sea) fishing operations; reliance on open water bodies; manufacture of vessels and nets on a small scale; and culture and processing of fish with investments of under 40,000 Bangladesh taka (BDT) or around US$490.

The major problem identified by the participants at the consultation was the lack of legal recognition of fishers or fishworkers in the policies or laws related to the fisheries sector of the country. That was the reason for one of the key recommendations of the consultation—to provide identity cards for small-scale fishers. It was strongly suggested that fisher community members themselves should be asked to prepare the list of bona fide small-scale fishers.

Another major recommendation of the consultation was to search for alternative livelihood or income-generating options, considering that fishing is often seasonal. Financial support should also be provided during official fishing embargoes. A social-security net in terms of special quotas for the fisher community members was also demanded. Female members of the community should be trained for employment in fish culture and poultry farming.

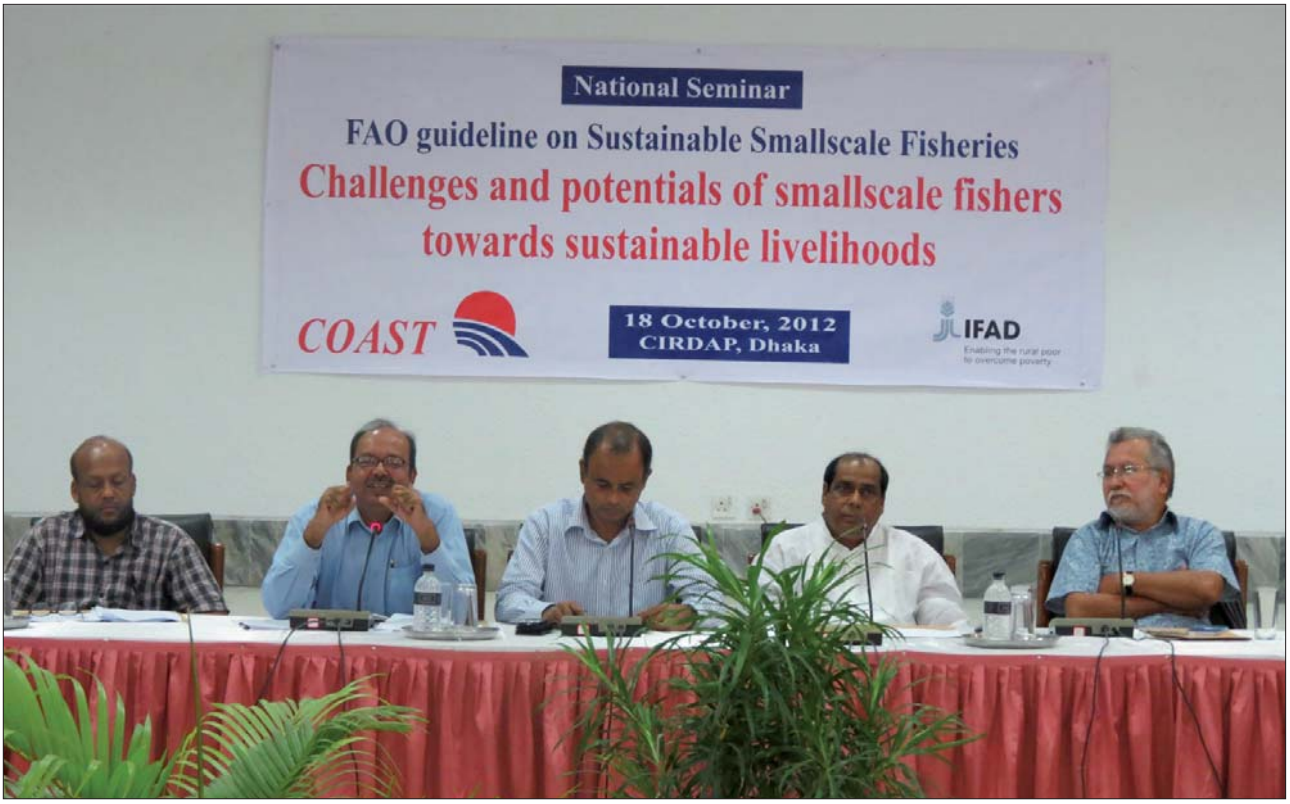
The major problem identified by the participants at the consultation was the lack of legal recognition of fishers or fishworkers...

Inadequate healthcare services for the fishers was pointed out as a severe problem. Demands were expressed for community clinics and mobile health centres on the rivers and the sea so that fishermen in distress can get free emergency treatment and medicines.

Educational demands

In the sphere of education, demands were made for primary schools in embankment areas, free educational material for the children of fishing communities, and special scholarships to help eliminate child labour.

MD. TAUHIDUL ALAM



A first-of-its-kind national consultation on the FAO IGSSF was recently held at the CIRDAP Auditorium, Dhaka, Bangladesh

There are various anomalies in the distribution of *khas* (government land) among the poor. At the consultation, fishers, who are mostly landless, demanded proper distribution of *khas* land.

Considering the power exercised by middlemen and moneylenders on the community, participants also recommended easy access to credit for fisher community members, which would help them access markets better.

Fishers in Bangladesh do not enjoy any health insurance or emergency medical aid schemes. In this context, demands were made for potable water supply, ambulance services and free health insurance.

Cancellation of the leases on open water bodies was strongly recommended to make sure that small-scale fishers enjoyed continuing access to fisheries resources.

Perhaps the most important outcome of the Dhaka consultation was the creation of an organization for the fisher community of Bangladesh, the National Fisher Folk Solidarity Forum. COAST will provide the secretarial and technical support for the Forum, which is expected to become an effective community-based platform that fishers can use to make their voices heard locally and nationally.

For more

www.coastbd.org
The Coastal Association for Social Transformation Trust

www.coastbd.org/images/stories/events/seminer18102012/English_Press_release.doc
Press Release about the Workshop

www.fisheries.gov.bd
Department of Fisheries, Government of Bangladesh

Increasingly Vulnerable

A study has come up with specific recommendations for the development and welfare of the fisheries sector and its small-scale fisher communities in Bangladesh, the 'Land of Rivers'

With 230 rivers coursing through the country, Bangladesh is called the 'Land of Rivers'. It also has the world's largest flooded wetland. Rivers and water resources have made Bangladesh one of the world's leading fish-producing countries with a total production of 4.27 mn metric tonnes (MT) in 2017-18. The fisheries sector contributes 3.57 per cent to the national gross domestic product (GDP), 25.30 per cent to the agricultural GDP, and provides a 60 per cent share of animal protein. About 18.5 mn people are directly involved in this sector, of whom about 10-12 per cent are women.

A study was recently carried out with the backing of the International Collective in Support of Fishworkers (ICSF). Titled 'Bangladesh: Social Development and Sustainable Fisheries', its objective was to discuss the overall fisheries sector of Bangladesh, bringing out some social-development issues of the country's fishers' communities, focusing on small-scale and marginalized fishers. The study identifies some evidence-based situations, analyses the data and offers some specific recommendations. It uses both primary and secondary data and information. To fathom the socioeconomic conditions of the coastal fishing communities of Bangladesh, a survey was carried out to gather data, while inteviews provided information from three coastal districts, namely, Bhola, Cox's Bazar and Bagerhat. The COAST Trust, a national-level non-governmental organization (NGO), supported the study.

The survey showed that about 90 per cent of the houses are made of bamboo, tin and wood.

Bangladesh has made significant progress in eradicating poverty. In this regard, there are a number of initiatives and projects, including extensive social safety-net programmes. It is, however, rare to have a separate scheme for fishers. Poverty remains a major challenge for Bangladesh fishers, despite the benefits from a number of poverty-eradication initiatives. According to this study, the country's fishing communities are still suffering from various forms of poverty.

Both the field data and secondary information show the unfortunate condition of the Bangladeshi fishermen in terms of almost all the indicators used in the study. The average annual income of the fishing communities was found to vary from US$235 to US$1,174, while the annual national income for Bangladesh is US$2,064. The difference is very obvious. The data shows that the fisheries sector has, on average, more landless and homeless people than in other sectors, and fewer with access to electricity. The number of people under extreme poverty is higher. Though data shows fishing families have more access to drinking water and sanitation, in several areas they have to travel far to collect water. The sanitation quality is not up to the mark.

The survey showed that about 90 per cent of the houses are made of bamboo, tin and wood. The houses are small and congested, being between one to 50 years old. The houses are not safe, especially in the coastal region, which is susceptible to storm surges.

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Creating jobs

Bangladesh has unique policies and initiatives in place to create jobs for all of its people. The government is introducing a number of measures to combat unemployment. There are special stimulus programmes for the manufacturing sector as well as for small and medium businesses and agriculture. The fisheries sector is given special attention. The Draft National Job Policy 2019 calls for assistance in the production of fish, because employment in this field comes under 'green jobs'. The policy also recognizes the importance of fisheries as one of the main rural industries.

Bangladesh has some specific policies and provisions in place to ensure that the labour sector as a whole has a decent working environment. But, in many cases, the reality lags behind the International Labour Organization (ILO) standard. The fisheries sector receives little attention in many cases. The study finds that small-scale fishers and fishworkers face a severe lack of decent working conditions.

The country's constitution gives the country an 'inclusive' character as it legally guarantees equal rights and opportunities for all. However, there are gaps and discriminations in several aspects of society, and in some cases there is a tendency to narrow the differences and to discriminate between sections of the population. The study did not find discrimination towards fisher groups for being fishers. In numerous cases, however, they face discrimination as disadvantaged and oppressed communities.

The State's policy is to ensure health services for all. It has a strong occupational health and safety policy. The public health programmes of the government are vast, reaching the village level with community hospitals. But the sector suffers from severe corruption and mismanagement. Though several sectors are trying to ensure occupational health and safety, the fisheries sector is yet to benefit much from such efforts. This study found that no support for occupational safety reached fishers during the COVID-19 pandemic.

Education is recognized as a fundamental right in the country's constitution under Article 15. Primary education is compulsory. Girls get special scholarships and free education until class 10. Fishing communities also benefit from these measures, but the study found that fishers lag behind in terms of education and literacy, compared to the national situation.

The citizen's right to shelter is guaranteed in the constitution and there are various housing programmes in the country. Though there is no special housing exclusively for fishers, they do benefit from projects and programmes for the poor and the marginalized. Coastal fishers get support as people vulnerable to climate vagaries.

Bangladesh has special policies and programmes on water, sanitation and energy. There are schemes for the poor that encompass fishers. The study found almost all the fishing communities have access to drinking water and sanitation. The source of water in many areas is a bit far to access, and the quality of the sanitation is yet to improve.

…women members of fishing families still lag in terms of empowerment and other socioeconomic indicators.

Bangladesh is a pioneer in creating a national strategic plan and policies and programmes to fight the negative impacts of climate change. Fishers of Bangladesh are among the most vulnerable communities in this regard. While government policies and programmes do benefit fishers, the study shows that the suffering of these communities is increasing and their vulnerabilities are getting more severe.

A range of policies and strong measures protects women in Bangladesh. The country has some remarkable accomplishments with respect to gender equality. But, according to the report, women members of fishing families still lag in terms of empowerment and other socioeconomic indicators.

Access to justice

Multiple policies and processes are in place to ensure access to justice

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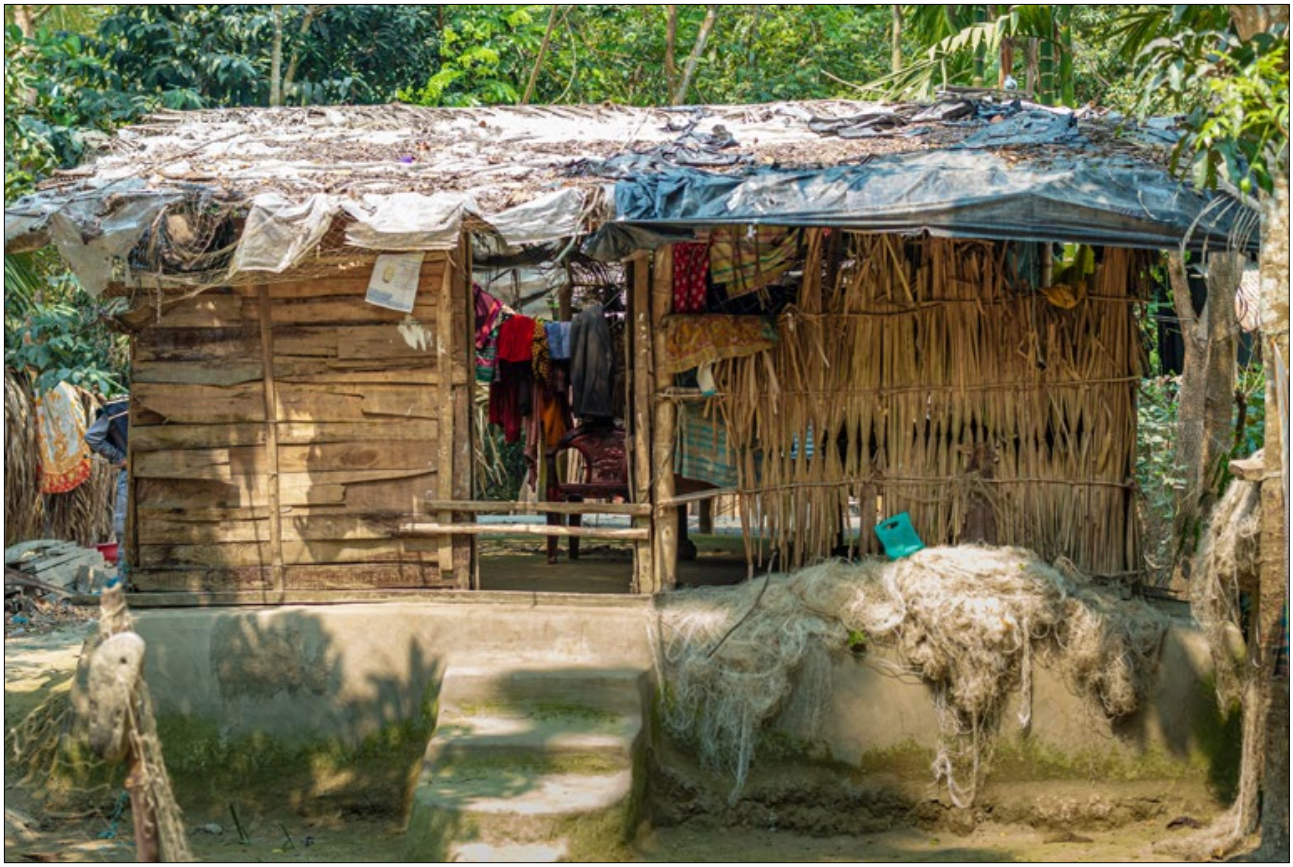

Fisher's house, Pathrghata, Barguna, Bangladesh. The data shows that the fisheries sector has, on average, more landless and homeless people than in other sectors, and fewer with access to electricity

for the oppressed and marginalized. Yet, according to the study, fishers are unaware about government programmes and thus fail, in many cases, to obtain timely justice. Poverty and lack of information, networking and negotiating skills create barriers to the provision of proper facilities for fishers from various organizations.

The study has also come up with some specific recommendations for the development of the fisheries sector and for the welfare of the small-scale fisher communities. These include: legal recognition of small-scale fishers; special safety nets for the fishing communities; ensuring access to the open-water bodies, and protection of resources; access to credit and market for small-scale fish producers; measures to provide health services such as floating medical centres at sea; education facilities for children; and safety-at-sea measures. Gender-segregated data is a must to recognize the contribution of women. Also necessary are special income-generating activity (IGA) support for the women members of the fishing communities; initiatives to ensure the sustainability of water bodies; insurance for fishers; provision of decent work; and measures for occupational safety.

For more

A Voice for the Coast
https://www.icsf.net/images/samudra/pdf/english/issue_63/3798_art_Sam63_E_art05.pdf

Making women in fishing visible
https://www.icsf.net/images/yemaya/pdf/english/issue_62/2401_art_Yemaya_62_Art1_Bangladesh_Mujibul.pdf

80pc marine fishers don't have enough safety equipment
https://www.thedailystar.net/city/news/80pc-marine-fishers-dont-have-enough-safety-equipment-2074025

The Coastal Association for Social Transformation Trust
www.coastbd.org

Hotter, Wetter, Saltier

The unique geography of Bangladesh makes it extremely vulnerable to climate change and warrants appropriate tools and strategies to combat and mitigate negative impacts

Bangladesh has been one of the countries most affected by climate change in the last 15 years. It is the seventh most vulnerable country on the Climate Risk Index 2020, according to a recent Germanwatch report.

Bangladesh is geographically unique and is home to one of the world's largest deltas formed by the Ganges-Brahmaputra-Meghna (GBM) river system. The GBM basin and the coast of the Bay of Bengal is characterized as a semi-enclosed tropical basin. Most of Bangladesh is less than 10 m above sea level. This makes the country extremely vulnerable to climate change, especially around the coastal areas, which are susceptible to cyclones, floods and other extreme weather events. This vulnerability is not only due to bio-physical and geographical factors, but also due to the socioeconomic standing of Bangladesh in terms of its dependency on agriculture and fisheries, and its high population density. Poverty further exacerbates the situation.

An analysis in 2009 identified Bangladesh as one of top four Asian countries which is climate-vulnerable (besides Cambodia, Pakistan and Yemen), especially due to the importance of fisheries to the nation's economy and diet, and because Bangladesh has limited capacity to face the potential impacts of climate change. As of 2018, the total fish production of Bangladesh was 4.3 mn tonnes. The sector contributed to 3.57 per cent of the country's gross domestic product (GDP) and accounts for 60 per cent of the total animal protein intake of the country.

Bangladesh's vulnerability to the effects of climate change mainly comes from the country's dependence on agriculture. The rise in sea level is leading to the intrusion of saltwater into the land. This increases soil salinity and creates poor conditions for crop cultivation, apart from decreasing the availability of natural freshwater for consumption and production. Climate-change effects such as floods, riverbank erosion, cyclones and storm surges, continue to cause losses of life, livelihoods and essential infrastructure; if this trend continues, fishers in Bangladesh may have to halt their practices. With sea-level rise and increased salinity of freshwater bodies, aquaculture, fish species distribution and biodiversity in the coastal areas continue to be under threat. Saltwater intrusion has caused many fish farmers to end their usual practices, pushing them to adapt to the changes. Many are now using saline-tolerant species such as tilapia (*Oreochromis niloticus* and other genetically improved strains) and *parsa*. The case of hilsa (*Tenualosa ilisha*), which accounts for 13-14 per cent of the total fish production of Bangladesh, provides a good insight into the challenges faced by the country's fisheries.

... vulnerability is not only due to biophysical and geographical factors, but also due to the socioeconomic standing of Bangladesh...

Threefold increase

Hilsa production from inland waters has declined by about 20 per cent over the last 20 years, whereas the marine catch increased threefold. The major hilsa catch has gradually shifted from inland to marine waters, revealing that the availability of the prized fish is gradually declining in the Padma and Meghna river catchment areas.

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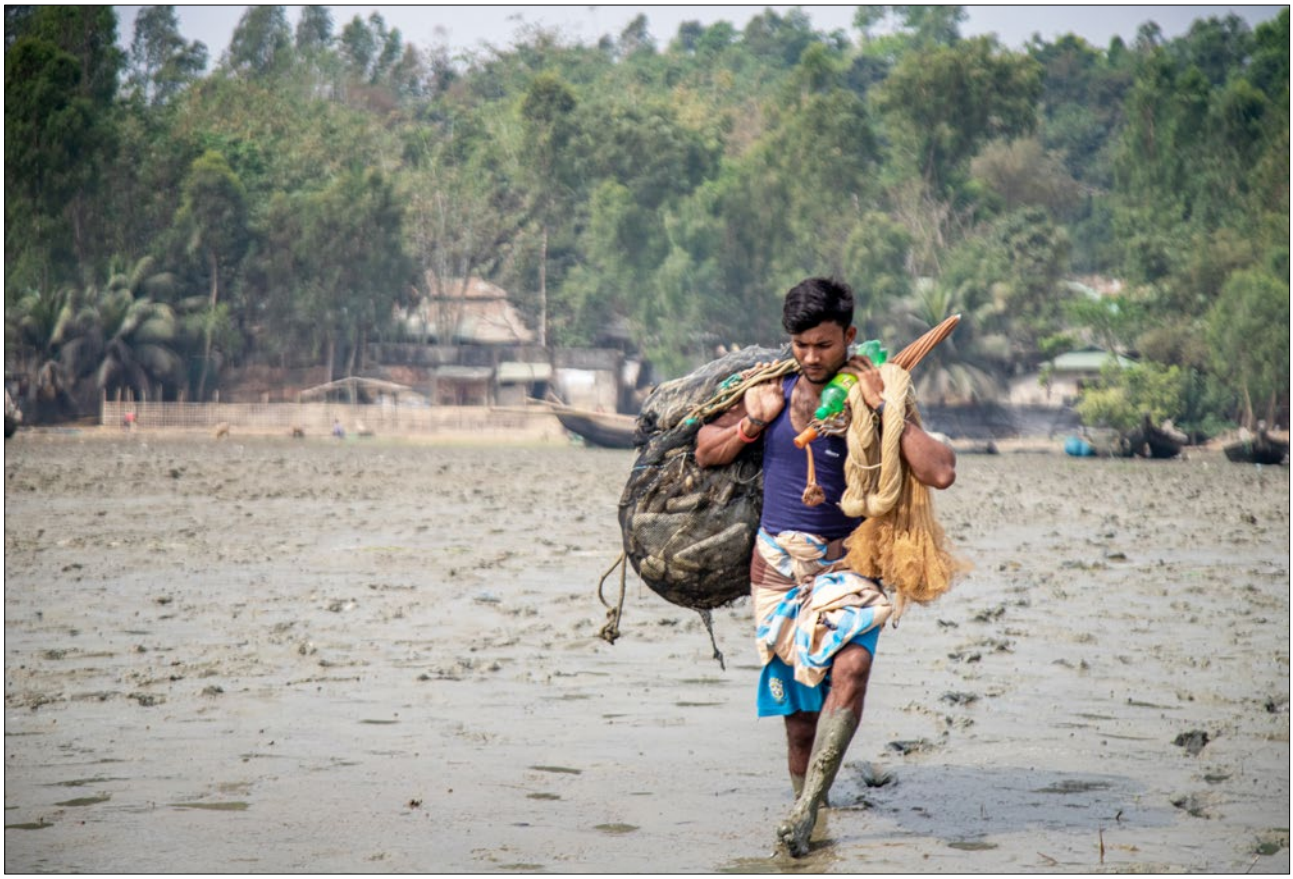
Effects of climate change	Impact of climate change on aquaculture and fisheries
Flood and river bank erosion	• High floods affect aquaculture—floods inundate and damage ponds, and release the fish, causing loss to fish farmers. Floods pollute pond waters and cause disease in fish. Siltation also occurs at the pond bottom due to silt being carried out by flood waters • River bed siltation by river bank erosion affects fish migration, breeding, production and the livelihoods of fishermen and women. Inland capture fisheries benefit from increased water
Cyclone and storm surge	• Loss of coastal fisher's lives and assets (homes, nets and boats) • Damage to fish markets and disruptions in the value chain • Damage to aquaculture infrastructure (embankments, sluice gates), hatcheries and nurseries, and loss of shrimp and fish • Loss of coastal aquaculture production and damage to aquaculture infrastructure, affecting farmers' incomes and livelihoods • Reduced employment opportunities and increased poverty
Sea level rise	• Salinity intrusion and increase of saline water area facilitates brackish water aquaculture • Increase of saline water area by inundation of low-lying coastal area will increase brackish water fish/shrimp production • Change in oceanographic parameters may affect marine fish stock, fish migration and biodiversity
Salinity intrusion	• Decrease in inland open water area, affecting freshwater fish production and livelihoods • Positive impact on coastal shrimp culture • Changes in aquaculture and fishing technology
Erratic rainfall	• Insufficient/irregular rainfall adversely affects the natural spawning of fish, and ultimately the production of fish and the livelihoods of fishers and fishworkers
Temperature rise and variation	• Affects breeding performance of fish and fish production in natural water bodies and fish/shrimp hatcheries • Changes in health of coral reefs and of aquatic biodiversity

For the GBM basin in winter, an expected reduction in the area covered by water bodies may cause favorable fish habitats to dry out, especially in the open-water bodies situated in the basin. This increases the fish death rate, and challenges the survival of open-water fishes due to the loss of their natural habitats. The anticipated rise in rainfall due to climate change will also result in increased river runoff, which is expected to extend the breeding ground for freshwater fish with higher nutrient availability. On the contrary, increased water runoff may cause floods and destroy aquaculture infrastructure. In the table, these climate-change effects and their impacts on aquaculture and fisheries are summarized, based on Bangladesh's Third National Communication to the United Nations Framework Convention on Climate Change (UNFCCC).

Recommendations

To address the challenges posed by climate change to coastal and riparian fishing communities in Bangladesh, we have a number of recommendations, based on the key findings of our review of literature. First, more research is needed to accurately anticipate the

MANUSHER JONNO FOUNDATION



A fisher with his nets in Moheshkhali, Cox's Bazar. Hilsa, which accounts for 13-14 per cent of the total fish production of Bangladesh, has declined by about 20 per cent from inland waters, whereas the marine catch has increased threefold

impacts of climate change on fish populations, and to identify salinity-tolerant species in coastal areas, and freshwater species in inland areas. This knowledge should be disseminated through channels appropriate for coastal fishing and fish-farming communities. Non-governmental organizations (NGOs) and civil society organizations (CSOs) can collect and disseminate a range of information on community mobilization, training, extension and credit disbursement so that the coastal community can adapt according to their needs.

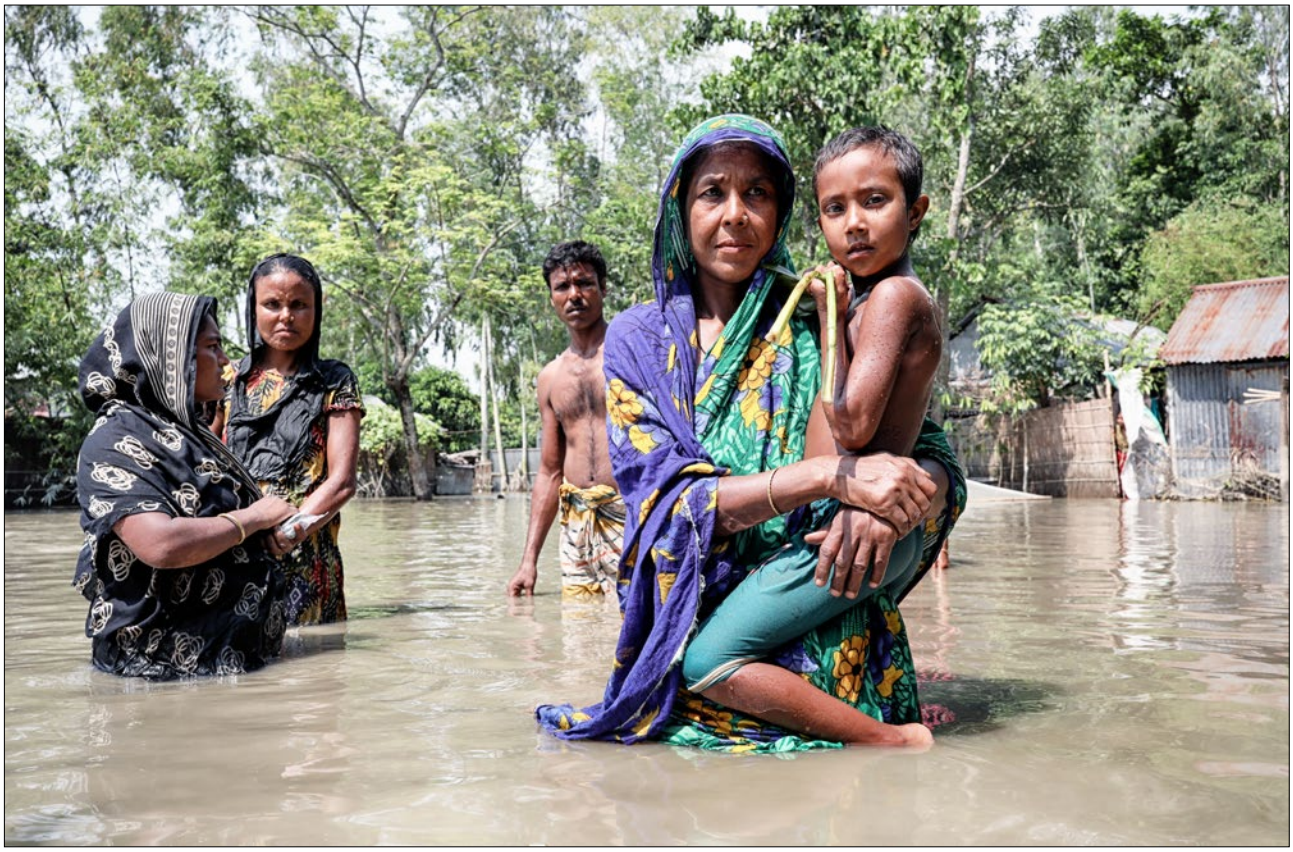
Plans for long-term research on the impacts of climate change on marine and inland fishery resources in the Asia-Pacific region should be made a priority as the lack of continuous and updated data prevents effective policy and action. Geo-spatial mapping and planning should be improved by monitoring the formation of new shoreline areas and new mangrove areas. Additionally, early detection methods for shifts in salinity should be identified and zones delineated to make appropriate adjustments to aquaculture practices.

Finally, the government can mobilize greater financial support and develop suitable projects for the sector. It should create a beneficial environment for climate-friendly investments (through taxing polluting industries and incentivizing 'green' production). It should enhance the business environment to attract more foreign investments to implement mitigation and adaptation processes that can benefit coastal areas and communities in Bangladesh.

Conclusion

Regardless of its low contribution to the global greenhouse gas (GHG) emissions, Bangladesh is extremely vulnerable to the adverse impacts of climate change. This vulnerability is amplified as the country's economy is dependent on the fisheries and aquaculture sector (12 per

UN WOMEN / MOHAMMAD RAKIBUL HASAN



Floods in Jamalpur, along the Brahmaputra in Bangladesh. An analysis in 2009 identified Bangladesh as one of top four Asian countries vulnerable to climate change (besides Cambodia, Pakistan and Yemen)

cent of Bangladesh's population relies on the sector for their livelihoods), and in terms of foreign exchange earnings from exports. Climate change could cause food insecurity and elevate poverty. If adaptive measures are taken, it could create more opportunities for improved fish-production practices and greater economic development.

In this respect, the government of Bangladesh needs to prioritize the challenges posed by climate change and coastal development. This can be achieved through researching and developing tools and strategies to combat and mitigate negative impacts. A co-ordinated long-term research study should be conducted on the impact of climate change on marine resources in the Asia-Pacific region. Assistance from the international community -- both technical and financial -- could result in better planning and implementation of sound policy measures. If effective implementation of such policies can be ensured, Bangladesh can be proactive in combating climate change and ensuring the sustainability of its aquatic ecosystems and the development of its fishing communities.

For more

Climate Change and Fisheries: Perspectives from Small-scale Fishing Communities in India on Measures to Protect Life and Livelihood
http://www.icsf.net/images/monographs/pdf/english/issue_121/121_Climate_Change_17May12_3_53PM.pdf

Impacts of climate change on fisheries and aquaculture: Synthesis of currrent knowledge, adaptation and mitigation options
https://www.fao.org/3/I9705EN/i9705en.pdf

A Large Ocean State Seeks Change
https://www.icsf.net/images/samudra/pdf/english/issue_84/4484_art_Sam_84_art03_Kiribati_%20Aurlie_Delisle.pdf

The Price for Ilish

Conservation of fisheries in Bangladesh has become heavy-handed and militarized while poverty in fishing communities remains unmitigated

Early on the night of March 16, 2021, police opened fire on a small fishing boat and killed a young fisher named Mohammad Masud in the Meghna River. The shots were fired in the river north of Chandpur, the town famous for its well-known trading centre of *ilish* (hilsa), Bangladesh's most prized fish. It was reported that Masud, 24, went fishing with some others during a seasonal ban imposed by the government to protect juvenile fish. The police said they opened fire in self-defence after the fishers threw brick chips and attacked the police with sticks. When a journalist visited the deceased Masud's house, his family did not have even a "handful of rice" to feed themselves.

Official estimates tell us that the catch in mixed-species open-water fisheries in Bangladesh has been increasing throughout the last decade. The catch is rising in the *ilish* fishery also; this is the single largest fishery in volume and economic value. Still, fishing families like Masud's are either ultra-poor or poor in the official categorization of poverty. Fishers go hungry during fishing ban seasons. Armed police, the coast guard, and navy patrol the fishing grounds to enforce the ban. In recent years, the air force has also conducted aerial surveillance. During such a season in 2020, at least 5,533 fishers were jailed. How did conservation in Bangladesh become so heavy-handed and militarized despite the poverty in fishing communities?

An old tale

The history of systematic injustice, economic and environmental, towards peasants and fishers dates back to the British colonial takeover in Bengal. The East India Company established its new land administration and revenue regime by the Permanent Settlement Act of 1793. It transferred all lands and water bodies, including rivers and inshore waters, as estates to a newly created small group of landlords called *zamindars*.

The empire is long gone. Yet successive governments have failed in making significant efforts to address distributive and procedural injustice against traditional artisanal fishers. There have been no legal reforms to recognize their customary tenure. The government does not invest meaningfully in artisanal fishing communities to enable them to secure a fair share of the income from fisheries.

The history of systematic injustice, economic and environmental, towards peasants and fishers dates back to the British colonial takeover in Bengal

For decades, capture fisheries were shrinking due to a wide range of pressures. Reduced water flow in trans-boundary rivers due to dams, barrages and diversion of water upstream significantly impacted the aquatic ecosystems in Bangladesh. Industrial and agricultural runoffs have polluted the water. Aquatic habitats are reduced and degraded by changes in land use—intensive farming, flood control measures, water infrastructure, draining wetlands for agriculture or land development, and encroachment, to name some. Water engineering, including embankments, has especially impacted fish biodiversity, population and the unit value of the catch.

No efforts have been made to restore and conserve fish habitats; or to mitigate or prevent the impacts of external threats. Rather, the government has prioritized

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aquaculture, in the wake of shrinking capture fisheries. Wealthy landowners in the rural areas have profited from large-scale intensive aquaculture, often responsible for degrading aquatic biodiversity in the country.

Misplaced priorities

In the late 1990s, Bangladesh experienced a decline in the total estimated catch in capture fisheries. Even then, the government did not address these factors on priority in its fisheries management plans. For instance, the Hilsa Fisheries Management Action Plan (HFMAP) in 2003 was mostly used to establish no-take zones and seasonal bans.

The management plan started with a target to protect *jatka* (juvenile ilish under 23 cm in size). Several top-down interventions have been gradually put in place since 2003 to increase the ilish catch. These interventions include spatial and temporal restrictions on fishing; limitations on the use of fishing gear and the size of the ilish catch; regulations for fishing vessels; and the distribution of food rations among a limited number of fishers during the fishing ban season.

Most of the factors behind the endemic poverty of fishers in Bangladesh can be traced back to the absence of distributive and procedural justice

Under the HFMAP, the most notable temporal interventions for the conservation of ilish are two seasonal bans on fishing: One to protect the jatka and another to protect the brood ilish (mature and about-to-spawn). To protect the brood, there is a 22-day-long ban on catching, carrying, transporting, offering, selling, exporting or possessing ilish fishes in the country. This period is evenly divided before and after the first full moon of the Bengali month of *Aswin* (usually in October). The second ban, to protect jatka, is for seven months every year, from November 1 to May 31. During this time, catching, carrying, and selling of jatka is prohibited.

The government does not adequately compensate fishers during the fishing ban seasons, though since 2004, the authorities have distributed a limited amount of rice as ration through the Vulnerable Group Feeding (VGF) programme. Using a heavy hand, the government forces fishers to comply with these regulations. For instance, from 2011 to 2013, the mobile courts reportedly imposed 2,462 prison sentences and fines amounting to US $106,509 on law-breaking fishers. The mobile courts are, in fact, non-judicial *'summary courts' run by 'executive magistrates'* embedded with law-enforcing agencies.

Fishers be damned

Several no-take sanctuaries for ilish run along the Ganga and Meghna river systems, as also in Bangladesh's coastal waters. There are two declared marine protected areas (MPAs) in offshore waters to protect megafauna species of conservation interest. Planning and designation of these riverine and MPAs did not adequately consider social outcomes. Consequently, these protected areas are underperforming in "effectiveness and social equity", according to recent studies. Most of the factors behind the endemic poverty of fishers in Bangladesh can be traced back to the absence of distributive and procedural justice. Yet, from the beginning of state interventions to govern and manage open-water fisheries, the erratic efforts were hardly participatory. More than two decades later, it has morphed into heavy-handed, top-down, enforcement-based and increasingly militarized conservation.

And now new users of inland and marine waters in Bangladesh are creating new threats to artisanal fishers. For example, unregulated navigation and shipping, sand dredging, rapidly increasing unsustainable economic activities in coastal and marine areas, coastal roads and other mega-infrastructure projects, including military instalments, ports and power plants.

The government does not see the well-being of fishing communities as an integral part of sustainability in fisheries. Instead, the authorities are

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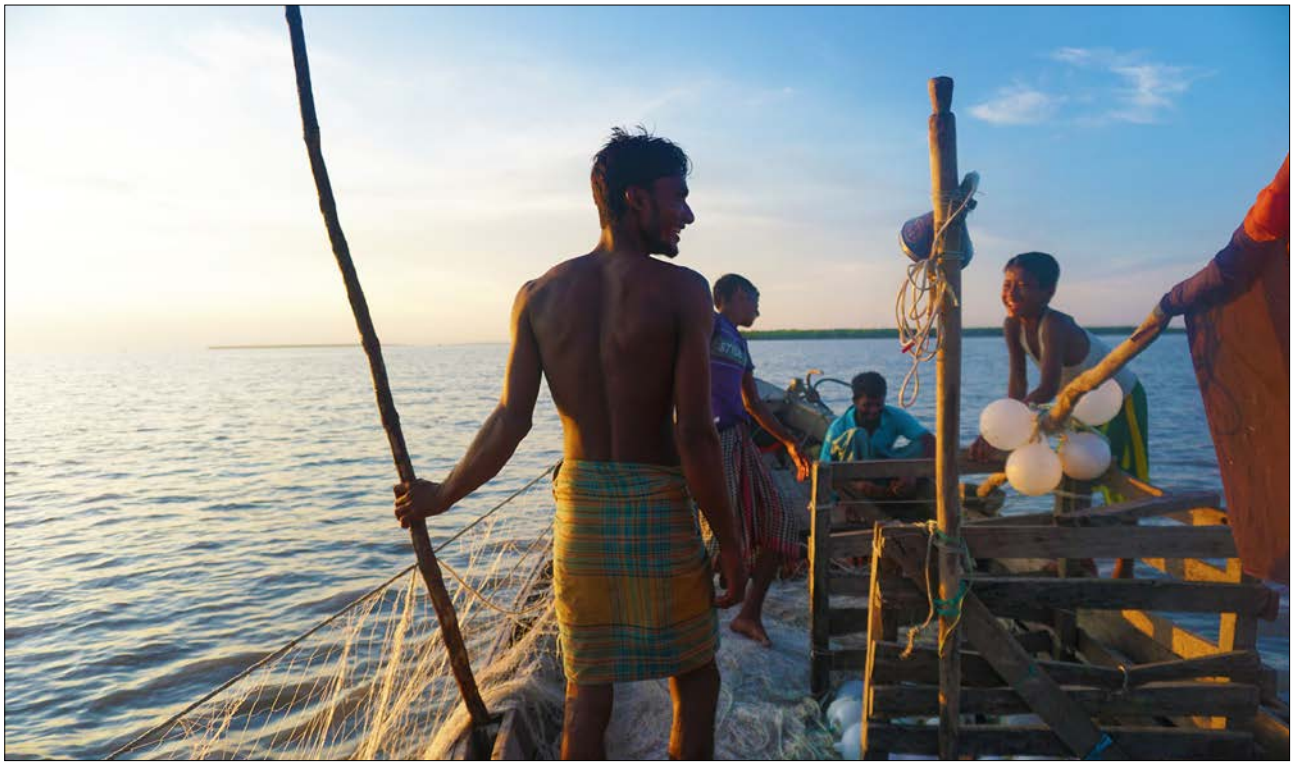

A family of artisanal fisher fishing for ilish (hilsa), Bangladesh's most prized fish in the Meghna river estuary, the coasta plain estuary on the coast of Bangladesh

focused on increasing the volume of catch at any cost. That cost, finally, is borne by the fishing communities. The government's priorities do not include equity and justice for fishers. This gets reflected in the existing fisheries policies and plans, such as Conservation of Fish Act 1950, the National Fisheries Policy 1988, the Marine Fisheries Act 2020, the Eighth Five Year Plan, and the Workplan for Marine Fisheries Resources Management.

What's left out?

To begin with, the fisheries laws and policies should prioritize addressing all threats to capture fisheries in a holistic manner, rather than prioritizing only top-down enforcement on poor fishers. The overall legal/policy framework in fisheries and water governance needs reformation with a new major goal: ensuring justice and equity for small-scale fishing communities. The legal/policy framework should prioritize removing structural barriers to procedural and distributive justice in the backdrop of external threats, of systematic deprivation of land rights and fisheries tenure of artisanal fishers.

The first step in this direction is to recognize the colonial nature of the current fisheries governance and management—it must be consciously decolonized. It must undo the colonial approach of taking away from the commons open-water fishery habitats. Land reforms began after the British colonial control ended in 1947. The East Bengal State Acquisition and Tenancy Act was passed in 1950. This, however, largely excluded restoring customary tenure of traditional artisanal fishers.

It must undo the colonial approach of taking away from the commons open-water fishery habitats

Which is why a good first step is to abolish the practice of riverine *jolmahals* (fishing grounds leased out to private parties), introduced in 1995. the Fishing communities have not reaped the benefits of that policy change because of the absence of public

investment in fishing communities or the lack of legal recognition of their customary tenure rights.

After the establishment of open-access fishery in the rivers, the *de facto* ownership of riverine fisheries is still not with the fishing communities! Local investors and moneylenders now own most fishing operations. Legal provisions must be designed to transform this exploitative pattern of ownership over the means of fishing operations.

Giving exclusive fishing rights to artisanal fishing communities in such open-access fisheries should be a good starting point. This depends on a change in policy changes to recognize the customary right of traditional artisanal fishing communities to govern and manage their rivers, wetlands and inshore waters.

Artisanal fishers want the abolishment of private-access fishing in all public water bodies

Both inland and near the coast

In non-riverine public water bodies like wetlands, private access to fishing is still allowed legally, as in the jolmahals. Artisanal fishers want the abolishment of private-access fishing in all public water bodies. On the other hand, fishers who work as labourers in small-scale commercial fisheries need good job opportunities. To begin with, they need to be formally recognized as labourers under labour laws.

In the case of nearshore waters in the Bay of Bengal, there is already a legal provision to reserve fishing areas with a depth of 40 metres or less for small-scale fishers. It is commonly known that large-scale industrial fishing fleet do not comply with this provision; they regularly fish in the coastal area. Fisheries authorities should strengthen monitoring, surveillance and control on the industrial fishing fleet; this will allow marine artisanal fishers to operate in their exclusive nearshore fishing zone without risking conflict with trawlers and other large-scale fishing fleets.

At least half of the people in small-scale fisheries are women, especially in shore-based post-harvest activities. Yet their rights are rarely recognized. In fish drying yards and shrimp processing plants, in particular, women fishworkers endure hazardous conditions, poor wages, risks to their health. A significant number of women are active fishers. Their role needs wider acknowledgement. The government, the civil society and the media must ensure their representation in all conversation on fisheries.

When discussing Bangladesh's fisheries and related policy, we must keep in mind that the main strength of fisheries in Bangladesh is small-scale artisanal fisheries. They bring in most of the catch, year after year. Justice and equity should not be distant dreams for them.

No matter what legal/policy reform is proposed, its efficacy depends on how the public agencies responsible for water, fisheries and wildlife governance embrace the principles of equity and justice. Discussions on environmental and economic justice for fishing communities have a chance to become a reality if fisheries authorities take the initiative to ensure the participation of artisanal fishers and fishworkers in policy-making.

For more

Hotter, Wetter, Saltier
https://www.icsf.net/samudra/hotter-wetter-saltier/

Increasingly Vulnerable
https://www.icsf.net/samudra/bangladesh-social-development-increasingly-vulnerable/

Poverty in small-scale fishing communities in Bangladesh: Contexts and responses
https://d-nb.info/1072046261/34

A Perpetual Struggle

The shocks from climate change have reduced incomes and adversely affected the livelihoods of fisher communities in Bangladesh

Often called the Land of Rivers, Bangladesh boasts a remarkable riverine landscape that has nurtured a flourishing fisheries sector. With about 230 rivers crisscrossing it, the country is one of the world's largest deltas along with the world's largest flooded wetland. The fisheries industry is a vital pillar of the national economy, contributing 3.57 per cent to the gross domestic product (GDP) and an impressive 25.30 per cent to the agricultural GDP. Beyond economic contributions, fisheries play a pivotal role in ensuring food security, providing approximately 60 per cent of the nation's animal protein. This sector engages an estimated 18.5 million people directly, with women constituting 10-12 per cent of the workforce.

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The national fisheries sector can be categorized into two primary groups: inland and marine fisheries. The former further divides into inland capture and inland culture fisheries, encompassing diverse aquatic ecosystems such as rivers, estuaries, beels (wetlands), floodplains, the Sundarbans, and the Kaptai Lake. The latter includes ponds, seasonal cultured water bodies, baors (oxbow lakes), shrimp/prawn farms, crab farming, pen culture, and cage culture. Marine fisheries consist of both industrial (trawler) and artisanal fisheries using wooden boats.

Historically, inland capture fisheries dominated fish production in Bangladesh. In 1983-84, they contributed a substantial 62.59 per cent to the country's total fish production; inland culture fisheries made up 15.53 per cent. There has been a notable shift, however, with inland capture fisheries contributing only 28.45 per cent in 2017-18, while inland culture fisheries account for a more substantial 56.24 per cent; marine fisheries constituted 16 per cent.

The sector faces a multitude of challenges, with the adverse effects of climate change standing out as a primary concern. Despite its relatively low carbon emissions, Bangladesh faces considerable challenges from climate change, making it one of the most vulnerable countries in the world. In 2018, the per capita carbon dioxide (CO_2) emissions for Bangladesh were a mere 0.56 tonnes, while countries like Saudi Arabia and the United States emitted 18.48 and 16.92 tonnes per capita, respectively.

A World Bank report projects that by 2050, Bangladesh's annual average temperature is set to rise by 1°-1.5°Celcius, affecting approximately 134 million people and incurring an estimated loss of US $167 billion. Moreover, the life expectancy of the population may decrease by 6.8 per cent by 2050. The international NGO Germanwatch ranks Bangladesh as the ninth most affected country by climate change.

Bangladesh's susceptibility to the effects of climate change is

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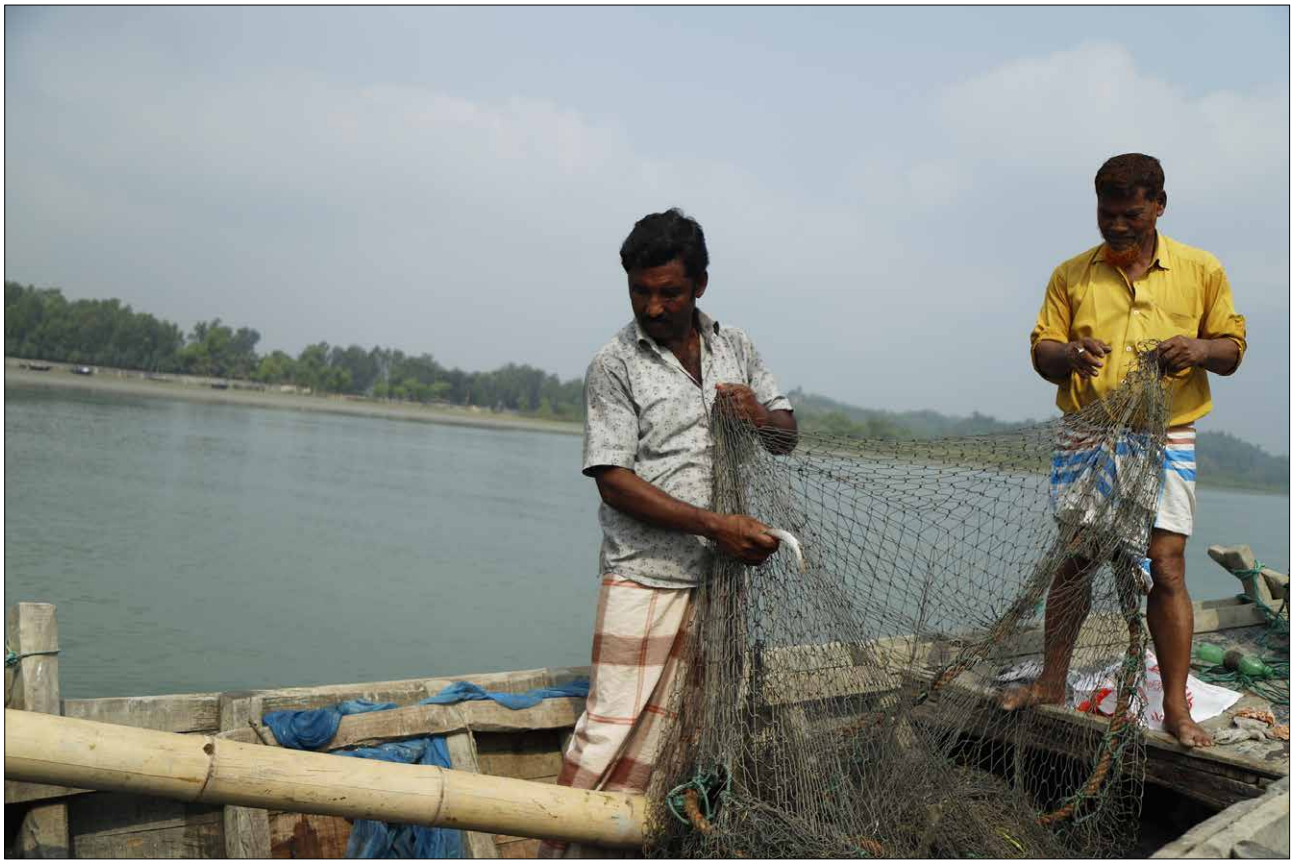

Small-scale fishers cast their nets near the shore, an age-old dance between man and the sea unfolds against the backdrop of the coastal horizon, Kutubdia, Cox's Bazar, Bangladesh

compounded by its population density and socio-economic environment, as recognized by the Sustainable Development Goals (SDGs) progress report in 2020. The country faces increased occurrences of unpredictable rainfall, intensified floods, droughts, extreme temperatures, and other natural hazards, as reflected in Bangladesh's disaster-related statistics. A staggering 70 per cent of the landmass in Bangladesh is susceptible to flooding.

Climate change severely threatens the country's food security, affecting crop production, particularly rice. Water scarcity for pre-monsoon irrigation is already hampering the production of high-yielding variety rice that accounts for about 36 per cent of the total rice production. Saline intrusion threatens to reduce crop yields significantly. Additionally, water-related hazards, including floods, cyclones and storm surges, as well as salinity in surface and groundwater, are hitting communities. Access to safe drinking water, proper sanitation and hygiene practices are persistent challenges, especially in coastal and char areas (lands surrounded by water), with fears of severe health consequences.

According to the Food and Agriculture Organization of the United Nations (FAO), extreme temperatures, erratic rainfall, floods, droughts, tropical cyclones, rising sea levels, tidal surges, salinity intrusion and ocean acidification are causing profound adverse effects on the lives and livelihoods of millions of people in Bangladesh. This onslaught of climate-related challenges threatens to undermine the socio-economic development achieved over the past three decades.

With approximately 40 per cent of its population living in poverty, the variable and unpredictable climate

adds another layer of complexity, significantly limiting livelihood options for the most vulnerable segments of Bangladesh's society.

Climate change

The unmistakable and distressing effects of climate change in Bangladesh manifest clearly in the case of river erosion on two crucial islands: Manpura and Kutubdia. Both these islands are inhabited by fisher communities grappling with the imminent threat of losing their homes and fishing grounds. The changing climate exacerbates the severity of river erosion, compounding the challenges these vulnerable communities face.

Unrelenting erosion has forced more than 60 per cent of the population to seek refuge in urban areas

In Bangladesh, fisher families are perpetually struggling to save their homes, primarily because they reside in close proximity to rivers and coastal regions. The relentless forces of riverbank erosion are a never-ending threat, displacing thousands. A staggering 283 locations, encompassing 85 towns and growth centres along with a substantial 2,400 km of riverbank, remain exposed to unforgiving erosive forces. The major rivers, including the Padma, the Jamuna and the Meghna, persistently encroach fertile floodplains, rendering countless individuals landless and homeless each year. The results, often termed 'Internally Displaced Population' (IDP), reinforce a multitude of inescapable challenges for the affected population at various stages of displacement.

In the country's islands, many people rely on fishing. Here, river erosion compounds the already formidable challenges. The eroding riverbanks claim not only the houses of numerous fishers but also disrupt their means of sustenance. Take Kutubdia, for example. Located in the Bay of Bengal, it functions as a upazila (sub-district) within the Cox's Bazar district. A majority of the island's inhabitants subsist primarily on farming and fishing. Over the past century, from 1880 to 1980, Kutubdia has lost a substantial portion of its landmass—about 65 per cent. What once expanded across 250 sq km has dwindled to a mere 59.56 sq km). Unrelenting erosion has forced more than 60 per cent of the population to seek refuge in urban areas.

Manpura Island, also a sub-district 80 km from Bhola district town (itself an island district), hosts a population of 125,000. Fishing is their livelihood. Over a 37-year period, from 1973 to 2010, the total land area of Manpura has steadily decreased from 148 sq km to 114 sq km.

This article draws from a series of focus group discussions (FGDs) with fishers. Conducted as part of a study sponsored by the International Collective in Support of Fishworkers (ICSF), these discussions took place in the coastal districts of Bhola, Cox's Bazar and Bagerhat. The insights shared by the fishers provide first-hand perspectives on the impacts of climate change, corroborated by previous studies and literature.

The fisher communities here have an up-close understanding of the tangible and often distressing consequences of climate change, given the stark shifts they have witnessed. The primary manifestation is the increasing frequency of cyclones and adverse weather. These disrupt fishing activities, preventing fishers from completing their trips successfully. In many instances, fishing expeditions are abandoned due to depressions or cyclones, leading to the loss of fishing nets and boats in the turbulent waters.

Residents of Cox's Bazar have been grappling with flash floods and waterlogging, previously uncommon. These present significant obstacles to aquaculture and fish capture. In Bhola,

the rise in river erosion has compelled fishers to migrate in search of alternative livelihoods. Fishers in both Cox's Bazar and Bhola have noticed shifts in fish stocks, resulting in diminished catch; they believe fishes have changed their habitats. About 45 per cent of fishers have associated climate change, especially adverse weather conditions, with increased domestic violence, as uncertain weather conditions often leave fishermen without work, escalating family conflicts.

In the district of Bagerhat, fishers encounter reduced access to freshwater due to heightened saline intrusion. This leads to a declining stocks of freshwater fisheries. Flash floods wreak havoc on shrimp farms. Fishers engaged in pond and closed water body aquaculture have witnessed unusual diseases and fish mortality. They attribute these fish kills to the effects of climate change, such as unexpected winter rains that were historically rare in Bangladesh. Frequent and heavy rainfall, even in winter, can disrupt ecosystems and impact fish populations.

The fishers' experiences and observations are supported by the findings of Hussain and Hoq (2018). Their research underscores the impact of climate change on fish reproduction, migration patterns and survival rates. Climate-induced floods, erosion and salinization of coastal lands further imperil both agricultural and freshwater fish habitat. Physical factors like temperature, rainfall and hydrology directly and indirectly influence fish reproduction, growth and migration.

The Ministry of Forest Environment and Climate Change's findings validate the Bagerhat fishers' concerns over saline water ingress. They emphasize the rise in sea levels, leading to saltwater intrusion. This, in turn, results in increased soil salinity, impacting crop cultivation and diminishing access to freshwater for

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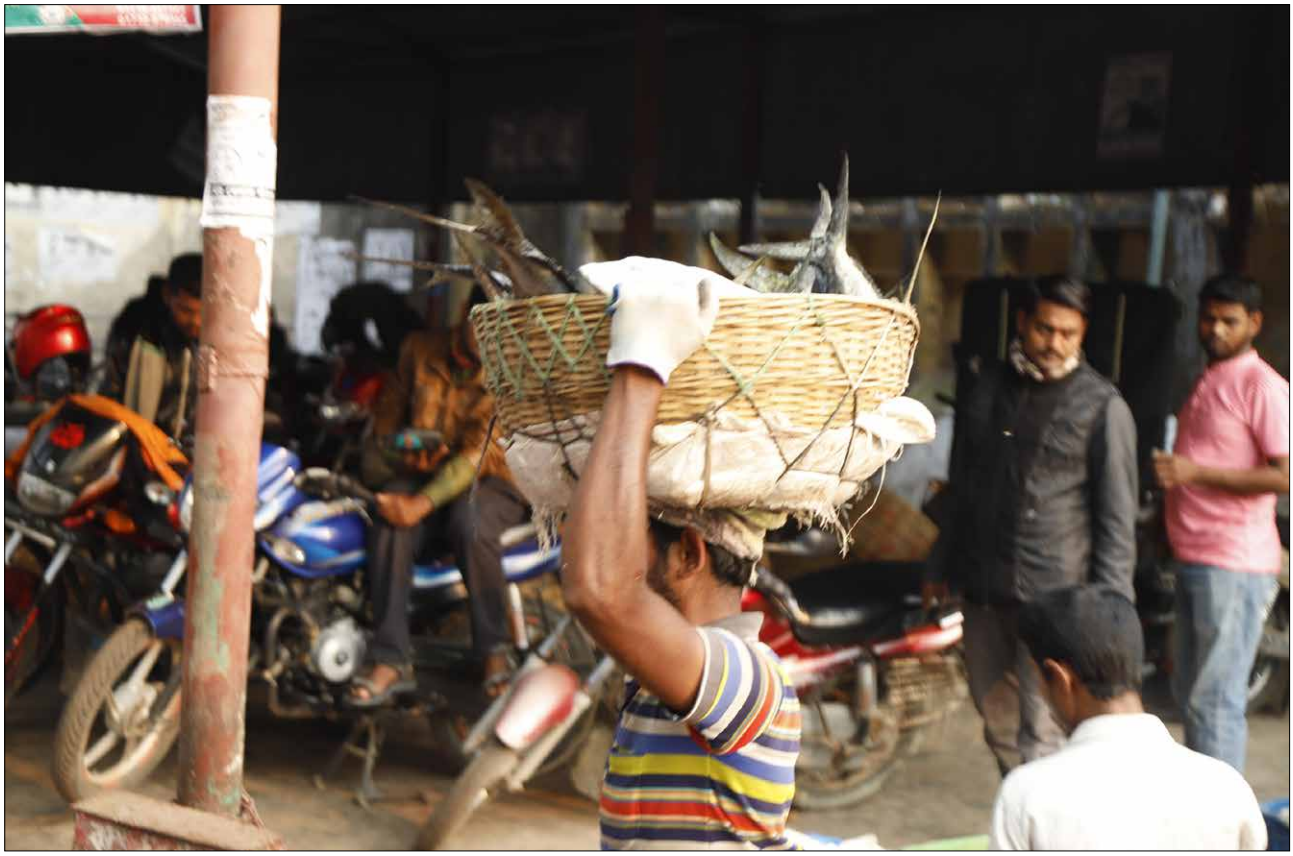

A Small-scale fisherman carry fresh catch to the local market, weaving through the hustle with basket brimming with ocean treasures in Kutubdia, Cox's Bazar, Bangladesh

For more

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consumption and production. Climate change-related events such as floods, riverbank erosion, cyclones and storm surges disrupt infrastructure and fisheries practices, compelling fishers to adapt. Many have switched to cultivating saline-tolerant species like tilapia and parsa.

Chowdhury *et al* (2010) align with the perception of Bhola fishers engaged in closed water body aquaculture. They emphasize how increased evapotranspiration and reduced water bodies adversely affect fish habitat, leading to higher fish mortality due to habitat loss. Anticipated increased rainfall, driven by climate change, extends breeding grounds for freshwater fish but also raises the risk of flooding and damage to aquaculture infrastructure.

The ministry has identified multiple impacts of climate change on the fisheries sector, including alterations in fish breeding patterns, changes in species composition and distribution, and increased risks of disease outbreaks. These disrupt the aquaculture industry, affecting both major culture species and organic culture. Climate change-induced disasters damage fishery infrastructure and further imperil habitats, leading to changes in patterns of fish migration and distribution.

The study by Blasiak *et al* (2017) ranks Bangladesh as the 18th most vulnerable nation in terms of the impacts of climate change on marine fisheries, highlighting the heightened vulnerability of fishing communities living close to the coast and reliant on climate-sensitive fisheries resources.

Islam *et al* (2020) reveal the fishers' coping strategies. Migration to alternative areas and professions has become a necessity for many; they rely on cautionary signals of extreme weather from radio and text messages on mobile phones. Cyclone shelters, often provided by the government, serve as critical facilities during adverse climatic conditions. However, access to health services during disasters remains limited for some, posing a challenge to their well-being.

Haque *et al*. (2019) have assessed the economic losses suffered by the fisheries sector due to climate change. They vary across regions; the southern part of the country is the most vulnerable. Floods have particularly devastating effects on the fisheries sector. Kabir *et al* (2016) note the dire consequences of climate change, such as the influx of saline water, leading to fish mortality and crop damage. Mostafa A.R. Hossain underscores the severe losses experienced across aquaculture, agriculture and biodiversity due to climate change. Changes in temperature, habitat quality and migration patterns, along with increased disaster events, impact the livelihoods of grassroots stakeholders.

Host of challenges

Azad and Wadood (2017) emphasize the intertwined nature of poverty and climate change on fishing communities. Vulnerability to climate change-induced shocks has intensified for those heavily dependent on fisheries and aquaculture. These shifts in fishing patterns, growth and distribution have made the fishery-associated population more vulnerable, leading to income reductions and a host of socio-economic challenges.

Poverty Amidst Plenty

Only comprehensive policy interventions and targeted initiatives can address systemic inequalities and ensure equitable development in the fisheries sector of Bangladesh

The fisheries sector has emerged as a significant contributor to Bangladesh's economy and food security. With abundant water resources and strategic policies, Bangladesh has become a leading producer in the global fisheries market, surpassing its production targets consistently. This success story, however, contrasts sharply with the socio-economic realities faced by fishing communities across the country. Despite the sector's remarkable achievements, fishers continue to grapple with poverty, limited access to education, healthcare challenges and occupational hazards.

This article examines the dichotomy of Bangladesh's fisheries sector's macro-level success and the micro-level socio-economic challenges faced by fishing communities, highlighting the urgent need for targeted interventions to address systemic inequalities and ensure equitable development.

Bangladesh's abundant water resources have propelled it to the forefront of global fish production, with the country emerging as one of the world's leading producers. This success, acknowledged worldwide, saw Bangladesh surpassing its fish production target, reaching an impressive 4.8 million tonnes in 2021-22, a testament to its self-sufficiency since 2016-17. The fisheries sector's multifaceted contributions extend beyond mere numbers, encompassing vital roles in animal protein consumption, job creation, foreign earnings, aquatic biodiversity preservation, and socio-economic advancement. Constituting 2.08 per cent of the national gross domestic product (GDP) and 21.83 per cent of the agricultural GDP, fisheries play a pivotal role in Bangladesh's economic landscape.

Notably, per capita fish consumption has exceeded targets, reaching 63 grams per day, while the sector provides over 12 per cent of total employment opportunities. Furthermore, the country's prowess in fishery is internationally recognized, as evidenced by its rankings in various categories, according to the Food and Agriculture Organization of the United Nations (FAO). Bangladesh stands tall as the third-highest producer in inland open-water capture production, fifth in world aquaculture production, and fourth globally and third within Asia in tilapia production. Bangladesh ranks second for the average growth rate of fish production over the past decade and proudly leads the pack as the foremost hilsa-consuming country among 11 vital nations, further solidifying its status as a global fisheries powerhouse.

While some development initiatives have reached these communities, they continue to lag behind significantly.

Elaborate government infrastructure

The transformation of the country's fisheries sector owes much to a concerted effort across individual, private and public domains, with the government playing a significant role. The Ministry of Fisheries and Livestock (MoFL) spearheads governance, crafting policies, laws and regulations while overseeing key institutions like the Department of Fisheries (DoF), the Bangladesh Fisheries Development Corporation (BFDC), the Bangladesh

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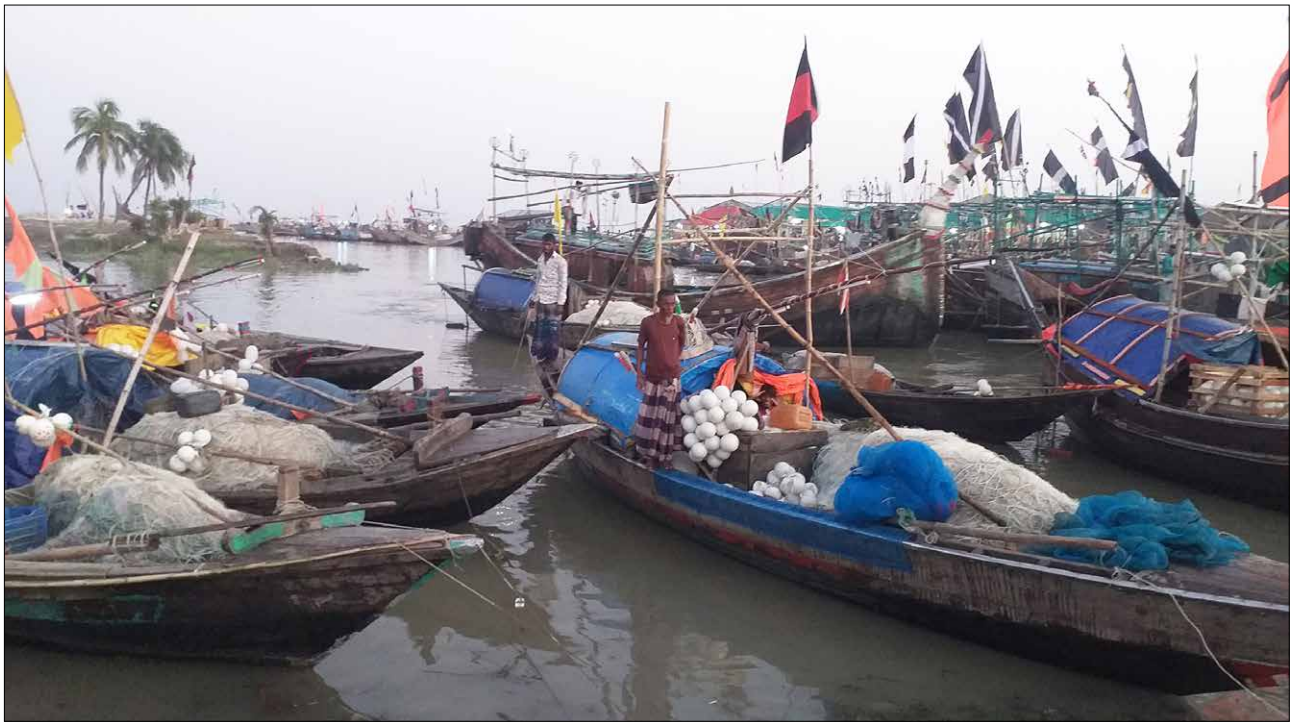

Setting Sail: Fishermen takeing rest at the local landing station in Bhola island before embarking on their fishing expedition, Bangladesh. Working conditions on fishing boats are also precarious, with inadequate safety equipment and lack of access to medical care during emergencies

Fisheries Research Institute (BFRI), and the Fisheries and Livestock Information Department (FLID).

DoF executes several functions, from extension services to law enforcement, while BFDC focuses on marketing and production. BFRI was recognized with the prestigious National Award Ekushey Padak, the second-highest civilian award in Bangladesh, introduced in memory of the martyrs of the Bengali Language Movement of 1952; it leads fisheries research and development, working in tandem with MoFL. Meanwhile, the Marine Fisheries Academy trains experts for marine fisheries management, while FLID disseminates crucial information and updates across the sector, underscoring Bangladesh's comprehensive approach to fisheries development and management.

Among the government departments, DoF holds a key role in fisheries management, boasting an extensive official structure, spanning the national and sub-district levels. With approximately 5,960 positions under the director general (DG), including an additional director general (ADG) and various officers and staff, it ensures comprehensive governance. Ensuring the production of safe and high-quality fish and fish products is a primary mandate, with measures like Good Aquaculture Practice (GAP) and Hazard Analysis Critical Control Point (HACCP) systems rigorously implemented.

The Fish and Fish Products (Inspection and Quality Control) Act, 2020, ensures adherence to international standards. DoF also promotes aquaculture and shrimp farming through various means, including extension services, wetland management and technology application, while laws and acts are continually updated to support quality production. The department's historical evolution, dating back to 1908 during the British colonial rule, underscores its enduring commitment to fisheries development.

Furthermore, initiatives such as Fish Seed Multiplication Farms and Brood Bank Development Projects demonstrate ongoing efforts to enhance the sector's sustainability and productivity, also enhanced by DoF via a wide array of activities. They include disseminating improved aquaculture technologies through training and

demonstrations, providing advisory services to farmers, and facilitating the conservation and management of fisheries resources. DoF also plays a crucial role in assisting the administrative ministry in formulating policies and laws related to the sector. Quality control measures are rigorously enforced, with the issuance of health certificates for exportable fish and fish products.

The department conducts surveys and assessments of fishery resources to develop a comprehensive database for informed planning. Moreover, it facilitates arrangements for institutional credit for fish and shrimp farmers, fishers and traders, while also promoting alternative income-generating activities for the rural poor and unemployed individuals to alleviate poverty. Lastly, the DoF actively formulates and implements development projects aimed at ensuring the sustainable utilization of fisheries resources, thereby contributing to food security in Bangladesh.

A contrasting reality

Even as the fisheries sector contributes significantly to employment generation, protein provision and overall economic development, the socio-economic conditions of the fisher community remain a cause for concern. While some development initiatives have reached these communities, they continue to lag behind significantly. A comparison between national data and the socio-economic indicators at the fisheries level reveals glaring disparities. Despite the sector's vital contribution to the national economy, fishers face daunting challenges, from low incomes and limited access to education to higher rates of landlessness and homelessness. These discrepancies underscore the urgent need for targeted interventions and policy measures to address the systemic inequalities faced by fisheries communities and ensure their equitable participation in the country's development trajectory.

The stark disparities between national averages and the socio-economic conditions of fishing communities paint a disconcerting picture of inequality and marginalization. While the national per capita income stands at US $2,064, the income of fishers languishes far below, ranging from $235 to $1,176, indicative of their economic vulnerability. Similarly, adult literacy rates among fishers are alarmingly low at 37.7 per cent, significantly trailing the national average of 74.4 per cent. Education remains a significant challenge, with only 28.33 per cent of fishers completing primary education, compared to the national rate of 81.3 per cent.

Landlessness is a pressing issue also, affecting 12 per cent of fishers, slightly higher than the national average of 11.33 per cent. As much as 25 per cent of fishers find themselves homeless, starkly contrasting with the national homelessness rate of 4.96 per cent.

The lack of accessible schools, coupled with financial constraints and the need for child labour to support family incomes, perpetuates the cycle of educational disadvantage among fishing communities

Access to basic amenities also reveals disparities, with fishers exhibiting lower rates of access to electricity, sanitation and land ownership, compared to the national averages.

Despite these challenges, it is encouraging to note that fisher communities have achieved full access to improved drinking water, although much work remains to be done to address the pervasive inequalities they face. These disparities underscore the urgent need for targeted interventions and policies to uplift fishing communities and ensure their equitable inclusion in national development efforts. With no minimum wage set for fishworkers, employment terms are often informally agreed upon, leading to uncertainty and lack of guaranteed benefits such as weekly holidays and incentives.

Health and education: Poor conditions

Working conditions on fishing boats are also precarious, with inadequate safety equipment and lack of access

to medical care during emergencies. Despite legislation like the Bangladesh Labour Act, 2006, the implementation of occupational health and safety (OSH) regulations remains inadequate, leaving workers vulnerable to life-threatening risks. Studies reveal alarming statistics, with a high percentage of labourers reporting poor workplace security, occupational risks, sickness and accidents. In sectors like shrimp processing, long hours of work in harsh conditions result in various health issues, including musculoskeletal pain and respiratory illnesses, underscoring the urgent need for improved workplace safety measures and healthcare provisions for small-scale fisheries workers in Bangladesh.

Access to adequate healthcare remains a significant challenge for marginalized communities, particularly those in coastal areas, where appropriate health facilities and skilled healthcare providers are scarce. Despite the presence of government sub-district and district-level hospitals, community clinics and private clinics, fishers in island areas often rely on local pharmacy owners and unqualified practitioners for medical assistance, as formal healthcare services are limited. This poses considerable risks for fishworkers, especially those at sea, who have no mobile or floating hospitals available in emergencies.

Research conducted by Atiqur Rahman Sunny and colleagues in 2020 found limited medical facilities in fisher communities, with 60 per cent of respondents resorting to traditional remedies due to the absence of specialized hospitals nearby. Furthermore, studies by Shibaji Mandal and his colleagues in 2017, and others in 2020, reveal alarming statistics, with a majority of fishermen reporting dizziness, vomiting, fever and other health issues during fishing expeditions and upon return. These findings underscore the urgent need for improved healthcare infrastructure and services tailored to the unique needs of fisher communities in Bangladesh. Other studies also highlight the fishers' reliance on unqualified practitioners, further emphasizing the need for accessible and reliable healthcare services in these areas.

The association between poverty and educational exclusion among fishing communities in Bangladesh is starkly evident, as highlighted by several studies. For instance, Altaf Hossain Benjamin Zeitlyn underscored in 2010 that poor health, inadequate school facilities and proximity to non-governmental schools predominantly attended by economically disadvantaged students contribute to the silent exclusion of children from education. The Seventh Five Year Plan of Bangladesh acknowledges the significant educational disparities, particularly at the secondary level, with the gross enrolment rate for the poor lagging behind significantly, compared to their non-poor counterparts. Moreover, approximately five million children remain out of school due to poverty-related factors, a situation that is particularly prevalent among fishing communities.

In the fishing communities surveyed, access to education is challenging, with limited availability of secondary schools and vocational institutes. Most schools are government-owned primary schools or madrasas, often situated at a considerable distance from students' houses. Despite primary education being accessible, the dropout rate after completing fifth standard is notably high, especially among girls, primarily due to financial constraints and parental illiteracy. Data collected reveals a concerning disparity in educational attainment between female members of coastal fishing communities and the overall education situation, with significantly lower completion rates observed among female members of fisher families.

The lack of accessible schools, coupled with financial constraints and the need for child labour to support family incomes, perpetuates the cycle of educational disadvantage among fishing communities. Overall, these findings underscore the urgent need for comprehensive policy interventions and targeted initiatives to improve educational access and attainment among fisher communities in Bangladesh.

For more

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