

Bangladesh jatka marine conservation programme

Case study Module 2

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Ecosystems, poverty alleviation and conditional transfers

Guidance for practitioners

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Evidence from the international research community shows that careful management of nature results in benefits to people's wellbeing. Poor people especially depend more heavily on the quality of the ecosystems and have less access to substitutes when they are degraded. Making meaningful impacts in the way ecosystems are managed requires governments to step in and scale up, but the evidence also shows that empowered communities can make strong calls to enact and implement change at the local level. Positive incentives like payments for ecosystem services (PES) and other forms of conditional transfers can provide important signals to enact this behavioural change into positive actions. Carefully designed, these incentives can also contribute to the wellbeing of people, especially poor and vulnerable groups. New tools emerge that can help with scaling up and dealing with inevitable trade-offs, but more efforts are needed to bring this information closer to those making decisions. This case study accompanies a [Guidance for Practitioners](#) that helps to bridge this space by: 1) making evidence accessible, bringing the latest evidence from research on PES in theory and practice with documented case studies written for practitioners; and 2) supporting capacity building to 'train the trainers', through teaching modules which can be used to promote capacity building of practitioners.

The Hilsa Conservation Programme (HSP) in Bangladesh combines environmental and social objectives, using a mix of regulation (bans) and payments for ecosystem services (PES) as compensation. PES rewards good ecosystem management agreements (such as improving soil conservation or refraining from damaging activities like overfishing) expected to result in ecosystem benefits like cleaner water and reduced carbon emissions (Engel, 2015; Wunder, 2015), or, in this case, an improvement in provisioning services, that is bigger juvenile hilsa fish (Islam *et al.*, 2016).

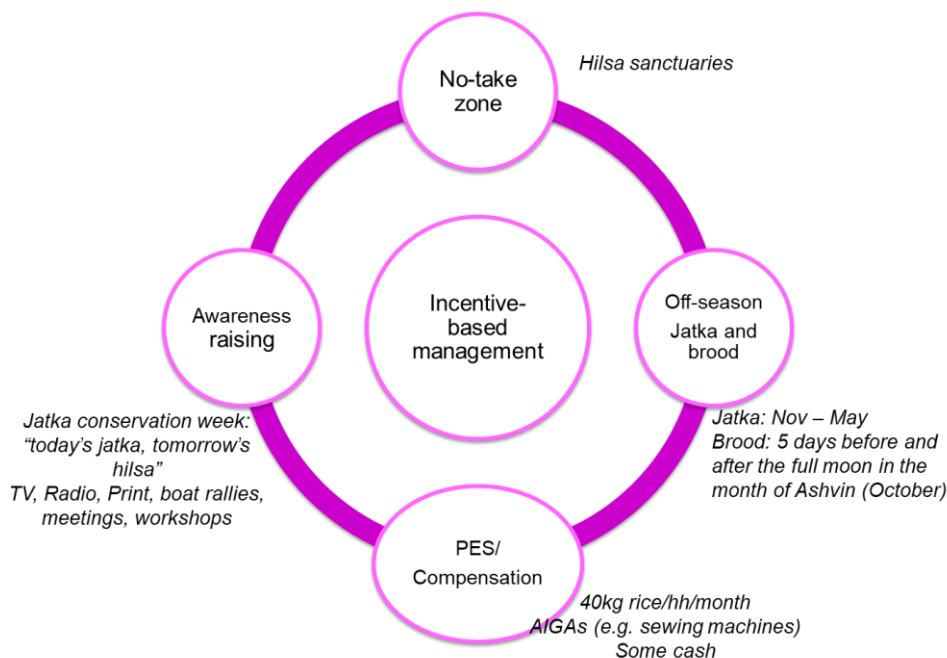
The primary goal of this scheme is the conservation of hilsa and associated biodiversity, but as it is funded through a national Vulnerable Group Feeding (VGF) programme, which aims to reduce food insecurity (Ahmed *et al.*, 2009; Uraguchi, 2011), it is intended also to improve the socioeconomic condition of affected fishers living inside and around the sanctuary areas (DoF, 2012; Haldar and Ali, 2014).

Political support

Hilsa fish (*Tenulosa ilisha*) are an important source of income and cultural identity in Bangladesh. They represent 11 per cent of the total catch in the country, and provide jobs to over 2.5 million people (Islam *et al.*, 2016).

Once a cheap fish affordable even for the poor, hilsa catches have gradually declined over the last 30 years to reach a low point of only 0.19 million tonnes in 1991 to 1992, then stagnated until 2001 to 2002. This prompted the government of Bangladesh to declare five hilsa sanctuaries in 2003 and seasonally ban the fishing of hilsa at important stages in its life cycle. This ban is designed to allow mature fish to reproduce and juvenile hilsa (jatka) to grow, thus achieving better sizes (and prices). It also allows juvenile fish to mature and reproduce to replenish the overall stock. To compensate for lost earnings during the closure, and to incentivise compliance with the new regulations, the government started providing affected fishing communities with rice and alternative income-generating activities.

Figure 1. PES in the incentive portfolio for marine conservation in Bangladesh



Source: Mohammed, 2015.

The HCP has grabbed much political attention because the programme is regarded as part of a poverty reduction strategy and sustainable development. Another reason is that the hilsa fish itself is very popular. The media have played a big part with programme-related news regularly published in the country. The HCP has a strong approach to awareness-raising as part of the incentives, reaching people through television, radio, boat rallies and local workshops (see Figure 1). Recent economic studies are generating new information on the economic importance of hilsa fish to Bangladesh and its links to poverty alleviation (Porrás *et al.*, 2017b; Porrás *et al.*, 2017c). The studies show that hilsa fishing is a high-value activity with a guaranteed market for its supply, with prices significantly higher than for other types of fish.

Sustainable financing

The programme is fully funded by the government of Bangladesh, through a national Vulnerable Group Feeding (VGF) programme, which aims to reduce food insecurity (Ahmed *et al.*, 2009; Uraguchi, 2011). and takes about 5.5 per cent of the total Department of Fisheries (DoF) development budget (about 1813Tk million or US\$23 million for 2014-15). The programme is funded solely by the Bangladesh government. The related personnel are funded from the revenue budget whereas the cost of the compensation is met through development budget.

A proposal for long-term financial viability is through the National Hilsa Conservation Fund. This legally independent grant-making institution could be used to channel a range of financing modalities, both private and public; for example, earmarking a percentage of government earnings from hilsa sales and exports, and introducing a fee to users (processors and retailers) to generate resources to implement a payment for the ecosystem service (PES) programme.

The idea has been shared with top-level government policymakers who have shown interest in its implementation. Two financial lines (6605 and 5390) have been created by the Ministry of Finance. Currently there is no specific legislation that ensures allocation of funding over time.

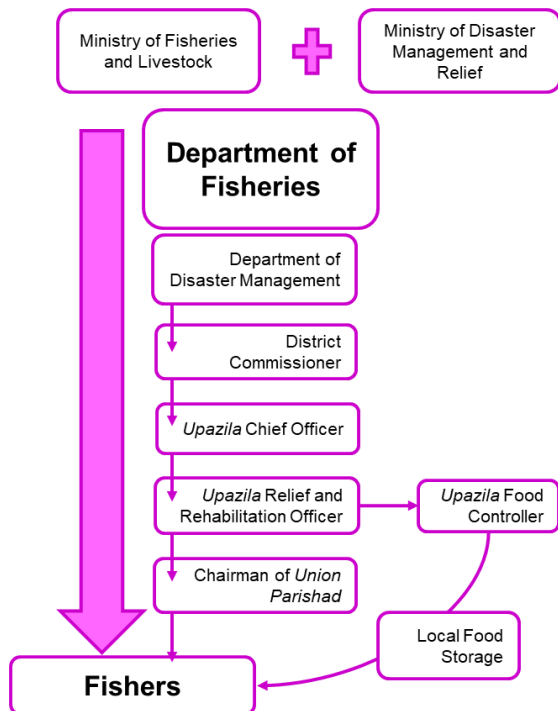
Institutional set-up

The programme is led by the Department of Fisheries (DoF) and supported by various other government agencies to channel the food incentive to the fishers affected, see Figure 2.

The process of finalising the list of food incentive recipients and allocating and distributing the food (rice) is lengthy and complex. It requires 13 separate steps and involves every tier of Bangladesh's administrative hierarchy, from meetings at the union *parishad* (local council), to approval from the director general of the Department of Fisheries, with several layers in between deciding how rice is distributed to the fishers. The transaction costs however are very low; administration and transaction costs account for 918 Bangladeshi Tk (equivalent to US\$11.89) for each metric tonne of rice distributed, or 3 per cent of the total cost.

Local councils present a list of jatka fishers to higher levels of administration. Such a lengthy system, without clear-cut targeting leads to problems like favouritism and elite capture. Since 2013 a new system has been started where local primary school teachers prepare a list of the hilsa fishers in their community, and more recently the introduction of an ID card.

Figure 2. Institutions: how does the Jatka PES in Bangladesh work?



Source: Adapted from Islam and Habib , 2013

Systems and tools for effective implementation

Targeting strategies: There is no prescribed targeting, although the programme aims to “reach the poorest and most vulnerable fishers” (DoF, 2012; Haldar and Ali, 2014). Practical criteria used includes “genuine jatka fishers”, those who are “fully dependent” on fishing for their livelihoods, and those without assets such as agricultural land or boats (Mome, 2014). The government identified a total of approximately 287,000 fisher households from 20 coastal districts, covering 91 sub-districts (locally known as *Upazila*), who are directly affected by the declaration of sanctuaries, based on the 2004 census data. Out of these, 226,852 vulnerable households were selected to receive food compensation. However, participation has been affected by inclusion errors (food-secure households were included) and exclusion errors (food-insecure households were not included), see Uraguchi (2011).

Payments to participants: Fishers affected by the fishing ban are entitled to receive compensation of 40kg of rice per household per month for four months.

Conditionality: A ‘mobile court’ team with support from the police and other agencies operates at the subdistrict level to enforce the fisheries’ regulations. The court operates under the Mobile Court Ordinance 2007, giving powers to the magistrate to punish offenders immediately at the site of the offence. However, a lack of human, physical and financial resources has been obstructing its role in effective monitoring and enforcement. This limits the ability to properly enforce the fishing ban, and cases of illegal jatka fishing have recently increased, despite a sharp drop in the early years of the conservation programme. Other issues include the fact that some hilsa sanctuaries have not been accurately demarcated, and that the banned monofilament net used for juvenile hilsa fishing is still openly produced and marketed.

Monitoring, policing and enforcement: The country’s navy, coastguard, police, Rapid Action Battalion, air force and Border Guards Bangladesh help run ‘mobile courts’ to enforce the fisheries regulations. However, the programme now has a limited level of evaluation and feedback channels.

Ability to demonstrate impact

Environmental impacts: there are no counterfactuals or before/after impact evaluations of the programme. There is a perception that the hilsa catch had declined in the pre-intervention period, both in the volume of the catch and the size of individual fish. It has been assumed that the management interventions have increased the availability of large hilsa and a large number of brood stock, both of which have positive impacts on population regeneration.

Site visits suggest that the set of measures seems to be working, and the reported hilsa stock shows signs of recovering. Although there are no counterfactuals or before/after impact evaluations, recent studies suggest that the ban has had a positive impact on the stock in the following ways:

i) A higher number of mature fish at maturity stages than in the other adjacent areas (Rahman *et al.*, 2012), as well as a higher number of 'spent fish', for example, fish that have recently completed spawning.

ii) Increased production of hatchlings and juveniles: Rahman *et al.* (2013) recorded about eight times as many eggs and juveniles in 2011 than in the base year 2007-2008, attributed to the 11-day fishing ban in the spawning grounds of hilsa during the peak spawning period.

iii) Positive impact of the HCP on the finfish and shellfish biodiversity: evaluations by Islam *et al.* (2016) in several fish sanctuaries (Shariatpur, Chandpur, Paatuakhai and Bhola) suggest that the temporal fishing ban is impacting positively on the fish and shellfish biodiversity within all the four sanctuary areas.

Bigger and better fish sizes sell at much better prices and bring higher profits across the value chains. The flavour and characteristics of Bangladesh hilsa make it a valuable commodity, fetching as much as US\$25 per kilo in niche Dhaka and foreign markets. This is good news for the fishing industry and exports in Bangladesh, which already represents 4.3 per cent of GDP (DoF, 2012).

Better research on the environmental impacts of the ban need to take place because many things can affect the size of the fish stock. Conditionality and monitoring are difficult to enforce and measure, due to the open access nature of the resource, fishers breaking the ban at night to elude the coastguards, or because of pirates attacking fishers and taking their catch away. Proposals for local communities and fishers to have a more active role in monitoring are put forward to try to tackle these issues.

Additionally, the programme should approach non-fishing related stresses, such as upstream damming, river diversion, siltation and pollution, which affect the health of the water ecosystems.

Socioeconomic impacts: Food assistance has been provided to fishers under the hilsa management plan since 2004 (see Table 1) and the programme's reach has expanded considerably in that time. Nearly 223,000 families received about 36 thousand metric tonnes of rice across 88 sub-districts.

However, households report receiving only 25-32kg each while DoF officers say that each household receives 35-38kg. Fishers have also stated that the government does not provide all the resources required to distribute the rice, and so additional costs are met by selling a proportion of the rice intended for their household, an amount (25-32kg) they claim is inadequate. In addition, household size does not affect the amount of rice received, which could be particularly problematic for bigger households in greater need of food. Furthermore, during the fishing ban periods the price of fish goes up and thus fish consumption in many households falls to zero, increasing the risk of malnutrition, especially for children and pregnant women. Finally, fishers have pointed out that during the fishing ban they also need to pay for other things, such as groceries and children's schooling, for which no support is available.

Table 1. Distribution of grain compensation in the Hilsa Conservation Programme, Bangladesh (2004-2014)

Financial year	Number of households	Rice (Kg/HH/month)	Months	Total rice allocated (Metric tonnes)
2004-05	33,300	10	3	1,000
2006-07	103,000	15	1	1,546
2007-08	145,335	10	3	4,360
2008-09	143,252	10	3	5,731
2009-10	164,740	30	4	19,769
2010-11	186,264	20	4	14,471
2011-12	186,264	30	4	22,352
2012-13	206,229	30	4	24,748
2013-14	226,852	40	4	36,296
Grand total of food distributed				130,272

Note: In 2005-2006 food assistance was not provided.

Support for alternative income generation activities (AIGA) has been offered by the HCP since 2009, including training in livestock rearing and running small businesses. So far, 21,690 households across four districts have engaged with this programme, receiving training and benefits worth BDT 7540 (equivalent to \$US97) per household. The reported beneficiary selection and administration amount is only 0.7 per cent of the programme's total costs. Households that participated in the programme increased their supply of food as a temporary buffer to seasonal asset depletion in addition to earning highly needed income during slack seasons.

Market monopolies in hilsa prices reduce potential benefits to poor fishers: Hilsa fish are highly valued, and their prices are significantly higher than other types of fish. Securing a supply of bigger fish should, in theory, benefit the fisher. However, the hilsa fish market is divided into two very different trading systems (see Figure 3), where fishers are obliged in practice to sell their catch to a pre-agreed buyer at highly controlled prices (Porras *et al.*, 2017b). Buyers often provide upfront loans in exchange for the catch, effectively lowering the fishers' bargaining power to zero. Wholesaler buyers (known as *aratdars*), on the other hand, trade through instant auctions, where information about supply of fish in other markets in the city is made immediately available through tight networks of informants. This means that there are many possibilities of making good profits from the high consumer demand. Better governance of markets can help break this monopoly and help pass profits down the value chain to fishers, making the activity more profitable and bringing costs in line with revenues.

Addressing fairness in PES: The cost of this fishing prohibition falls almost completely on the fishers. Already poor, uneducated and in debt, they are not bearing this easily. Lacking access to fish protein, the rice compensation they receive is good and welcomed, but not enough to provide nutrition to their large families. Their low levels of education prevent them from finding alternative income. Importantly, incentives should be extended to all fishers affected by the ban; at the moment only hilsa fishers are entitled to compensation, although non-hilsa fishers cannot operate during the ban (Islam *et al.*, 2016). The lack of suitable compensation to other people affected across the chain puts further pressure on fishers to attempt illegal fishing. Although there are alternative income-generating activities (AIGA), the subscription is very low. This urgently highlights the need to review the type of training on offer in a way that responds to the needs and skills of the fishing families. Porras *et al.* (2017c) make suggestions for inclusive financing and insurance options, alongside or instead of the rice PES payment, and involving other players along the hilsa value chain to help spread out the benefits of investments.

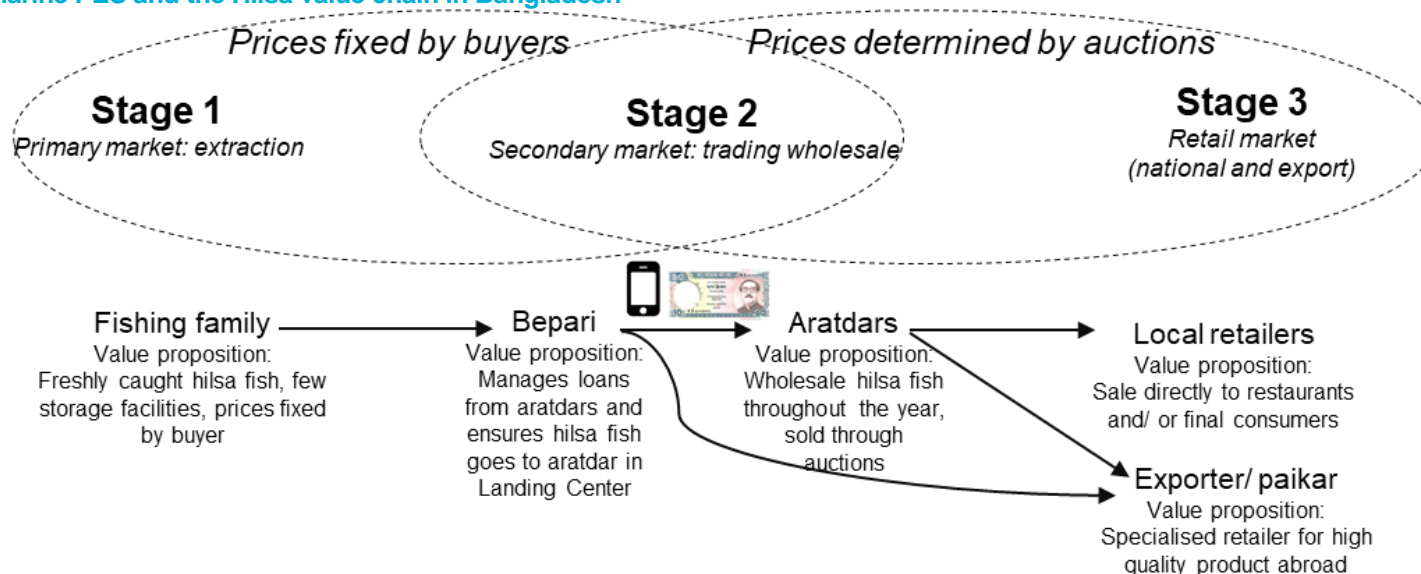
Lessons

Fishery policies are particularly vulnerable to failure. The open access characteristic of fishing as an occupation make compliance difficult. Trade is often informal and non-regulated, with multiple pressure points across the supply chain that can render a PES incentive invalid. Attention to the social component of the policies is particularly important in the case of artisanal fisheries, as the main actors affected by regulation tend to be poor and vulnerable.

While economic incentive mechanisms of this kind have been hailed as the most cost-effective and efficient way to manage natural resources and alleviate poverty, their efficiency depends on how much the incentives cost to implement. The lengthy administration chain from the national government to fishers have low reported transaction costs, but it is long and time-consuming. Other less reported costs include potential bribery; for example, local union leaders withholding some of the rice for their own costs even if these are covered by the programme. There have been concerns regarding equity and political interference in the distribution of compensation, elite capture and high levels of inclusion and exclusion error (Haldar and Ali, 2014; Matin, 2000; Matin and Hulme, 2003; Rahman *et al.*, 2012). Impact on the ecosystem is difficult to measure, especially because of the open access nature of the resource, and the absence of counterfactual.

However, this programme represents a step forward, linking social and environmental authorities. There is a perceived increased number of mature hilsa fish, hatchings and juveniles with important benefits on supply chains. Additional work — including the potential rethinking of the PES format and providing the 'right' type of incentives — can help improve the programme's impact on poverty alleviation; for example, addressing the problems of financial exclusion by providing appropriate financial products to fishers. Importantly, the programme should also consider wider watershed management approaches and mitigate non-fishing related stresses, such as upstream damming, river diversion, siltation and pollution that affect the health of the fish stock (Mohammed, 2015).

Figure 3. Marine PES and the Hilsa value chain in Bangladesh



Inputs.

River ecosystem inputs, affected by fishing ban several times/year

Financial inputs Loans from *Dadondar*, *Mohajon* or *Araddar* (lends money and usually keep the catch), to a lesser scale from associations, NGOs, or banks (minor role as fishermen do not have access);

In-kind PES as food compensation during ban.

Technical inputs (usually located at Landing Center): Boat, fitting (nets, engine, oil, ice), labour (family, hired) Repairs and maintenance

Safety inputs: Radio, communications, weather information, protection from navy/police; Insurance (not currently available)

Inputs

Landing center facilities (access to –or lack of - to physical location, water, electricity, storage, quick transport...)

Financial inputs most aratdars have their own funding, with occasional loans at 12-17%.

Technical inputs include ice, storage, space at landing center;

Transport providers: Truck, rickshaws, boats bringing buyers, pier providers

Inputs

High quality, first grade hilsa fish, all year round especially for festivals. Manages direct contacts with suppliers like *beparis* and *aratdars* and need top quality packaging and transport to ensure freshness and quality for final customers.

Source: Porras *et al.*, 2017c.

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