



# The cost of compensation

## Transaction and administration costs of hilsa fish management in Bangladesh

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The government of Bangladesh has introduced an economic incentive mechanism to sustainably manage the country's hilsa fishery – a sector that provides 450,000 fishers with their main livelihood and accounts for about 1 per cent of Bangladesh's gross domestic product (GDP). Under its hilsa management plan, fishing is banned for several months a year in a number of sanctuary areas, and during these periods affected fisher households are offered food assistance and support for alternative income generation activities. While economic incentive mechanisms of this kind have been hailed as the most cost-effective and efficient way to manage natural resources, their efficiency depends on how much the incentives cost to implement. This paper investigates the transaction and administration costs of delivering economic incentives under the hilsa management plan in Bangladesh, in order to better understand what costs are incurred and why; and offers some recommendations to improve the scheme.

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# Acronyms

AIGA	alternative income generating activities
BDT	Bangladeshi taka
DC	Deputy Commissioner
DDM	Department of Disaster Management
DFO	District Fishery Officer
DMR	Disaster Management and Rehabilitation
DoF	Department of Fisheries
FRSS	Fisheries Resources Survey System
GDP	gross domestic product
HFMAP	Hilsa Fisheries Management Action Plan
LSD	local store depot
MoFL	Ministry of Fisheries and Livestock
PES	payments for ecosystem services
PIO	Project Implementation Officer
UFO	Upazila Fisheries Officer
UNO	Upazila Nirbahi Officer
UP	<i>union parishad</i>
VGf	vulnerable group feeding

# Summary

Since 2003, the government of Bangladesh has been giving economic incentives to fishers as part of a programme to sustainably manage populations of the hilsa shad fish, *Tenulosa ilisha*. The importance of hilsa to Bangladesh cannot be overstated; it accounts for 12 per cent of the country's total fish production and 1 per cent of its gross domestic product (GDP), providing 450,000 fishers with their main livelihood. When hilsa catch figures showed a sharp decrease between 2001 and 2003, it was attributed to overfishing, and led the government to introduce an incentive mechanism to its management plan. One of several conservation measures was to ban fishing for certain months each year in a number of areas demarcated as hilsa sanctuaries, and during these periods affected fisher households are offered food assistance and support for alternative income generation activities.

While economic incentive mechanisms of this kind have been hailed as the most cost-effective and efficient way to manage natural resources, their efficiency depends on how much the incentives cost to implement. This paper investigates the transaction and administration costs of delivering economic incentives under the hilsa management plan in Bangladesh, in order to better understand what costs are incurred and why; and offers some recommendations to improve the scheme.

**Food assistance** has been provided to fishers under the hilsa management plan since 2004, and the programme's reach has expanded considerably in that time. In 2014, a total of 226,852 hilsa fisher families across 88 *upazilas* (or sub-districts) in 16 districts received 36,296 metric tonnes (mt) of rice, with each *upazila* receiving an average of 412.6mt.

The process of finalising the list of food incentive recipients, 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. Each step incurs transaction and administration costs, such as for personnel time and for transporting the food. Together, administration and transaction costs account for 918 Bangladeshi taka (BDT, equivalent to USD 11.89)<sup>1</sup> for each metric tonne of rice distributed, or 3 per cent of the total cost. This is low compared to similar schemes such as the payments for ecosystem services (PES) scheme in Costa Rica, for which the transaction cost ranges between 12 and 25 per cent according to some studies (Miranda *et al.* 2003). However, a shorter chain of food allocation and distribution would be more cost-effective still and allow more households to benefit from the scheme.

While affected fisher households are entitled to 40 kilogrammes of rice per month during ban periods, many recipient households report that they frequently receive 3 to 5kg less. Among other reasons, this is due to *union parishad* chairmen withholding some of the rice to cover their own losses incurred for wages and transport, rather than undertaking the slow process of claiming expenses.

**Support for alternative income generation activities (AIGA)** has been offered by the hilsa management programme 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 per household. Transaction and administration costs are incurred in the tasks of selecting beneficiaries and procuring bids from suppliers of materials, such as livestock or sewing machines. Again, the process of selecting and approving beneficiaries is relatively complex, involving several different committee meetings at various levels of the administrative hierarchy. However, beneficiary selection and administration amount to only 0.7 per cent of the programme's total costs.

<sup>1</sup> According to the exchange rate in October 2014 (USD 1 = BDT 77.42)

## Recommendations

**Food allocation and distribution is lengthy and complex, and therefore more cost-intensive than necessary.** A shorter chain of food allocation and distribution would be more cost-effective, providing better value for government funds and potentially including at least 1000 more households in the scheme. A wider discussion with relevant stakeholders could develop ways to shorten and streamline this process.

**Fishers often receive less than their allotted amount of food.** Alternative means need to be in place to encourage chairmen to recoup the losses they incurred in distribution through the official route, rather than by withholding food from fisher households.

**The types of AIGA support provided do not seem to match household preferences.** For instance, some households were provided with sewing machines even though they lacked the knowledge and skill to use them. These households then sold the sewing machines (often for less than their market value) and used the cash for other purposes. This would negatively affect the efficiency of the scheme. Therefore, the compensation scheme should be informed by a careful assessment of households' preferences.

**Further study on the efficiency of the compensation scheme would be useful.** This could include an assessment of households' preferences; the adequacy of the food provided to compensate for the loss of earnings; its ability to stimulate positive behavioural change in natural resource use; and the transformative capacity of the types of AIGA support provided.

## 1

## Introduction

In Bangladesh fish and fisheries play an important role in nutrition, employment, the economy, poverty reduction, and foreign exchange earnings through the export of fish products. According to the latest available data, about 3.1 million tons of fish were harvested in the year of 2010–2011, contributing 4.43 per cent to Bangladesh's gross domestic product (GDP). In the same year the export of fish and fish products earned 46,038 million Bangladeshi taka (BDT; or USD 595 million) – 2.73 per cent of total export earnings (FRSS 2012.) About 5.5 million fishers are directly employed by the sector as their main livelihood, and the total employment in fisheries makes up about 10 per cent of the country's population.

The fishery of Bangladesh comprises inland, coastal waters and marine fisheries. Among the different species of fish, the common Indian shad 'hilsa', *Tenualosa ilisha*, supplies the most important single-species fishery – not only in Bangladesh but in Southeast Asia as a whole. The fish accounts for about 12 per cent of the country's total fish production and 1 per cent of its GDP (FRSS 2012); about 450,000 fishers are directly involved in hilsa fishery as their livelihood. Historically, the total annual hilsa catch in Bangladesh has ranged from 144,800 in the financial year 1984–1985 to nearly 350,000 in 2010–2011 (FRSS 2003).

However, hilsa production decreased sharply in the year of 2001–2002, and 2002–2003 figures showed a further 10 per cent drop. This was attributed to overfishing, and led the government of Bangladesh to introduce its Hilsa Fisheries Management Action Plan (HFMAP). The HFMAP sets out more than a

dozen actions to achieve sustainable hilsa production. Among them was a legal prohibition under the Hilsa Conservation Act and rules against catching juvenile hilsa, known locally as *jatka* and defined as up to 25 centimetres long, between November to April (this was extended to June in 2013). Five sanctuaries were also demarcated at the hilsa's main nursery grounds in the lower Meghna River and coastal region – together they constitute about 230 kilometres of four different rivers – where fishing of any kind is banned during March and April each year. There is also a yearly ten-day fishing ban in the main hilsa spawning ground, an area of 6900 square kilometres in the Meghna River estuary.

The fishing bans and restrictions in the sanctuary areas has caused a loss of income to about 175,700 hilsa fisher families across three of Bangladesh's seven divisions or regions – Dhaka, Barisal and Chittagong (Haldar 2002). As a result, since 2004 the government has been providing food assistance via its Vulnerable Group Feeding (VGF) programme, as well as support for alternative income generating activities (AIGA). In 2008 the Department of Fisheries (DoF) and Bangladesh Fisheries Research Institute (BFRI) initiated the 'Jatka Conservation, Alternative Income Generation Activities and Research Project' (referred to in this paper as the 'Jatka Conservation Project' or hilsa management plan) to continue the conservation work, including the food assistance programme. The food allocation and distribution is complex and directly involves officials from local government (such as the chairman of each '*union parishad*', or local council) and from Fisheries and Livestock, Ministry of Food and other relevant departments.<sup>2</sup>

<sup>2</sup> These include the Department of Fisheries, Department of Food and Disaster, Deputy Commissioners and Upazila Nirbahi Officers (chief executives of *upazilas* or sub-districts – see Box 1).

# 2

## Study objectives and methods

Natural resources management through the use of economic incentive mechanisms, such as the government's food assistance for fishers in Bangladesh, has been hailed as one of the most cost-effective and efficient ways of delivering both ecological and social objectives. However, a critical element that enhances or hinders the efficiency of such schemes is the cost of implementation: namely administration and transaction costs. The broad objective of this study is therefore to determine the transaction and administration costs of distributing food incentives to fishers affected by the hilsa management plan; to establish what government investment costs are; and to make recommendations to minimise or further reduce these costs.

### 2.1 What are transaction and administration costs?

'Transaction costs' are the expenses incurred in making an economic exchange, or the cost associated with the exchange of goods or services, and includes communication charges, legal fees, information and transport costs. 'Administration costs' are expenses incurred in managing and directing an organisation, but not directly associated with production – such as executive salaries, accounting, contracting and other general services (BusinessDictionary.com 2014a;

2014b). Distributing incentives to hilsa fishers for hilsa management can be considered a 'service' provided by the government, and thus the following items have been included in the transaction and administration costs of distributing food incentives to fishers:

- the cost of preparing lists of beneficiaries and the process of approving the allocation of food incentives
- the cost of transporting food from local store depots to distribution centres (local council yards)
- personnel time spent on food allocation and distribution, and wages including travel costs.

### 2.2 Data collection methods

This paper is based on information on food incentive distribution collected directly from the fisheries and other relevant departments through data sheets, interviews, focus group discussions, a literature review and online research. 'Key informant' interviews supplied some information: these are in-depth interviews with individuals who have direct specialist knowledge of the issues being researched, in this case the personnel involved in food incentive distribution. Appendix 1 gives details of the interviews.

## 3

# Food incentives for fishers

Two types of incentives are offered to fishers affected by fishing ban periods: food assistance through the government's Vulnerable Group Feeding (VGF) programme, and support for alternative income generation activities (AIGA). Food assistance has been provided to fishers under the Jatka Conservation Project since the financial year 2004–2005, and AIGA since 2009–2010. This section examines the transaction and administration costs in delivering food assistance, while the next section looks at the costs involved in AIGA support.

## 3.1 Food assistance for fishers

Under the Jatka Conservation Project, food is provided for those living in the hilsa sanctuary areas – and therefore affected by the seasonal fishing ban – especially for the poorest group of fishers. Although HFMAP recommended providing households with 30 kilograms (recently increased to 40 kilograms) of wheat or rice per month for a period of at least four months, the Department of Fisheries' official records show that in the earlier years only 10 to 30kg of wheat was provided per household per month for one to three months, beginning in February or March every year. In the current year (2014), the government has provided food assistance for a four-month period from February to May, at a rate of 40kg of rice per month per family. Table 1 gives the details of food assistance provided to fishers from the start of the management plan.

In 2014, a total of 226,852 hilsa fisher households across 88 *upazilas* (or sub-districts) in 16 districts received 36,296 metric tonnes (t) of rice, with an average allocation per *upazila* of 412.6t. As Table 1 illustrates, both the amount of food and number of households covered have increased considerably (by four to seven times) from 2009 onward. Implementing the compensation or incentive mechanism is a long process, from selecting beneficiaries to food allocation to distribution; the details are described below.

## 3.2 Beneficiary selection, food allocation and distribution

Information on beneficiary selection, food allocation and distribution was gathered through interviews with senior officials from the Department of Fisheries' headquarters and field officers (see Appendix 1). All of them described more or less same process; and stated that Upazila Fisheries Officers (UFOs) usually manage to ensure that affected fishers from their own area are added to the list of beneficiaries. UFOs find that the incentive recipient list changes most years. This is because marginal farmers and labourers change their profession to 'fisher' on an almost yearly basis, if work or income sources are scarce, since small-scale *jatka* (juvenile hilsa) fishing is not expensive or labour intensive – it is easy to operate a gillnet to catch *jatka*,

Table 1. Food assistance for hilsa fishers, 2004 to 2014

Financial year	No. of households receiving food incentives	Amount per family per month (in kg)	Duration (months)	Total amount of food allocated (in t)	Area covered		Average allocation per UPZ (in t)
					No. of districts	No. of UPZ	
2004–05	33,300	10	3	1000	*	*	*
2006–07	103,000	15	1	1546	*	*	*
2007–08	145,335	10	3	4360	*	*	*
2008–09	143,252	10	3	5731	*	*	*
2009–10	164,740	30	4	19,769	10	59	335.1
2010–11	186,264	20	4	14,471	10	59	245.3
2011–12	186,264	30	4	22,352	15	85	263.0
2012–13	206,229	30	4	24,748	16	88	281.2
2013–14	226,852	40	4	36,296	16	88	412.6
Grand total of food distributed				130,273			

Note: \* – data deficit, t – metric tonnes, UPZ – upazila (sub-district). In 2005–06 food assistance was not provided.

and a profitable harvest can be caught within just three to four hours at dawn or dusk.

Finalising the recipient list, allotting and distributing the food is a lengthy and complex process that requires 13 separate steps, and involves every tier of Bangladesh's administrative hierarchy (see Box 1):

## BOX 1. BANGLADESH'S ADMINISTRATIVE HIERARCHY

In Bangladesh, central government divides the country into four levels of administration:

- **divisions** (the highest tier) headed by Divisional Commissioner (commonly known as Commissioner)
- **districts**, headed by a Deputy Commissioner (DC)
- **upazilas** (sub-districts), headed by the Upazila Nirhabhi\* Officer (UNO)
- **union parishads** (or local councils), headed by the *union parishad* (UP) chairman.<sup>3</sup>

The Department of Fisheries, the government agency responsible for the Jatka Conservation Project, has representatives at all but the lowest tier:

- a **Deputy Director** at division level
- a **District Fisheries Officer** (DFO) at district level
- an **Upazila Fisheries Officer** (UFO) at *upazila* level.

\*Nirhabhi means 'executive'.

**Step 1.** The Upazila Fisheries Officer (UFO), in consultation with the Upazila Nirbahi Officer (UNO), writes an official letter to every union parishad (UP) chairman in the *upazila*, requesting an incentive recipient list of genuine *jatka* fishers only.

**Step 2.** The chairmen of the various UPs, in consultation with their union council members, prepare a list of *jatka* fishers who are eligible to receive food incentives. The chairmen organise two or three meetings to finalise the list with the Union Parishad VGF Committee, which consists of 12 UP members and eight others and usually includes the UFO or his representative. After finalisation, the list of recipients is submitted to the relevant UFO.

**Step 3.** After receiving the lists from each *union parishad*, the UFO asks the UNO to call together the Upazila VGF Committee to compile a list of recipients for the whole *upazila*. The committee has 15 members, and 22 to 24 people attend including the *union parishad* chairmen. It usually takes two to three meetings to finalise the list, taking into account the fishers' dependency on *jatka* and their socioeconomic status such as income level.

**Step 4.** Having compiled the list, the UFO prepares a summary of the food incentive requirements for the *upazila* and sends it to the relevant District Fishery Officer (DFO).

**Step 5.** The DFO compiles a list of food incentive recipients from the various *upazilas* in the district and calls a District VGF Committee meeting, chaired by the Deputy Commissioner (DC) – this is a roughly 30-member committee including all UNOs and the representatives of higher-ranking officials. The list of

<sup>3</sup> Throughout this paper the term 'chairman' has been used to denote male or female leaders of union parishads, as this is the term widely used and accepted in Bangladesh.

recipients is discussed, endorsed and sent to the Director General of the Department of Fisheries. Usually the District VGF Committee does not change the list but simply endorses it and passes it on.

**Step 6.** The final list of incentive recipients from all the districts is compiled at the Director General's office. From there a letter allocating the food incentives is sent to the Ministry of Fisheries and Livestock.

**Step 7.** The Ministry of Fisheries and Livestock endorses the list and the amount of food grain required, forwarding it with a requisition request to the Ministry of Disaster Management and Rehabilitation.

**Step 8.** The Ministry of Disaster Management and Rehabilitation approves the amount of food grain, usually in a meeting that considers the total allocation from government and the demand from different sectors. It issues an order (at times reducing the total amount), to the Department of Disaster Management's (DDM) Director General, listing the amount of food, number of recipient families, *upazilas* and districts, with a few directives and terms and conditions. The order also directs the DDM to allocate the agreed amount of food to the recipient districts' Deputy Commissioners and to cover transport and other miscellaneous costs. The order is also communicated to the secretary at the office of the Prime Minister; the Ministry of Finance; Ministry of Fisheries and Livestock; the Director General of Department of Food; and other relevant ministries and departments.

**Step 9.** As directed, the DDM Director General allocates the agreed amount of food to the DCs in the recipient districts, requesting that they distribute the food incentives among local poor eligible fishers (included in the list of affected fishers prepared in the earlier steps) who abstain from *jatka* fishing during the ban period, following the humanitarian aid implementation guidelines of 2012–2013, and maintain records and accounts for auditing. A copy of the order is also communicated to the relevant deputy secretaries of the ministries; Divisional Commissioners; Director General of Supply, Distribution and Marketing of the Ministry of Food; UP chairmen; UNOs; district food controllers, district relief and rehabilitation officers, *upazila* food controllers; and other relevant officials.

**Step 10.** The Deputy Commissioner in each district meets with the relevant UNOs to authorise the allocated amount of food.

**Step 11.** The UNOs collect their allocation letters and organise a meeting with the relevant UP chairmen, giving each a copy of the allocation letter to authorise them to collect the food from the local store depot (LSD).

**Step 12.** The UP chairmen or secretaries collect the allocation letter and delivery order from the UNO and submit it to the officer in charge of the LSD. After weighing samples of the food, which are in sealed sacks or bags, they transport it to the *union parishad* yard for distribution to fisher households.

**Step 13.** The food is brought to the *union parishad* yard from the local store depot in sealed sacks containing 80 kilograms of food grain, or polythene bags of 50kg, or both. The UP chairmen set a date for food distribution, informing recipients via the *chaukidar* (local watchman) or a UP member. The recipient fishers then gather at the UP yard on the scheduled date. As the fishers only receive a portion of the amount in the sealed bags, and the UP chairmen have to cover transport costs by selling the bags afterwards, the bags are opened in the UP yard, and food is weighed by a UP member and distributed under the supervision of a Task Assignment Officer. Occasionally, a representative from the Upazila Fisheries Office remains present for the food distribution. The fishers receive their allotted food grain in their own bag or container, recording the amount on their VGF card. They transport the food home at their own cost or labour; this can cost BDT 200 to 300, depending on distance and type of transport.

### 3.3 Mistargeting beneficiaries

Disputes invariably arise at meetings to discuss the beneficiary list, since most UP chairmen and members try to include more people from their own constituency in order to get a larger food allocation, and to benefit their supporters with an eye on election prospects. Sometimes the choice of beneficiaries is political, with the names of genuine *jatka* fishers excluded from the list and other names appearing a second time with some minor variation. To address these practices, the process of selecting beneficiaries was changed from 2013: now UFOs directly engage primary school teachers as volunteers to compile a list of hilsa fishers in their locality, supervised by the UNO. Once the fishers' list is complete the UNO consults with the Upazila VGF Committee at a meeting that includes the UFO and UP chairmen, to finalise the list as described in Step 3 above. Despite these precautionary measures, the problem of including non-target beneficiaries and duplicated names persists, since the UNO, UFO and the members of the VGF committee cannot know all the fishers by name – and because the poorest group tend to change profession so frequently. The Department of Fisheries has recently created a fisher identity card; once it has been distributed it should reduce the problem of inclusion or exclusion errors.

## 3.4 Food incentive distribution: transaction and administration costs

This sub-section looks at the details of the transaction and administration costs of distributing food incentives.

### 3.4.1 Cost of beneficiary selection, approval, food release and distribution

As described in Section 3.2, it takes 13 steps or activities to prepare and approve the beneficiary list and order and distribute the food. Almost all of these steps incur both transaction and administration costs. For this paper, the cost of each step was worked out through focus group discussions involving UP chairmen, UFOs, DFOs and relevant Department of Fishery officials. Data on the total cost of steps taken by union *parishads* (UPs) and *upazilas* were first gathered through interviews and then converted into cost per metric tonne of food, dividing the total cost by the amount of allocated food items. Time spent by each official was also established through focus group discussions, enabling the transaction and administration costs for the whole process to be calculated. The results appear in Table 2.

This process takes place once a year, so these costs are not repeated throughout the year. Table 2 shows that the total cost incurred for beneficiary selection, food allocation, and distribution was BDT 196 per metric tonne (food allocation cost BDT 70.0 and distribution BDT 126.0) and the total administration cost incurred for 36,296.3t of food allocation and distribution was BDT 10.90 million. The administration cost for one tonne of rice distributed is therefore BDT 300.31. To put this in perspective, using a market price of 1kg of rice in Bangladesh (which costs about BDT 45 on average), this administrative cost is equivalent to a market value of about 250,000kg of rice. In other words, the same amount could include an additional 1500 to 1600 households in the programme, with each receiving 40kg of rice for four consecutive months. Even though such costs are inevitable and cannot be completely eliminated, efforts should be made to minimise the cost to ensure that as many fishers as possible are included in the incentive mechanism.

### 3.4.2 Transport costs from local depot to union distribution yard

Focus group discussion supplied the data to calculate the actual transport cost of food distribution, taking into account the concentration of fisher households, distances from the *upazila* headquarters and mode of transport. The focus group consisted of UP chairmen from three UPs: 1) Dakshin Rajpur UP, Bhola Sadar, Bhola District; 2) Alexander UP, Ramgati Upazila, Laxmipur District and 3) Lalua UP, Kalapara Upazila, Patuakhali District. Discussions with the UP chairmen and secretaries supplied data on expenses. Table 3 gives the details of the costs incurred transporting the food incentives in these three UPs.

Table 3 shows that transport costs vary between the three UPs depending on the type of transport required; the highest cost was for Lalua UP in Kalapara Upazila, Patuakhali District, where the food was transported by both boat and truck. The average cost for food transport per metric tonne was found to be BDT 422.

### 3.4.3 Total transaction and administration costs for food incentive distribution

Table 4 gives the total cost for food incentive distribution to the fishers; administration and distribution costs make up about three per cent. This is relatively low compared to similar schemes such as the payments for ecosystem services scheme in Costa Rica; according to some studies (Miranda *et al.* 2003) the transaction cost alone ranges between 12 and 25 per cent of the total incentive distributed.

### 3.4.4 Transport and miscellaneous costs for chairmen

The government gives funds directly to the UP chairmen for part of the transport costs and instructs them to recoup the rest of the cost by selling the empty food bags after distributing the food. The government also gives BDT 100 to 200 per tonne to the chairmen for miscellaneous costs incurred in preparing the beneficiary list, master rolls and so on. The rate of the funding towards transport costs varies depending on the area and type of transport required to take food from the local store depot to the UP yard. Table 5 gives the details of these costs and money recouped from the sale of bags.

Table 2. Transaction and administration costs for food allocation and distribution

SITE OF EXPENSES	BENEFICIARY LIST AND FOOD ALLOCATION COSTS		SOURCE OF FUNDS	STAFF SALARIES (BDT MILLION)	
	Cost items	BDT/t.*		Time spent & rate/day	Tk
UP office	Beneficiary list preparation: WL for 2 meetings	50.0	UP chairman's own funds	UP chairman, members and office staff: 5 P x 5 WD @ BDT 500.0/day x 440 UP	5.50
UFO office	Beneficiary list finalisation: 4 lunch meetings	10.0	UFO claims from Jatka Conservation Project funds	UFO/AFO & office staff: 4 P x 5 WD @ BDT 800.0/day x 88 UFO	1.40
DFO office	WL for 2 meetings and allowance for office staff	2.0	DFO claims from Jatka Project funds	Members of VGF committee: 30 P x 0.5 WD @ BDT 1000.0/day x 16	0.30
Division office, DoF	WL for 1 meeting and allowance for office staff	0.50	DD claims from Jatka Project funds	Members of VGF committee: 30 P x 0.5 WD @ BDT 1000.0/day x 3 div. offices	0.05
DG office, DoF	WL for 1 meeting	0.50	PD claims from Jatka Project funds	DG, DDs, PDs and HQ personnel: 30 P x 0.5 WD @ BDT 1200.0/day	0.02
MoFL	No cost	–	Built in tea cost for meetings	DGs, DDs, PDs & others: 30 P x 0.5 WD @ BDT 1500.0/day	0.02
Ministry of DMR	No cost	–	Built in tea cost for the ministry	Ministers, secretaries, joint secretaries, DS etc.: 30 P x 0.5 WD @ BDT 1500.0/day	0.02
DG, Ministry of DMR	No cost (administrative process)	–	–	DG, Director & office staff: 4 x 0.5 WD @ BDT 1200.0/day	0.03
DC office	WL for 1 meeting	1.0	DFO claims from Jatka Project funds	Members of VGF committee etc.: 30 P x 0.5 WD @ BDT 1000.0/day x 16	0.24
UNO office	WL for 1 meeting	1.0	UFO claims from Jatka Project funds	Members of VGF com.: 30 P x 0.5 WD @ BDT 1000.0/day x 88	1.32
OC, LSD	Food release, trips to LSD, personnel	5.0	From chairman's own funds	Chairman, OC of LSD, weighing person – 4P x 2 WD @ 500/day x 88	0.35
UP premises	Food distribution trips or wages	126.0	From chairman's own funds	TAO, members etc.: 4P x 2 WD @ BDT 500/day x 440	1.76
Total cost for allocation and distribution		196.0			11.01

\* Tonnes rate calculated based on average upazila allocation of 400t and average UP allocation of 40t.

Note: DD – division directors (DoF), DSs – Deputy Secretaries, LSD – local store depot, OC – officer in charge, P – personnel, PD – project director, WD – working day, WL – working lunch, TAO – Task Assignment Officer. See also the list of acronyms.

Table 3. Transport cost from local store depot to distribution yard

Sl. no	Means of transport	Name of UP, district and cost incurred (BDT/t)			Average cost (BDT/t)
		Alexandar, Laxmipur	Rajpur, Bhola	Kalapara, Patuakhali	
1	Labour to unload and load truck/boat at LSD	88.7	150.0	160.0	132.9
2	Transport by truck/boat from LSD to UP yard/river bank	88.7	300.0	180.0	189.6
3	Transport by truck from LSD to UP yard	0.0	0.0	160.0	53.3
4	Labour to unload from truck/boat at UP yard	88.7	0.0	0.0	29.7
5	Fare for tow truck and unload/load in UP yard	0.0	50.0	0.0	16.7
Total transport cost BDT/t		266.1	500.0	500.0	422.2

Note: LSD – local store depot

Table 4. Total costs of food incentive distribution

Sl. no	Cost items	Cost incurred (BDT/t)	Total cost (BDT million)	% of total cost
1	Food allocation	70.00	2.54	0.22
2	Food transport	422.00	15.32	1.37
3	Food distribution	126.00	4.57	0.47
4	Administration	300.31	10.90	0.97
Total administration and distribution costs		918.31	33.33	3.0
5	Cost of 36,296.3t of food	30,000	1088.90	97.0
Grand total (1–5)		30,918.31	1122.23	100.0

Table 5. Government funding for transport costs, and bag sales

Item/head	Amount of BDT received by the Chairmen			Average received BDT/t
	Alexandar, Laxmipur	Rajpur, Bhola	Kalapara, Patuakhali	
Transport cost	102.0	137.0	137.0	125.3
Bag sales (20 bags @ BDT 11 each)	220.0	220.0	220.0	220.0
Miscellaneous	0.0	0.0	0.0	0.0
Total	322.0	357.0	357.0	345.3

The three UP chairmen altogether incurred a cost of BDT 603 per metric tonne: BDT 422 for food transport, BDT 50 for beneficiary list preparation, BDT 5.0 for transporting food from the LSD, and BDT 126 for distribution. However, they only received BDT 345.3 per metric tonne from the government and from the sale of empty bags, which leaves an average shortfall of BDT 157.7 per metric tonne. This is roughly equivalent to the cost of five kilograms of rice. Therefore, if the chairmen have incurred losses they usually withhold rice from each fisher household to an equivalent value, in order to cover their remaining costs.

The government of Bangladesh allows BDT 230 to 300 per metric tonne to transport food in flat areas, BDT 270 to 350 for floodplain areas and 300 to 380 per tonne for hilly areas, depending on the distance between the local store depot and the distribution area, with an additional miscellaneous grant of BDT 200 per tonne for any area or distance. The government also invites the UP chairmen to submit statements of expenditure after the work is complete, in order to be reimbursed for any shortfall or to deposit any remaining balance. But the chairmen are keen to avoid this lengthy procedure and instead take the shortcut of providing less food to the fishers if there is a shortfall, and making a verbal statement to the UNO that there was no balance or shortfall (see Box 2).

## BOX 2. WHY DO FISHERS RECEIVE LESS THAN THE ALLOCATED AMOUNT OF GRAIN?

If the UP chairmen are left with a deficit after paying transport and distribution costs, they make up for the shortfall by distributing less food to the fishers, rather than claim a reimbursement by submitting detailed expenditure reports to the UNO office. There are further reasons why fishers receive less than the amount they are entitled to. Members of the UP, *koialdar* (the man who weighs the food items for distribution), *choukidar* (village watchman) and Task Assignment Officer are involved in food incentive distribution, but since there is no provision to remunerate them, they all claim a share of the rice. Some food is also lost due to bags rupturing and leaking in transit, and the food is weighed inside the bags, without deducting the bags' weight. There is no provision to make up for recipients receiving less than they should for either of these reasons. In addition, food is sometimes poached from the yard.

Moreover, when food distribution begins, disabled people, widows, and groups of beggars tend to congregate in the UP yard and demand to be given food. The chairmen have to allow for the lost food, and also for handing out some food for humanitarian reasons; so as a result the fishers usually get three to five kilograms less than the official allocation of 40kg. While fishers are used to receiving this reduced amount and usually do not complain, in focus group discussions they have said that their households need the full 40kg and would prefer 50kg for larger households (Islam *et al.* 2014).

# 4

## The alternative income generation activities (AIGA) programme

The Jatka Conservation Project offers support to hilsa fishers for alternative income generation activities (AIGA). The project aims to support affected fishers through training and providing materials to set up small businesses such as rearing livestock or sewing. Members of the project implementation committee in each *upazila* select AIGA beneficiaries according to fishers' scope, capacity and interest.<sup>4</sup> The procedure is outlined below.

### 4.1 Selecting AIGA beneficiaries

The project receives funds annually. The following steps are taken to select beneficiaries and distribute AIGA materials:

**Step 1.** The director of the Jatka Conservation Project, based in Dhaka, writes to the Ministry of Fisheries and Livestock (MoFL) requesting funds to deliver the year's AIGA programmes. After receiving the funds release order from the ministry, which divides funds between the *upazilas*, the director approves the funds to be

disbursed to the Chief Accounts Officer of the Ministry of Fisheries and Livestock, with copies to the Director General and Deputy Directors of Finance, Planning and other relevant divisions, and to the Department of Fisheries' Districts and Upazila Fisheries Officers, including Upazila Accounts Officers. The project director also instructs the officers to deliver AIGA support programmes to the poorest fishers.

**Step 2.** On receiving the funds sanction order, the Upazila Fisheries Officer asks the relevant AIGA *union parishad* chairmen to prepare a list of beneficiaries through the local Union Project Implementation Committee (UPIC).

**Step 3.** Each UP chairman meets with the local UPIC to compile a list of beneficiaries, taking into account the scope, capacity and interest of the poorest fishers, and submits it to the UFO with minutes of the UPIC meeting(s). The UPIC consists of five members: the UP Chairman, the Upazila Fisheries Office Field Assistant, a representative from the National Fisheries Cooperative and the Small-Scale Fishery Society, and one member of the *union parishad* nominated by the chairman.

<sup>4</sup> However, some fisher households reported a divergence between their preferences and the AIGA support they received – see Section 5.2 below.

**Step 4.** The UFO meets with the Upazila Project Implementation Committee, of which he is also member secretary. It has eight other members: the Upazila Nirbahi Officer (UNO), Upazila Assistant Officer (UAO), Assistant Commissioner (AC) land, Upazila Livestock Officer (ULO), Upazila Social Service Officer (USSO), Upazila Cooperative Officer (UCO) and representatives from the National Fisheries Cooperative Society and Small-Scale Fishery Society. This committee finalises the lists of AIGA beneficiaries from each *union parishad*, taking budget allocation into account as well as the fishers' potential and capacity.

**Step 5.** The UFO then prepares detailed specifications of materials to procure for the beneficiaries (such as sewing machines or livestock) and invites tenders to supply them, following the government's public procurement rules.

**Step 6.** On receiving the tenders, the UFO sets out a comparative price list of the materials to procure. The ten-member Upazila Purchase Committee meets with the UFO and selects suppliers from the list.

**Step 7.** The UFO issues an order to the successful bidders to supply the materials.

**Step 8.** Meanwhile, the UFOs and Jatka Conservation Project officials organise training for the AIGA beneficiaries in each *upazila*. They invite *upazila* level specialists to deliver lectures or demonstrate practical courses on specific trades. The training costs are covered by the conservation project.

**Step 9.** After receiving the AIGA materials, the UFO organises a meeting to ceremonially award them to the beneficiaries in the presence of the UNO, hilsa management officials, UP chairmen and members, and the local elite. The meeting includes a speech on the importance of hilsa management and AIGA, and the benefit of these activities to the fishers as well as to the nation. Each beneficiary supplies a receipt for the materials they have received.

**Step 10.** The suppliers of the materials submit their bills to the UFO, who examines, approves and forwards them with a payment order to the Upazila Accounts Office, from where the suppliers receive their payment.

**Step 11.** Finally, the UFO sends the detailed list of AIGA beneficiaries and a statement of expenditure, with a copy of the bills and receipts, to the office of the Jatka Conservation Project Director at Dhaka.

Table 6. AIGA programme administration costs

Site	Beneficiary selection and distribution costs			Administration cost (BDT)	
	Work and cost item	Rate/unit (BDT)	Total (BDT)	Personnel: time spent and rate	Amount
PD office	Approval of funds from MoFL	–	0.0	PD & office staff: 4 P x 5 D x 1000	20,000
UFO office	Communication to UP re AIGA list	500 x 22 UZ	11,000	UFO & office staff: 3 P x 0.5 D x 750 x 22	24,750
UP office	List preparation and communication to UFO	1500 x 99 UP	148,500	5 P x 1 D x 500 x 99 UP	247,500
UFO office	Meeting for list finalisation (9 members)	2000 x 22 UZ	44,000	9 P x 0.5 D x 1000/D x 22 UZ	99,000
UFO office	Specification preparation and invite to tender	100 x 22 UZ	2200	3 P x 1 D x 750 x 22	49,500
UFO office	Meeting for supplier selection (9 members)	1000 x 22 UZ	22,000	9 P x 0.5 D x 1000 x 22	99,000
UFO office	Issue of work order to the vendors	100 x 22 UZ	2200	3 P x 0.5 D x 750 x 22	24,750
UFO office	Supply of materials to the beneficiaries	2000 x 22 UZ	44,000	30 P x 0.5 D x 500 x 22	165,000
UFO office	Suppliers' bill payment order issue	100 x 22 UZ	2200	3 P x 1 D x 750 x 22	49,500
UFO office	Report to the PD	200 x 22 UZ	44,000	3 P x 0.5 D x 750 x 22	24,750
<b>Grand total</b>			<b>320,100</b>		<b>803,750</b>

Note: D – days, P – personnel, PD – Project Director (Jatka Conservation Project), UZ – *upazila*. See also the list of acronyms. The average salary of a UZ level officer is BDT 30,000 per month. Costs calculated based on last year's total number of *upazilas* and *union parishads* covered by the AIGA programme.

The breakdown of the AIGA programme's administration cost is outlined in Table 6. This includes staff salaries and communication or meeting costs.

So far, between 2009 and 2014, 21,690 households have received AIGA support from the hilsa management plan, in four main districts and up to 22 *upazilas* in the hilsa sanctuary and adjacent areas. Since the AIGA programme began, support has been available in four main districts: Chandpur, Bhola, Laxmipur and Patuakhali. Table 7 gives the details.

The total cost of beneficiary selection and distribution and staff salaries is about BDT 1,123,850. Assuming that this cost is incurred once a year, we estimate that the average cost per household per year is BDT 259. However, there is a noticeable decline in household numbers engaging with AIGA support over the last two years. Fishers interviewed for a recent study said that the AIGA support on offer was not based on an effective assessment of households' needs; fishers therefore often lack the skills or motivation to make use of the AIGA materials they are given (Islam *et al.* 2014).

## 4.2 Types of AIGA support for fishers and their costs

Altogether, 11 different trades or types of AIGA have been offered to selected hilsa fisher households. The most common type of AIGA support is for small businesses (6228 beneficiaries) followed by net making (4909), with the least common being vegetable cultivation (79). The fishers of Bhola District received

the most AIGA support, followed by Laxmipur District. Table 8 gives the different AIGA types and total costs incurred per unit.

Usually fishers who receive food assistance are not considered for AIGA support except in very poor households. The total cost of delivering the AIGA programme was found to be BDT 163.56 million, of which materials cost 99.3 per cent, administration 0.55 per cent, and beneficiary selection 0.2 per cent (see Table 9). On average, the fishers received benefits to the value of BDT 7540.8 per household.

From this section, we can learn that the cost of beneficiary selection, distribution and administration cost has been kept to minimum; less than 1 per cent of the total cost of the AIGA programme. This is mainly due to the low wage rate of the personnel involved, and the fact that most of the AIGA items are sourced locally, minimising the cost of distribution. While this may be regarded as 'cost-effective', it may not be necessarily the most 'efficient'. As discussed in Islam *et al.* (2014), there has been some discrepancy between the type of AIGA provided and the preference or the capacity of the households – and there are some instances where households stated that the support provided was not transformational or did not have any positive impact in their livelihoods. In some instances households sold the sewing machines they had received and used the cash for other purposes. However, assessment of the efficiency of the AIGA programme is beyond the scope of this study.

Table 7. Households receiving AIGA support

Financial year	Districts covered	No. of households supported	<i>Upazilas</i> covered	No. of households supported per <i>upazila</i>
2009–10	Chandpur, Bhola Laxmipur, Patuakhali	4388	20	219
2010–11	As above	6869	21	327
2011–12	As above	7785	21	371
2012–13	As above	1743	16	109
2013–14	As above	905	22	41
Total number of households		21,690		

Table 8. Types of AIGA provided, approximate cost and households covered

Type of AIGA	Unit per house hold	Cost per unit (BDT)	Households receiving AIGA				Total house holds	Total cost in million BDT
			Chand pur	Laxmi pur	Bhola	Patua khali		
Calf rearing	1	10,000	175	687	351	451	1664	16.64
Goat rearing	2	6000	366	1060	525	290	2241	13.45
Rick shaw/van	1	10,000	410	618	986	226	2240	22.40
Sewing machine	1	7000*	820	758	932	322	2832	19.97
Small business	LS	8000	935	1220	2068	2005	6228	49.82
Net making	LS	6000*	292	1194	1967	1456	4909	32.71
Duck keeping	30	6000	133	47	187	49	416	2.50
Chicken keeping	30	6000	184	49	172	98	503	3.02
Plant nursery	LS	6000	10	34	177	9	230	1.38
Vegetable cultivation	LS	6000	-	40	32	7	79	0.47
Cage fish culture	LS	10,000	347	1	0	0	348	3.48
<b>Total</b>			<b>3672</b>	<b>5708</b>	<b>7397</b>	<b>4913</b>	<b>21,690</b>	<b>162.43</b>

\*Rate was increased to BDT 10,000 for 50 units of sewing machines and 855 for units of net making  
LS – lump sum

Table 9. Total cost of the AIGA programme

COST ITEMS	COST IN MILLION BDT	% OF TOTAL COST
Beneficiary selection	0.32	0.2
Administration cost	0.81	0.5
Materials cost	162.43	99.3
<b>Total</b>	<b>163.56</b>	<b>100</b>

## 5

# Conclusions and recommendations

In general, both administration and transaction costs of the compensation scheme have been kept to a minimum. Compared to other similar schemes such as the Costa Rican payments of ecosystem services, we can conclude that the compensation is cost-effective. This is mainly due to (1) the relatively low salaries of the personnel who administer the scheme, and (2) the fact that most of the rice and AIGA support provided are sourced locally, which significantly reduces the cost of transport and administration. However, from this study alone, it is not possible to conclude whether the scheme is efficient or not. Assessing the scheme's efficiency would require an assessment of households' preferences; the adequacy of the food provided to compensate for the loss of earnings; its ability to stimulate positive behavioural change in natural resource use; and the transformative capacity of the types of AIGA provided. This is beyond the scope of the study.

However, we have identified some challenges to the food incentive and AIGA scheme as it currently stands. These challenges, and some recommendations to address them, are as follows:

**Food allocation and distribution is a lengthy, complex and therefore costly process.** The total administration and transaction cost of distributing each metric tonne of food is BDT 918, amounting to 3 per cent of the total. Even though this is still very small compared to similar schemes elsewhere, a shorter chain of food allocation and distribution would be more cost-

effective, providing better value for government funds; in other words, ensuring the inclusion of at least 1000 more households in the scheme. A wider discussion with relevant stakeholders could develop ways to shorten and streamline this process.

**Fishers often receive less than their allotted amount of food.** The food incentive programme allocates 40 kilograms to each household per month, but households regularly receive 3 to 5kg less than this. Food spillages, embezzlement, and begging account for some of the loss; and also the fact that UP chairmen claim a portion of the food to cover the costs they incurred in distribution. Alternative means to recoup their losses through the official route should be encouraged, rather than withholding food from fisher households.

**The types of AIGA support provided do not seem to match households' preferences.** For instance, some households were provided with sewing machines even though they lacked the knowledge and skill to use them. Therefore, these households ended up selling the sewing machines (often for a price lower than its market value) and using the cash for other purposes. While a full assessment of the scheme's efficiency is outside the scope of this study, this is a clear example of a negative effect on its efficiency. Therefore, the AIGA programme should be informed by a careful assessment of household preferences.

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# Appendix 1: Key informant interviews

INTERVIEWEES	INTERVIEW TOPIC
Project Director, Jatka Conservation Project	Fisher selection; incentive distribution, transaction & administration cost
4 DFOs	As above
PIO, Jatka conservation project	As above
4 UP chairmen	Transaction costs, incentive distribution system and costs
UP members, secretaries, <i>dafadars</i> , <i>choukidars</i> : 12 in total	As above
12 fishers	Receiving food incentives

Note: *choukidar* – village watchman, *dafadar* – messenger, DFO – District Fishery Officer, DoF – Department of Fisheries, PIO – project implementation officer, UP – *union parishad* (local council).



The government of Bangladesh has introduced an economic incentive mechanism to sustainably manage the country's hilsa fishery – a sector that provides 450,000 fishers with their main livelihood and accounts for about 1 per cent of Bangladesh's gross domestic product (GDP). Under its hilsa management plan, fishing is banned for several months a year in a number of sanctuary areas, and during these periods affected fisher households are offered food assistance and support for alternative income generation activities. While economic incentive mechanisms of this kind have been hailed as the most cost-effective and efficient way to manage natural resources, their efficiency depends on how much the incentives cost to implement. This paper investigates the transaction and administration costs of delivering economic incentives under the hilsa management plan in Bangladesh, in order to better understand what costs are incurred and why; and offers some recommendations to improve the scheme.

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