

Darwin Initiative Main Project Annual Report

Important note: To be completed with reference to the Reporting Guidance Notes for Project Leaders:
it is expected that this report will be about 10 pages in length, excluding annexes

Submission Deadline: 30 April

Darwin Project Information

Project Reference	20-015
Project Title	Economic incentives to conserve hilsa ¹ fish (<i>Tenualosa ilisha</i>) in Bangladesh
Host Country/ies	Bangladesh
Contract Holder Institution	International Institute for Environment and Development (IIED)
Partner institutions	Bangladesh Centre for Advanced Studies (BCAS) and Bangladesh Agricultural University (BAU)
Darwin Grant Value	£208,316 (Year 2 grant £70,430)
Funder (DFID/Defra)	DFID
Start/end dates of project	Start date: 04/2013 End date: 03/2016
Reporting period	Apr 2014 – Mar 2015; Annual Report 2
Project Leader name	Essam Yassin Mohammed
Project website/blog/Twitter	http://www.iied.org/bangladesh-protecting-hilsa-overfishing
Report author(s) and date	Essam Yassin Mohammed; Liaquat Ali; and Zoarder F Ahmed

1. Project Rationale

The Hilsa (*Tenualosa ilisha*) fishery is by far the largest single species fishery in Bangladesh; providing full time employment for about 450,000 ‘professional’ fishers and 2.5 million part time fisher folk. Hilsa is the most affordable and preferred fish among the poor; thus contributing to poverty alleviation. But it is feared that the fish stock could collapse in the near future as the fishery is over exploited. The exploitation rate of Hilsa increased sharply from 0.33 (under exploited) in 1990 to 0.66 (over-exploited) in 2002.

This prompted the government to declare four sites in the coastal areas of the country as Hilsa sanctuaries (see figure 1) preventing fishing during the reproductive season. To compensate for lost earnings, the government has started providing “affected” fisher communities (186,000 households) with 30 kg (recently increased to 40 kg) of rice per household and alternative income generating activities.

However, a preliminary study carried out in March 2012 by the proposal partners identified a number of weaknesses such as mistargeting that reduce the effectiveness of the payment scheme in conserving fish stocks and compensating the poorest fishers. These reflect gaps in

¹ Hilsa and hilisa are often used interchangeably. However, the project team has agreed to use the most widely used spelling – *hilsa*.

knowledge on both the functioning of complex marine ecosystems, and socio-economic characteristics of the fisher communities.

The research team aims to generate information to inform the decision-making process through:

1. **Ecological and socioeconomic assessments.** Ecological baseline assessments will aim to better understand the current complex marine biodiversity and how the ecosystems function, and will encompass biological, physical and chemical characteristics of the fish and their habitat. The current socioeconomic characteristics of the fishing communities will also be analysed to better understand how people are making a living from fishing. Social baseline assessments will include identifying key stakeholders to be interviewed to find out their preferences for how they will be compensated for not fishing, and the types of compensation they prefer.
2. We will **assess both the technical and institutional capacity** of relevant government authorities and communities. Once the assessment is completed we will identify the necessary institutional structures that need to be in place to ensure that a properly functioning payment mechanism is sustained after the project ends.
3. We will **design equitable benefit distribution systems** that aim to both fairly and equitably distribute payments and conserve biodiversity. This component of the research project will shed light on “who gets what and why?”
4. **National hilsa conservation fund.** The government earns an average of \$630 million – a considerable sum – from hilsa exports annually. Earmarking tax revenue for the scheme and/or an additional levy on exports through private sector engagement will also be explored in order to ensure the financial sustainability of the compensation scheme.

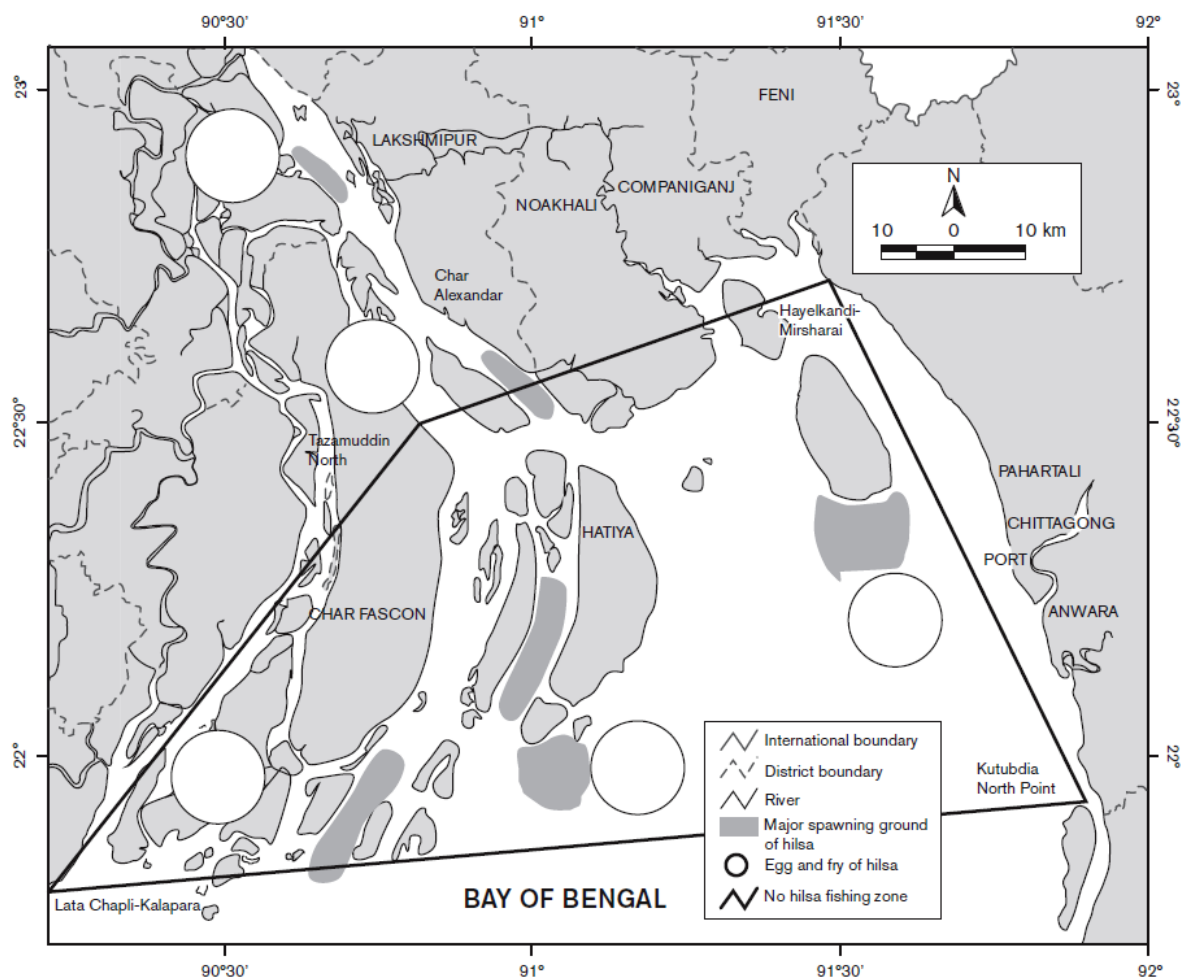


Figure 1 Major spawning grounds of hilsa and study site map

2. Project Partnerships

Since the project inception phase, we have been able to establish a strong partnership portfolio with host-country based institutions namely BCAS and BAU. And most importantly, we have also developed a close partnership with the Department of Fisheries (DoF) of the Ministry of Fisheries and Livestock.

The IIED team maintained its role for designing the socioeconomic studies, and drawing on experiences of the use economic incentives for fisheries management from around the globe to ensure best practice in relation to effectiveness, equity, efficiency and financial sustainability. The IIED team has also played a major role in ensuring excellence and rigour in the research methods employed, and that the research is policy relevant. Most importantly, the team has been responsible for ensuring that the project activities and outputs are delivered in a timely manner. Some of the most important contributions of the IIED team have been (1) developing a rigorous methodology to assess the preferences of the recipient communities for compensation packages using the choice experiment method (CEM); (2) drawing lessons on the use of conservation trust funds for natural resources management (please see section 3.2); and (3) ensuring the quality and policy relevance of the knowledge products; particularly, linking both socioeconomic and ecological studies to policy processes.

The BCAS team has been responsible for revising the socioeconomic research methodologies to ensure that cultural sensitivities and other local factors are taken into consideration. The team has also led the execution of field work and managing a team of qualified enumerators. The BCAS team has also been instrumental in periodically briefing officials from DoF about the research progress.

One of the most commendable traits of the BCAS team is their genuine desire to overcome challenges associated with limited resources and not compromise the quality of the research. For instance, given the availability of resources (and estimating confidence intervals and sample means) the project team had agreed that 750 households would be surveyed. After the completion of the survey, the team realised that surveying additional 230 households was inevitable. The BCAS team utilised their internal resources to cover the cost of the additional (and unbudgeted) survey. This is a clear manifestation that the team is genuinely keen to deliver (to use their phrase) “world-class research” and ensure they are effectively communicated to policy makers.

The BAU team has been leading on the ecological/biological component of the project. Their highly qualified team of fisheries scientists has designed the research methodology and collected extensive dataset which has led to the production of three scientific reports which are due to be submitted to academic journals.

Similarly, the BAU team has also utilised its internal resources to cover the deficit from the budget allocated for capital equipment. The cost of buying a microtone and other fieldwork equipment (e.g. salinometer etc.) were significantly underestimated. The BAU team mobilised internal resources to offset the deficit (equivalent to \$7000) and eliminated the risk of compromising ‘research excellence’, which is the core value of this project.

The partnership with the DoF has also been ‘superb’. The Director General of DoF, Mr Syed Arif Azad in particular, has been very keen in learning about the project and expressing his willingness to incorporate the outputs (policy recommendations) of the project in improving the compensation scheme. The briefing meeting that was held at the conference hall of the DoF on the 19th of January 2015 was requested by Mr Azad. Please see press release:

<http://www.iied.org/uks-darwin-initiative-funded-project-strives-reduce-threats-hilsa-fish>

The DoF officials have also been providing extensive feedback to our research methodologies, and made several suggestions. Even though some of their suggestions have cost implications, we are willing to take them on board and amend our activities accordingly. This is explained further below.

Overall, the partnership between the lead institution and host-country partners including the DoF can be rated as ‘outstanding’.

3. Project Progress

3.1 Progress in carrying out project activities

As can be noted from Year 1 annual report, some of the project activities for FY 2013-2014 (Y1) were delayed due to unprecedented political unrest in Bangladesh. However, major progress was made in FY 2014-2015 (Y2) to make sure that the project team is on track to deliver project outputs in a timely manner. Therefore, this year's progress report also covers some of the progresses made from Y1 activities.

The ecological and biological component of the research project (**1.2, 1.3, and 1.4**) is on track. The BAU team in consultation with fisheries experts from Bangladesh Fisheries Research Institute (BFRI) identified four sampling sites. The sites are at (1) the confluence of Padma and Meghna Rivers in Chandpur District; (2) lower part of Meghna River in Doulatkhan, Bhola; (3) Tetulia River in Lalmohon, Bhola; and (4) Andhermanik River, Kalapara, Patuakhali. Water samples for all physical, chemical and biological parameters, and samples of hilsa specimens were collected monthly. Both the biophysical data and fish specimens were taken to the laboratory for further analysis. Both field and laboratory measurements included physical (e.g. surface temperature, secchi disc (water transparency), total dissolved solids, total suspended solids, conductivity etc.), chemical (e.g. Dissolved oxygen, pH, total alkalinity, salinity, nitrate-nitrogen (NO₃-N), ammonia-nitrogen (NH₃-N), phosphate-phosphorus (PO₄-P) and chlorophyll-a) and biological (spawning seasonality, gut content or feed selectivity etc.) parameters. The extensive data that was collected over 12-month period (with a follow up survey to validate a few periodic observations) was analysed. Three scientific reports have been completed and are due to be submitted to academic journals.

A large-scale household survey to enhance our understanding of socioeconomic characteristics of hilsa fishery has been completed. 900 households were interviewed across 213 villages in Chandpur, Lakshmipur, Bhola, Patuakhali, Barisal, Barguna, Rajbari and Cox's Bazar Districts in southern Bangladesh (lower Meghna River region, mid Padma near Rajbari and coastal/marine area in Cox's Bazar district). The household survey was conducted by qualified and experienced enumerators from BCAS between May and October 2014. Please see Fig. 2 below. 800 of these households were selected from villages directly affected by the fishery closures. Affected communities were then categorised into two sub-groups. The two sub-groups are those household that reside *inside* the sanctuaries (600) and those that reside adjacent to the sanctuaries (200). These are areas where compensation for the loss in earnings during the ban period is provided. Please see figure 3 below. The remaining 100 were selected from villages in an inland district (Rajbari) and one coastal district (Cox's Bazar). Compensation is not provided in these two districts. They are distant enough to show any spill-over effect; therefore, they were selected to be used as control sites. Stratified random sampling was used to select the households. The data was then analysed to assess the opportunity cost of participating in the compensation scheme and preferences for compensation packages of the recipient households (**1.5 and 1.7**).

A study to estimate the transaction and administrative cost of the compensation scheme (**1.6**) was also conducted. Secondary data on the cost of administering the compensation scheme was obtained from the DoF and analysed. In addition, 'key informant' interviews were also conducted. The interviewees comprised of: project director of the compensation scheme; 4 District Fisheries Officers (DFOs); 4 Union Parishad (UP) or local councillors; 4 Project Implementing Officers (PIOs); 12 fishers; and 12 union council members.

To investigate the potential impacts of the compensation/payment scheme on the local economy (**1.8**), a team from BCAS conducted four focus group discussions with a total of 81 members of the residents of Gobindia and Charipara villages, in Chandpur District in the Chittagong Division of eastern Bangladesh. Both villages are within a designated *jatka* (juvenile hilsa) sanctuary and house fishers receiving rice 'compensation'. Focus group participants included fishers, rice retailers and wholesalers, grocery shop owners, labourers, and other interest groups, including women. In addition, we conducted interviews with local fisheries officers and local money lenders.

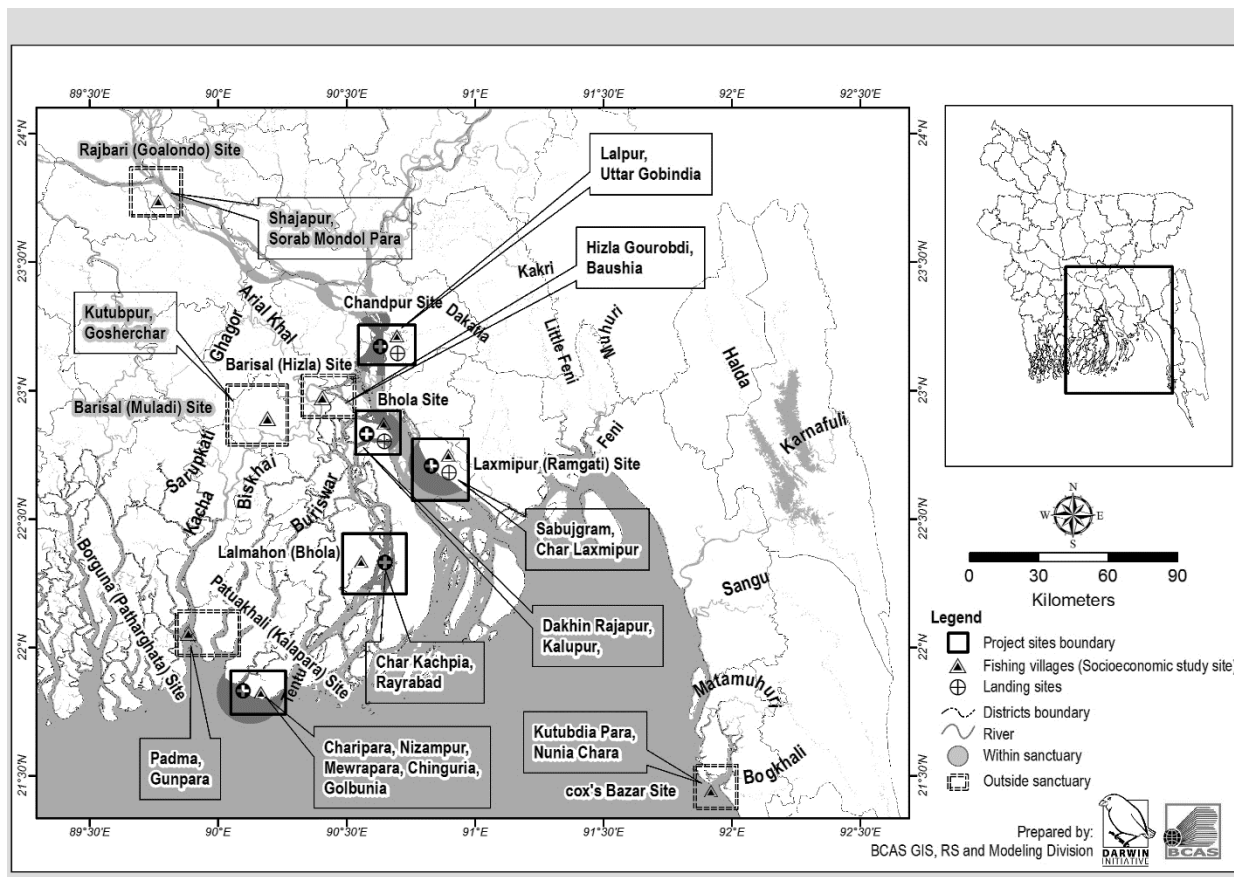


Figure 2 Socioeconomic survey sites. Study sites include villages within and outside hilsa sanctuaries.

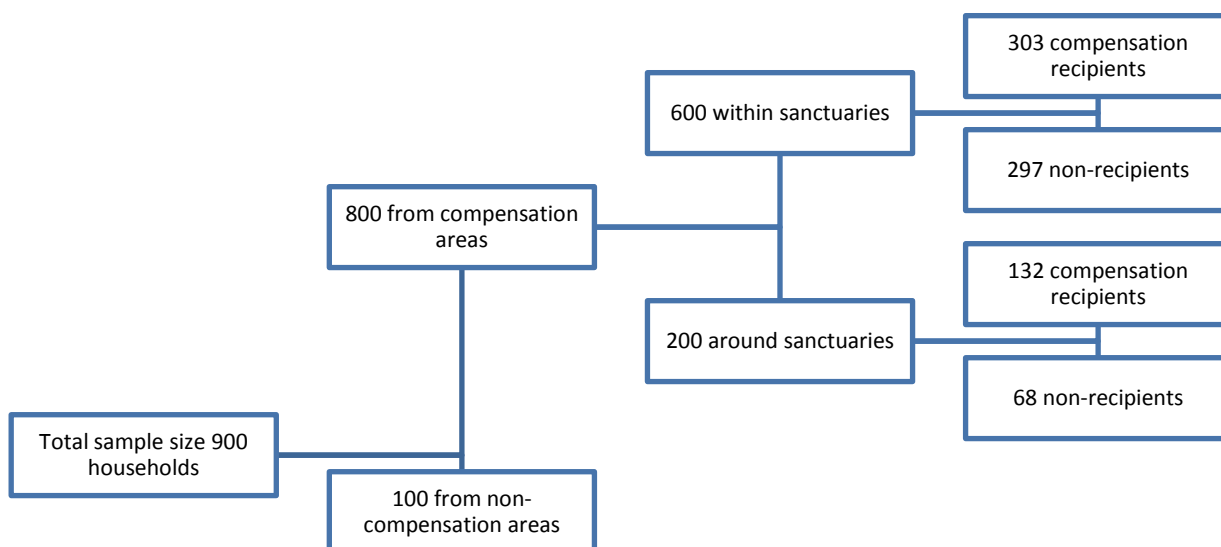


Figure 3 Sample population

A study was conducted to enhance our understanding on the institutional and technical capacity needs of the hilsa compensation scheme (2.1 – 2.4). This study was based on a review of existing legal, policy and institutional documents, as well as recent literature relating to hilsa fishery and conservation. It also drew on primary information gathered from key informant interviews and focus group discussions, held between January and April 2014. A consolidated report that presents the institutional and legal frameworks and gap analysis was produced.

A rigorous analysis on social targeting has been completed. In addition, a medium-scale survey with 230 households has been conducted to assess 'who gets what and why?' We were advised to conduct the additional survey by the senior officials from DoF following the multistakeholder workshop on equitable benefit sharing that was held in the DoF Conference Room in Matshya Bhaban, Dhaka on the 19th of January 2015. The workshop was attended by 60 participants including senior government officials, District Fisheries Officers, academics and representatives of the fisher communities (3.1 – 3.3). The MoU between DoF and the fisher communities has not been completed mainly because of the unprecedented and additional survey that was conducted following the suggestion by the DoF. Once the analysis is completed, we will draft the principles of Equitable Benefit Sharing.



Figure 4 Multistakeholder workshop on Equitable Benefit Sharing

Significant progress has been made in making the case for a hilsa conservation fund (4.1 and 4.2). A task team comprising of local experts and the project leader was formed. The task team has drafted and submitted two documents titled: (1) Background document: hilsa conservation trust fund, and (2) memorandum and articles of association of the hilsa conservation fund. The workshop to revise and fine-tune the documents has been postponed to the end of May at the request of the DoF. The DoF officials needed more time to study the documents.

Project outputs dissemination is on track (5.1 – 5.4). Several knowledge products and 2 press releases have been produced (see section 3.2 for details). The project leader also participated at the 16th Annual BIOECON Conference on Biodiversity, Ecosystem Services and Sustainability, 21-23 September 2014, Kings College, Cambridge, United Kingdom where he presented a draft paper titled "assessing preferences for compensation packages using the choice experiment method: The case of hilsa management in Bangladesh" In addition the project leader gave a seminar at the FAO head quarter in Rome in September 2014, where he shared some of the lessons learned to 26 FAO staff members. The BAU team has also attended and presented their preliminary findings at the annual conference of the Bangladesh Agricultural University Research System (BAURES), which was held on 25-26 January 2015.

Overall, we can confidently say that the project activities are on track and will be accomplished in a timely manner.

3.2 Progress towards project outputs

Output 1. Improved understanding of current ecological and socioeconomic characteristics of hilsa fishery. [On track]

Indicator 1.1

A scientifically rigorous biophysical survey was conducted by the BAU team. The team has produced three scientific reports which are due to be submitted to academic journals. The three papers are:

- *Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed. Assessment of physical, chemical and biological factors of the environment of the hilsa fishery areas in Bangladesh (to be submitted)*
- *Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed. Food and feeding ecology with special reference to food preference of hilsa *Tenualosa ilisha* in the Meghna River basin of Bangladesh (to be submitted)*
- *Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed. Reproductive seasonality of hilsa shad, *Tenualosa ilisha* (Hamilton 1822) in the Meghna River, Bangladesh (to be submitted)*

The findings of these studies have challenged some of the widely agreed notion that hilsa have a distinctive breeding season and have specific migration routes. For instance, the gonado-somatic index analysis showed that hilsa breed throughout the year (not just in October), even though there was 'notable' increase in gonad size just before the full moon in the month of October (*Ashvin* in Bengali calendar). This has stirred some debate among fisheries experts from DoF and other academic institutions. The government is now considering demarcating an additional (sixth) sanctuary based on the findings from this project. The 6th sanctuary will be at the confluence of the three tributaries of the Meghna River, between Hijla and Mehendiganj in Barisal district. This has been reported by the DhakaTribune and can be found at:

<http://www.dhakatribune.com/bangladesh/2015/jan/20/country%E2%80%99s-6th-ilish-sanctuary-coming-soon#sthash.PPaq7mnk.dpuf>

Indicator 1.2 and 1.3

The project team has agreed to combine indicators 1.2 and 1.3 mainly because some of the reports need to be consolidated. The reports on both the opportunity cost of participating in the compensation scheme and assessment of preferences for compensation packages will be merged. Even though the production of the paper has been delayed mainly because additional household survey had to be conducted. The survey has just been completed. Preliminary findings have already been shared with the DoF and we are finalising the report. The preliminary findings of the study is available at:

- *Mohammed, E. Y. Brouwer R. 2014. Assessing preferences for compensation packages using the choice experiment method: The case of hilsa management in Bangladesh* Available at: <http://www.slideshare.net/IIEDslides/assessment-of-preferences-hilsa-bioecon2014>

A report on the cost of running the scheme (administrative and transaction costs) has been completed.

- *Haldar, G.C., and Ali, M.L. 2014. Transaction and administrative cost for the compensation scheme for hilsa management in Bangladesh. IIED Working Paper, IIED, London, UK.* Available at: <http://pubs.iied.org/15522IIED.html>.

In addition, a paper that draws lessons from examples from across the globe has been published in the journal of Fish and Fisheries. The journal has the highest impact factor in the field of fisheries science. The study was done to inform the design the compensation scheme in Bangladesh.

- *Bladon, A., Short, K., Mohammed, E.Y., and Milner-Gulland, E.J. 2014. Payments for ecosystem services in developing world fisheries. Fish and Fisheries. DOI: 10.1111/faf.12095* <http://onlinelibrary.wiley.com/doi/10.1111/faf.12095/pdf>

Indicator 1.4

We had initially planned to conduct a study on the cost and benefit of the compensation scheme. While we were able to estimate the cost side of the equation (see above), it was very challenging to obtain reliable data on 'benefits' or gains. The statements made on both ecological and livelihoods gains of the compensation scheme are anecdotal or not based on rigorous assessment, to say the least. This was highlighted in [Mohammed and Wahab 2013](#).

The project has secured additional funding from USAID/WorldFish to do a comprehensive and rigorous impact evaluation on both the ecological and livelihood impacts of the compensation scheme. This study is expected to be completed within the lifetime of the Darwin project. This will enable us to have a better understanding of both the cost and benefits of the compensation scheme and run the analysis taking into account the time value of money (for a range of discount rates).

An indicator that is missing from the current logical framework is the study on unintended impacts of the compensation scheme on the local economy. The study has been completed and a policy briefing paper has been submitted to the DoF.

- *Mohammed, E. Y., Chowdhury, S. A., and Ali, L. 2015. Mitigating unintended local economic impacts of the compensation scheme for hilsa management. . IIED briefing papers. IIED, London. Available at: <http://pubs.iied.org/pdfs/17282IIED.pdf>*

Output 2: Improved understanding of institutional capacity needs, opportunities and gaps to ensure the effective management and functioning of the compensation scheme [on track/completed]

Indicators 2.1, 2.2, 2.3 and 2.4.

A study was conducted to enhance our understanding on the institutional and technical capacity needs of the hilsa compensation scheme. This study was based on a review of existing legal, policy and institutional documents, as well as recent literature relating to hilsa fishery and conservation. It also drew on primary information gathered from key informant interviews and focus group discussions described below, held between January and April 2014. A consolidate report that present the institutional and legal frameworks and gap analysis was produced.

- *Islam, M., Mohammed, E.Y. and Ali, L. 2014. Economic incentives for hilsa shad fish management: legal and institutional framework analysis. IIED Working Paper, IIED, London, UK. Available at: <http://pubs.iied.org/15523IIED.html>*

This comprehensive report has identified some critical gaps and made several recommendations that would enhance the effectiveness of the scheme. While some of the recommendations could be implemented easily, a few others require amendment of some of the existing policies. For instance, the Protection and Conservation of Fish Rules (1985) would need an amendment to revise the boundaries of sanctuary areas, to exclude non-target fishers, and to include non-hilsa fishers and other key stakeholders in the compensation scheme. In addition, an amendment of the Mobile Court Ordinance 2007 could provide magistracy power to the fisheries officers. However, such amendments are very likely going to take a long time and are very likely going to be implemented after the lifespan of the project.

Output 3: Enhanced engagement between the DoF and fisher communities in the lower Meghna [largely on track]

Indicators 3.1 and 3.2

In the three multistakeholder workshops and briefing meetings held since the inception of the research project, officials from DoF and representatives of the fishers were invited. This has created a platform for both parties to sit in the same room and discuss. The fishers have been represented in every workshop by 3 fishers and Mr Ali Islam, the president of the Fishermen's Association of Bangladesh.

We have used the results of the socioeconomic survey to define the principles of 'equitable benefit sharing'. The results of the 'preferences' study (see above) and social targeting were presented to the DoF.

- *Bladon, A. Milner-Guland, E.J. and Mohammed, E. Y. An assessment of social targeting in a compensation scheme for hilsa fishers in Bangladesh (submitted along with this annual report)*

At the request of the DoF, additional, medium-scale survey with 230 households has been conducted to assess 'who gets what and why?' We will be analysing the data and draft the 'principles of equitable benefit sharing' policy document and submit it to the DoF.

The questionnaire was designed in such a way that we will be able to enhance our understanding on how different payment or compensation packages affect benefit sharing within and between households. For instance, in the consultation workshops with the fisher communities, we learned that rice is mainly consumed by male subjects of an average rural Bangladeshi household. This certainly creates inequities within the household. Moreover, we have collected data to answer the question whether the distribution of benefits or compensation should be based on 'equity' (in proportion to each household's opportunity cost), 'equality' (the same level of compensation to each household) or 'need' (the most needy receive disproportionately higher compensation than the less needy).

We also strongly believe that the 'unintended' consequences of the compensation scheme on the local economy which may affect other non-recipient or non-fisher communities, need to be minimised or, where possible, eliminated. Therefore, we plan to produce a very comprehensive policy document which sets out the principles of equitable benefit sharing concerning the affected fishers and beyond.

Output 4: Sustainable national hilsa conservation fund proposed and agreed by DoF [on track]

Indicator 4.1 and 4.2

As mentioned above, significant progress has been made in making the case for a hilsa conservation fund. A task team comprising of local experts and the project leader was formed. The task team has drafted and submitted two policy documents to the DoF. These documents are:

- *Background document: hilsa conservation trust fund, and*
- *Memorandum and articles of association of the hilsa conservation fund.*

While the first document makes the business case and clarifies the legal underpinning for the establishment of the hilsa conservation fund, the second document illustrates the governance structure of the hilsa conservation fund in line with Companies Act 1983 of the Government of Bangladesh. Both documents are available to be shared up on request.

In addition, in order to draw lessons from international experiences on conservation fund management and governance architecture, a set of 12 conservation funds from Latin America, Asia and Africa were reviewed. Please see the report below.

- *Bladon, A., Mohammed, E. Y., and Milner-Gulland, E.J. 2014. A Review of Conservation Trust Funds for Sustainable Marine Resources Management: Conditions for Success. IIED Working Paper. IIED, London. Available at <http://pubs.iied.org/pdfs/16574IIED.pdf>?*

Indicator 4.3

The planned workshop to revise and fine-tune the documents has been postponed to the end of May 2015 at the request of the DoF. The DoF officials needed more time to study the documents.

Output 5: Project outputs are disseminated to influence decision making in Bangladesh and beyond [on track]

Indicator 5.1

Planned outputs for Output 5 have exceeded the target for Year 2. Please see summary of the progress below:

Presented research findings at the following conferences:

- The 16th Annual BIOECON Conference on Biodiversity, Ecosystem Services and Sustainability, 21-23 September 2014, Kings College, Cambridge, United Kingdom.
- Seminar at the FAO HQ, Rome on the 19th of September 2014.

- Rethinking Capitals: Going beyond the financial, 17 December 2014
- Bangladesh Agricultural University Research System (BAURES), 25-26 January 2015, Mymensingh, Bangladesh

Blogs and press releases

- UK's Darwin Initiative funded project strives to reduce threats to hilsa fish <http://www.iied.org/uks-darwin-initiative-funded-project-strives-reduce-threats-hilsa-fish>
- Protecting ecosystems and livelihoods in Bangladesh <http://www.iied.org/protecting-ecosystems-livelihoods-bangladesh>
- Want to know how to save a fish species? Ask a fisher <http://www.iied.org/want-know-how-save-fish-species-ask-fisher>
- Idris bhai, your voice has been heard! <http://www.iied.org/idris-bhai-your-voice-has-been-heard>
- Can we save our fisheries with lessons from our forests? <http://www.iied.org/can-we-save-our-fisheries-lessons-our-forests>
- Environmental Funds: sustainable finance for conservation <http://www.iied.org/environmental-funds-sustainable-finance-for-conservation>

Media mentions:

- Country's 6th Ilish sanctuary coming soon <http://www.dhakatribune.com/bangladesh/2015/jan/20/country%E2%80%99s-6th-ilish-sanctuary-coming-soon>
- Drive against gillnet manufacturing soon <http://www.thedailystar.net/drive-against-gillnet-manufacturing-soon-60804>
- Efforts to boost hilsa production stressed <http://thedailynewnation.com/news/40169/efforts-to-boost-hilsa-production-stressed.html>
- Greater efforts to boost hilsa production suggested <http://www.thefinancialexpress-bd.com/2015/01/20/76756/print>
- Experts for greater efforts to boost hilsa output http://www.theindependentbd.com/index.php?option=com_content&view=article&id=244984:experts-for-greater-efforts-to-boost-hilsa-output&catid=161:region&Itemid=193
- Experts for greater efforts to boost hilsa output <http://unb.com.bd/hilsa-project>

3.3 Progress towards the project Outcome

The project is on track towards achieving outcome level key objectives. By the end of the project period, we anticipate that there will be an effective compensation scheme in place characterised by (1) a better understanding of the biophysical characteristics of hilsa fishery, (2) better social targeting and equitable benefit sharing that takes into account the preferences of the recipient households, (3) mechanisms put in place to mitigate unintended consequences of the compensation scheme, and (4) a sustainable financing mechanism through the establishment of a hilsa conservation fund. These attributes will in turn improve both sustainable management of hilsa fishery and associated biodiversity benefits, and maintain the livelihoods of the thousands of the fishers that rely on the sector.

Indicator 1: even though the actual number of recipients may not change, we anticipate that the number of 'impacted' fisher households will increase through effective targeting. The project team is working closely with the DoF to ensure that the most affected fishers are included, and unintended consequences on non-recipient or non-fisher households are minimised or eliminated. Evidences that support these statements are provided in the preceding sections.

Indicator 2: assessment of the preferences of households for compensation packages using the choice experiment method has been completed. This will certainly inform the design of the principles of equitable benefit sharing.

Indicator 3: as discussed in section 3.2 above, two comprehensive documents that define the legal and institutional frameworks and the memorandum and articles of association of the hilsa conservation trust fund have been completed and submitted to the DoF. These documents will be revised further following the scheduled multistakeholder workshop before the end of May. We anticipate that the ratification process will commence accordingly.

Indicator 4: this indicator will be assessed towards the end of the project period (Year 3). We have secured additional grant to do a counterfactual impact evaluation of the compensation scheme using propensity score matching.

Box 1: counterfactual impact evaluation

As mentioned above, anecdotal evidence suggests that the compensation scheme has had positive impacts both on hilsa population and the livelihoods of thousands of fishers. But there has been no rigorous impact evaluation — and researchers agree that one is sorely needed (Mohammed and Wahab 2014). A properly designed impact evaluation is particularly important because it shows whether the intervention is working or not, and can be used to inform decisions about scaling up.

In thinking about how to evaluate impacts, it is important to distinguish between the monitoring of outcomes, which is a description of the factual; and the use of ‘counterfactuals’ to attribute observed outcomes to the intervention.

In its simplest form, counterfactual impact evaluation (CIE) involves comparing socioeconomic and ecological outcomes from the intervention (the ‘treated group’) with outcomes in a ‘control’ group that is similar in all respects but distance. The control group must be geographically distant enough not to have been exposed to the intervention. CIE enables us to answer the question: “what would have happened without the intervention?” and “to what extent can the socioeconomic and ecological changes (positive and negative) that we see be attributed to the intervention?” Like many developing world fisheries, Bangladesh’s hilsa fishing is characterised by limited data, which means we cannot do a before-and-after evaluation of the compensation scheme. We will therefore use an ‘ex-post’ impact evaluation technique, such as ‘propensity score matching.’ We will assess the scheme’s impacts in three main areas: (1) livelihoods/ poverty alleviation; (2) ecology or hilsa population and biodiversity in general; and (3) local economy – such as food (rice) price market distortions. Remote sensing techniques will help us assess changes in biophysical parameters, which will be ground-truthed using perceptions data.

A copy of the Memorandum of Agreement (MoA) signed between IIED and WorldFish Bangladesh can be shared with the reviewer (NOT to be circulated).

Indicator 5: this is also primarily going to be completed in Year 3 of the project. Nonetheless, communications with key stakeholders from West Bengal State (India) and Myanmar have already started. We will be holding a regional workshop which will bring together key stakeholders from the three countries and initiate discussions on how the Bangladeshi approach may be scaled up to regional level. The WorldFish Centre Bangladesh through the support of USAID has agreed (in principle) to cover the cost of participation of additional stakeholders from India and Myanmar.

3.4 Monitoring of assumptions

The government of Bangladesh has continued to support the compensation scheme. The Ministry of Finance created two new financial lines (6605 and 5390) for hilsa production and conservation in the national budget, and has started allocating money regularly through these new codes. The government allocated Tk 33.07 million to the DoF in 2014-2015 under 6605 for mobile courts, awareness creation and motivation, capacity building, operation and distribution

costs for the hilsa alternative income generating activities (AIGA) programme. In addition, the DoF received Tk 1,610.00 million from the revenue budget and Tk 170.00 million from the development budget (project code 5390 for the year 2013-14).

The Director General of the DoF in particular, has been tremendously supportive throughout the project period. This is manifested by his attendance in our workshops (not just during the inaugural ceremony), and recently, his request to the project partners to hold a briefing session. Please see press release <http://www.iied.org/uks-darwin-initiative-funded-project-strives-reduce-threats-hilsa-fish>



Figure 5 consultation and briefing meeting with fisher communities in Chandpur District

The second important assumption we made was that overfishing continues to be the main cause of depletion of hilsa stock. While this is not disputed by the fisher communities and researchers from Bangladesh, we have also unearthed a few other critical issues that may hinder the effectiveness of the compensation scheme. These are discussed below:

1. A policy paradox promotes illegal fishing. Under Bangladesh's Protection and Conservation of Fish Act (1950), if the authorities find anyone using the fine-mesh monofilament net, locally known as *current jal*, they will confiscate their fishing equipment and may also impose a fine. However, the production of current jal or monofilament net is/was allowed. The contradiction in policy arises, whereby the government bans fishers from using the nets but permits many factories in the capital to produce them.

2. Siltation, upstream damming and river diversion. In a conversation we had with a local fisher, he told us that "...if the environment is not conducive, then hilsa will migrate elsewhere. So we have to prepare a nice home for them." The local fishers believe that damming, river diversion projects and uncontrolled sand and gravel mining from riverbeds have increased the amount of silt in the river, which has reduced water clarity and depth. They suggested that more dredging in the river banks to remove the silt and deepen the water is needed.

3. Law enforcers need night shifts. The local fishers were also critical of the way the authorities monitor and enforce the no-take period and zone. Most of the policing activities

happen during day time, but most hilsa fishing is done at night. They believe policing activities need to be intensified at night – and not much so during the day.

4. Loan sharks threaten Hilsa fish. Another critical finding through the consultation process was the fact that most of the fishers are systematically trapped in debt to local money lenders called *aratdars* or *dadons*.

The fishers who borrow money are obligated to hand all their catch to the money lenders who then decide its price. Some of this (up to 50 or 60 per cent) will be used to service the debt and the rest is given back to the fishers in cash. Even during the fishing ban period, the fishers are expected to repay their loans so they go fishing regardless of their ban period and zone. Two solutions are often suggested: either provide fishers with alternative microcredit, or encourage money lenders to freeze repayments during the ban period.

The fishers' testimony is a reminder that policymaking must be based on grounded realities and that researchers can magnify local knowledge if they direct their questions to the right people. In the case of the hilsa, that means talking to a lot more of the men and women who have been catching them for years.

Defying conventional approaches to research, and taking a calculated risk of potentially getting diverted from our research focus, we decided to take the above points seriously and communicate them with policymakers. This seems to have paid off and here's the reason why.

Government bans current jal production

On 19 January 2015, together with researchers from BCAS and BAU, we met with senior government officials from the DoF. We wanted to share our research findings with the officials and help inform the policymaking processes for hilsa shad management.

During the briefing meeting, Syed Arif Azad, director general of DoF, alluded that efforts were being made to **ban both the production and use of monofilament net or current jal** in Bangladesh. The ban is expected to be ratified by the parliament and come into effect in the near future.

Extending microcredit to hilsa fishers

One of the major constraints most hilsa fishers face is limited access to microcredit. Formal microfinance institutions often do not have either 1) adequate resources to meet the demands for microcredit, or 2) do not provide credit to fishers since most of the fishers cannot offer collateral or are regarded as 'not creditworthy'.

We have been arguing that microcredit should be introduced and tailored to meet the needs generated by a fishing ban. This must include a 'grace period' that protects fishers from repaying capital or interest when the fishery is closed, which would in turn boost compliance with the ban.

Well-thought-out microcredit should gradually liberate hilsa fishers from a cyclical debt trap and prevent the interest rates they pay rising when the fishery is closed. This was strongly supported by the director general of DoF in the meeting.

The project team had the opportunity to meet with Dr Mihir Kanti Majumder, former Secretary of Environment in Bangladesh and the current chair of the Palli Sanchoy Bank (PSB) – the Rural Savings Bank in English. PSB provides microcredit and micro-savings programmes to small-scale producers. This is a project-based and not-for-profit government-sponsored scheme that aims to liberate farmers from the debt trap. We discussed the possibility of extending the service to hilsa fishers as part of the incentive-based scheme that is conditional on the fishers abiding with the non-fishing period. The microcredit will also provide a grace period during the ban.

Dr Majumder agreed and took immediate action. He has already drafted a proposal requesting the Prime Minister's office to approve 2.44 billion Taka (equivalent to US\$31 million) to pilot the project for two years. [The draft concept note is available upon request (confidentially)]. If this is approved, then the scheme will play a significant role in liberating thousands of fishers from the debt trap and enhancing the effectiveness of the compensation scheme through increased compliance.

Our approach in (1) ensuring the voices of the fishers are amplified and used in policy making processes, and (2) taking measures to address initially overlooked but critically important issues could be mentioned as one of the unique and outstanding achievements of this project.

Evidence of these events can be found here: <http://www.iied.org/idris-bhai-your-voice-has-been-heard>

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

Please see sections 4 and 5 below.

4. Project support to the Conventions (CBD, CMS and/or CITES)

Biodiversity conservation in general and working closely with the Government of Bangladesh to meet its obligations under the CBD is central to our project. We have been working closely with the Secretary of the Ministry of Environment and (by default) CBD focal point, Mr Mesbah ul Alam. However, a new Secretary of Environment has just been appointed. A meeting with the new Secretary has been scheduled for the end of May.

6th sanctuary

One of the most notable achievements of this project is that owing to the biophysical study that was conducted and effective communication with the DoF, the government is now considering demarcating an additional (sixth) sanctuary based on the findings from this project. The 6th sanctuary will be at the confluence of the three tributaries of the Meghna River, between Hijla and Mehendiganj in Barisal district. If implemented, this is expected to have positive impact on biodiversity conservation and help the Government of Bangladesh meet its CBD commitments. As mentioned in the previous section, this has been reported by the DhakaTribune and can be found at: <http://www.dhakatribune.com/bangladesh/2015/jan/20/country%E2%80%99s-6th-ilish-sanctuary-coming-soon#sthash.PPag7mnk.dpuf>

Extending to the marine environment

While the sanctuaries are in riverine and estuarine systems, we have been arguing that there is urgent need to extend the protected areas to marine and coastal environments. We believe that the development of Marine Protected Areas (MPAs) is an effective tool for biodiversity conservation and the restoration of fish resources. As hilsa is an anadromous migratory fish and a notable portion of its life cycle is spent in the sea, the establishment of a Marine Protected Area (MPA) in the Bay of Bengal for the conservation of hilsa deserves immediate action. In 2002, for the first time in Bangladesh, a marine reserve (sanctuary) covering an area of 698 km² between 20.51 N - 21.08 N and 91.20 E was established through a government gazette notification (SRO No. 327/2000 dated 21 October 2002), whereby any type of fishing is prohibited within this area throughout the year. The COP (Conference of Parties) of the CBD (Convention on Biodiversity) held in Nagoya, Japan in 2010 (Aichi Targets), took the decision that each country declares 10 per cent of its marine area as a protected area.

However, the present 698 km² in Bangladesh does not meet the requirement of the 10 per cent target, so the size of the area needs to be increased. An increased reserve area will provide a more suitable marine habitat for hilsa fish, and more conservation efforts are needed to support this habitat. Moreover, thousands of poor hilsa fishers catch hilsa in the sea during the winter season. Some restrictions that are necessary for the management of the MPA will definitely affect their income and therefore attempts will be needed to extend the coverage of the incentive-based scheme to coastal communities. This means that more resources will be

needed to extend existing hilsa fisheries management plans to the marine environment and to include marine hilsa fishers in the compensation scheme. This will inevitably mean more cost. We have suggested to the Government of Bangladesh that the creation of the Hilsa Conservation Fund could generate the resources needed. This is clearly articulated in the background document of the hilsa conservation fund. Therefore, the fund will be established taking into account a significant increase of MPAs in the foreseeable future – alleviating the concerns of the government with respect to cost implications.

5. Project support to poverty alleviation

Hilsa is the most important single-species fishery in Bangladesh. The sector employs nearly half a million full-time and 2.5 million part-time workers, making up around a quarter of the Bangladesh fisheries sector. It is evident that fisher communities are among the poorest and most marginalised section of the society in Bangladesh. It is vital that this industry has a sustainable future which supports the people involved and allows fish stocks to recover.

Unlike in many other countries that resort to command-and-control measures to manage their fisheries resources and deprive the fishers of their livelihoods, the Government of Bangladesh has introduced a rare example of compensation scheme to alleviate the short-term cost of fishing restrictions borne by poor fisher communities. Therefore, through effective targeting (inclusivity) and delivering compensation that meets the demands of the poor fisher households (equity), we aim to enhance the effectiveness of the scheme. This will in turn contribute to poverty alleviation and support the Government of Bangladesh achieve its post-2015 development goals – or commonly known as sustainable development goals (SDGs),

Even though rigorous impact evaluation (Year 3) has not been conducted yet, the DoF has increased the beneficiaries from 187,000 (during the start of the project) to [slightly more than 200,000](#) (at the time of writing this report). Moreover, the amount of rice provided to each household has been increased from 30 kg to 40 kg per household per month. Further improvements are expected to be made by the end of the project period including (potentially) extending microdot and savings programmes to the fisher communities.

Indirect impacts

As discussed in the preceding sections, we are also working with the DoF to mitigate or eliminate unintended consequences of the compensation scheme on the local economy. Lessons from similar social protection schemes show that in-kind compensation (such as rice) may have some unintended negative socioeconomic consequences or ‘externalities’. The unintended effects are seldom identified by impact evaluation studies and consequently they remain largely unaccounted for in policymaking. For example, ‘compensation’ for hilsa fishery closures may distort local rice prices for farmers and retailers. Prices might be pushed down as more rice is available and/or there is less demand for locally bought rice. So compensating fishers might disadvantage other sections of the community, possibly reducing overall societal wellbeing. Similarly, fishers who stop fishing for several months are likely to look for other work, causing knock-on effects to the local labour market that can cause local conflict. And when a whole economic group suffers a long gap in regular income, local finance and credit markets can be affected too. Policy recommendations have been made on how such unintended consequences may be minimised or eliminated. The policy briefing paper can be found here: <http://pubs.iied.org/pdfs/17282IIED.pdf>

6. Project support to Gender equity issues

Our research approach has always ensured that women are adequately consulted and their opinions are reflected in our analysis of the socioeconomic studies. One of the main drawbacks of failing to consult women in such compensation schemes is that it may lead to ineffectiveness or inefficiency of the compensation provided. For example, just before the beginning of this research project, the DoF provided some women with sewing machines as part of the compensation package. The objective was to provide them with an alternative income

generating activity particularly during the ban period. However, most of the women did not know how to use the sewing machines and therefore sold them in the market and utilised the cash to pay for non-productive consumables.



Figure 6 Consultation meeting with a women self-help group leader in Chandpur

Therefore, defying traditional belief that fisher**men** only should be consulted as they pose the main threat to the fishery, we have ensured that adult female subjects are consulted both in our household survey and focus group discussions. Therefore, the preferences of women and impacts of the compensation 'type' on the wellbeing of women will be carefully assessed and reflected in the 'principles of equitable benefit sharing' document.

7. Monitoring and evaluation

The project leader and host-country based partners have met twice in Year 2 (August 2014, and January 2015) to monitor project progress. The project team members regularly reviewed the logical framework. The link between activities, outputs, and outcome level indicators has been extensively discussed in section 3 above.

The cost of impact evaluation of the compensation scheme was overlooked during the project inception phase. However, (as mentioned in the previous section) the project team members have just secured additional funding from USAID through WorldFish to conduct a rigorous counterfactual impact evaluation of the scheme.

8. Lessons learnt

Key lessons learnt from this project have been extensively discussed in the previous sections. They can be summarised as follows:

- 1- **Meaningful consultation** with impacted communities or households and make an effort to communicate them effectively to policy makers; even if this means risking being diverted from the central objective of the project. In our case, the measure that was taken was risk free and 'rewarding.'
- 2- **Revisit assumptions** and search for overlooked issues that may hinder the success of the project.

- 3- **Ensure government buy in** through regular consultations and taking their feedback on board - even though this (sometimes) may seem extra burden to the project.
- 4- **Effective communication** using different medium (blogs, press releases etc.) to demystify complex theories and bridge the traditional disconnect between science and policy formulation.

9. Actions taken in response to previous reviews (if applicable)

The project team found the feedback from last year's annual report extremely useful. As noted by the reviewer, there have been some delays in progress due to the political unrest in Bangladesh. Therefore, in Year 2 of the project period, we agreed that we shall double our efforts and ensure we deliver on both delayed and planned outputs. We believe that we have made significant progress and we are now on track towards achieving both output and outcome level objectives by the end of the project period.

Please see below summary of our response to last year's annual report:

Feedback	Response
Evidence of reports on physical hydrological, chemical and biological parameters and spawning and reproductive seasonality (indicator 1.1)	<p>The following reports have been completed and submitted along with this annual report.</p> <ul style="list-style-type: none"> ▪ Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed. Assessment of physical, chemical and biological factors of the environment of the hilsa fishery areas in Bangladesh (to be submitted) ▪ Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed. Food and feeding ecology with special reference to food preference of hilsa <i>Tenualosa ilisha</i> in the Meghna River basin of Bangladesh (to be submitted) ▪ Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed. Reproductive seasonality of hilsa shad, <i>Tenualosa ilisha</i> (Hamilton 1822) in the Meghna River, Bangladesh (to be submitted)
Evidence of report on opportunity cost of participating and running costs of payment scheme (indicator 1.2) e.g. copy of the final questionnaire Evidence of report on public preference (indicator 1.3)	<ul style="list-style-type: none"> ▪ Mohammed, E. Y. Brouwer R. 2014. Assessing preferences for compensation packages using the choice experiment method: The case of hilsa management in Bangladesh" Available at: http://www.slideshare.net/IIEDslides/assessment-of-preferences-hilsa-bioecon2014 [additional data has been collected and the report will be finalised in Q1 of Year 3] ▪ Haldar, G.C., and Ali, M.L. 2014. Transaction and administrative cost for the compensation scheme for hilsa management in Bangladesh. IIED Working Paper, IIED, London, UK. Available at: http://pubs.iied.org/15522IIED.html. ▪ A copy of the questionnaire and choice tasks are provided along with this annual report.
Evidence of report on legal and policy frameworks, and technical and institutional capacity (indicator 2.1 and 2.2)	<p>Islam, M., Mohammed, E.Y. and Ali, L. 2014. <i>Economic incentives for hilsa shad fish management: legal and institutional framework analysis</i>. IIED Working Paper, IIED, London, UK. Available at: http://pubs.iied.org/15523IIED.html</p>
Additional evidence of partnership meetings e.g. agenda and participant list, summarised minutes, photographs.	<p>A workshop report, agenda and participant list of the multistakeholder workshop on benefit sharing is provided. Please see attachment.</p>

Reporting on project assumptions would be useful to confirm that they have not changed.	Please see section 3.4
Spelling of Hilsa needs to be consistent throughout documents	Hilsa and hilisa are often used interchangeably. However, the project team has agreed to use the most widely used spelling – hilsa.

10. Other comments on progress not covered elsewhere

11. Sustainability and legacy

The *Darwin Hilsa Project*, as is commonly known in Bangladesh and can be seen from the workshop report submitted along with this report, has attracted a number of other organisations and donors to work on ‘incentive-based’ hilsa management. For instance, the International Union for the Conservation of Nature (IUCN) has been echoing the findings and recommendations of our research project over the last fiscal year. A recent press coverage by [The Independent](#) citing participants of a workshop organised by IUCN in October last year states that “[Sic.] ...building a **Hilsa Conservation Fund** through innovative policy measures can boost hilsa production by ensuring sustainable **incentive-based** conservation... considering **one per cent tax on hilsa export**.” These are the phrases commonly used in our research project. This is a clear manifestation that our project has been having an impact on policy debate with regard to hilsa conservation in Bangladesh.

The *Darwin Hilsa Project* has also inspired USAID to develop a \$15,000,000 EcoFish^{BD} project. The project will be implemented by WorldFish Bangladesh. IIED is one of the partners helping with the research component of the project. The EcoFish project will help fill some of the knowledge gaps (e.g. counterfactual impact evaluation of the compensation scheme) and ensure successful implementation of the recommendations made by the Darwin project over the next five years. One of the intermediate results (IRs) of the EcoFish project focuses on ‘effective and sustainable incentive mechanism for hilsa conservation’. USAID is considering putting ‘seed money’ to the Hilsa Conservation Fund, subject to ratification of the conservation fund by the Government of Bangladesh. IIED and WorldFish have signed both Memorandum of Agreement (MoA) and Memorandum of Understanding (MoU). Both documents are available upon request. **[NOT to be circulated]**

To ensure continued government buy in and collaboration, Mr Kaisir Mohammad Moinul Hasan, Assistant Director of DoF, has been enrolled in a PhD programme at BAU. He has played a leading role in data analysis and writing 3 scientific papers. Please see indicator 1.1 (Section 3.2).

Request for correction: in Section 18 of the project proposal (Legacy), it is stated that we aim to involve decision makers from India and Myanmar in a regional workshop and is “*planned in the second year of the project.*” However, as can be seen from both the Gantt chart and budget breakdown of the project, this activity is scheduled for Year 3 of the project period. Therefore, this activity will be conducted in Year 3 of the project period.

12. Darwin Identity

We have acknowledged Darwin Initiative funding and displayed the DI logo prominently in all our publications, workshop/meeting banners, and conference presentations.

We have also published several blog posts and press releases. Please see section 3.2. Publications and blogs/press releases were sent directly to a large number of practitioners, policy makers, and academics in both developed and developing countries. These were sent through IIED’s new-publications newsletter, targeted emails to key stakeholders from Bangladesh, and the BioDiv-L mailing list managed by IISD.

All publications (including academic journals) have been made available for free download via IIED’s website.

IIED’s communications team has also used social media sites such as Twitter and Facebook to disseminate the knowledge products and articles.

As can be seen from Section 3.2, the Darwin Hilsa Project (see Section 11) continues to get extensive media coverage in the host country.

13. Project Expenditure

Please expand and complete Table 1.

Table 1 Project expenditure during the reporting period (1 April 2014 – 31 March 2015)

Project spend (indicative) since last annual report	2014/15 Grant (£)	2014/15 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	78,378	78,378		

Highlight any agreed changes to the budget and **fully** explain any variation in expenditure where this is +/- 10% of the budget. Have these changes been discussed with and approved by Darwin?

14. **OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes**

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

[Please see **Section 3.4**]

Annex 1: Report of progress and achievements against Logical Framework

Project summary	Measurable Indicators	Progress and Achievements April 2014 - March 2015	Actions required/planned for next period
<p>Goal/Impact</p> <p>In the longer term, Hilsa fish stock is maintained, and threats to marine biodiversity are avoided in line with CBD targets (Aichi Biodiversity Targets 6) and the Convention on Migratory Species (CMS). Food security is improved because of improvement in fish stocks and livelihood diversification for poor fisher communities.</p>		<p>The project is on track towards achieving impact level objectives. An effective and equitable incentive mechanism would enhance enforcement of the closure period, thus minimising threats to marine and estuarine biodiversity and improving the livelihoods of thousands of fishers. Improves the livelihoods.</p>	
<p>Purpose/Outcome</p> <p>By the end of the project, an improved mechanism for ensuring sustainable management of Hilsa fishery is put in place, incorporating incentives conditional on compliance with fishing restrictions and other provisions of management plans. These plans are based on ecological and socioeconomic assessment and agreed in a bottom-up participatory process with fisher communities. An effective payment mechanism reduces threats to marine biodiversity and contributes to poverty alleviation through improved targeting of those affected, maintaining a food source for the poor, and enabling continued employment of small-scale fishers in Bangladesh and beyond; Myanmar and India.</p>	<p>Indicator 1 Increased number of “impacted” households and individuals involved in the payment scheme</p> <p>Indicator 2 Equitable benefit distribution system reflects the preference of the fisher communities</p> <p>Indicator 3 A sustainable national Hilsa fish conservation fund to finance the scheme fits existing institutional and technical capacity</p> <p>Indicator 4 Exploitation rate (ER) of Hilsa fishery in the lower Meghna reduced to optimal level (0.5)</p>	<p>The number of fishers included in the compensation scheme has increased from 187,000 to 200,000. We anticipate that the number will increase through effective targeting.</p> <p>Assessment of the preferences of households for compensation packages using the choice experiment method has been completed. This will inform the design of the principles of equitable benefit sharing.</p> <p>Two comprehensive documents that define the legal and institutional frameworks and the memorandum and articles of association of the hilsa conservation trust fund have been completed and submitted to the DoF.</p> <p>This indicator will be assessed towards the end of the project period (Year 3).</p>	<p>Impact evaluation scheduled for year 3. The project team is working closely with the DoF to ensure that the most affected fishers are included, and unintended consequences on non-recipient or non-fisher households are minimised or eliminated.</p> <p>The principles of equitable benefit distribution system will be prepared.</p> <p>These documents will be revised further following the scheduled multistakeholder workshop before the end of May. We anticipate that the ratification process will commence accordingly.</p> <p>We have secured additional grant to do a counterfactual impact evaluation of the compensation scheme using propensity score matching.</p>

	Indicator 5 The project outputs influence decision making process in Bangladesh and beyond.	The project continues to influence policy making in Bangladesh; e.g. increase in the number of recipients, demarcating a 6 th sanctuary, increase of compensation from 30 kg to 40 kg of rice.	We will be holding a regional workshop which will bring together key stakeholders from Myanmar, India and Bangladesh, and initiate discussions on how the Bangladeshi approach may be scaled up to regional level.
Output 1. Improved understanding of current ecological and socio economic characteristics of hilsa fishery	Indicator 1 Ecological baseline assessment Indicator 2 Clear understanding of the costs of refraining from fishing during off season Indicator 3 Clear understanding of the preference of the fisher communities for payment type and level Indicator 4 Cost benefit analysis of conserving hilsa fish stocks	Ecological baseline completed. In addition, three scientific reports completed. Indicators 2 and 3 have been combined. An analysis of the preference of the fishers for compensation packages, and estimation of the opportunity cost of the fishers has been completed. Report will be completed in Q1 of Y3. A rigorous impact evaluation (including the gain/benefit side of the equation) of the compensation scheme will be conducted in Year 3 of the project period.	
Activity 1.1 Inception workshop		Completed	
Activity 1.2 Physical and hydrological assessment of Hilsa fishery		Completed	
Activity 1.3 Chemical and biological assessment of Hilsa fishery		Completed	
Activity 1.4 Assessment of spawning and reproductive seasonality of Hilsa		Completed	
Activity 1.5 Assessment of the opportunity cost of participating in the payment scheme		Data collection and analysis completed. Report writing soon to be completed.	
Activity 1.6 Estimation of the transaction and administrative cost the scheme		Completed	
Activity 1.7 Assessment of the preference of the public for payment formats (level and type)		Data collection and analysis completed. Report writing soon to be completed.	
Output 2. Improved understanding of institutional capacity needs, opportunities and gaps to ensure the effective management and functioning of the repayment scheme	Indicator 1 Existing legal and policy frameworks assessed Indicator 2 Technical and institutional capacity needs identified Indicator 3 Capacity-strengthening action plan and strategy	A comprehensive report that assesses (1) legal and institutional frameworks, (2) technical and institutional capacity needs, and (3) recommendation to the Government of Bangladesh on actions needed to fill gaps in technical and institutional capacities.	
Activity 2.1 Existing legal and policy framework analysis		Completed	

Activity 2.2 Technical and institutional capacity needs assessment		Completed
Output 3. Enhanced engagement between the Department of Fisheries and fisher communities in the lower Meghna	Indicator 1 Based on output 1 and 2 above, 'equitable' benefit distribution system is formulated	A multistakeholder workshop on 'equitable benefit sharing' has been completed. In addition, at the request of the DoF, medium-scale survey with 230 households has been conducted to assess 'who gets what and why?' We will be analysing the data and draft the 'principles of equitable benefit sharing' policy document and submit it to the DoF.
Activity 3.1 Design of equitable benefit distribution system		This is an ongoing activity. The additional household survey will be incorporated.
Activity 3.2 Workshop on benefit distribution system		Completed (workshop report and agenda submitted along with this annual report)
Activity 3.3 Signing Memorandum of Understanding (MoU) between DoF and the fisher communities		This will be done in Q2 of Y3. The ambition may have to be scaled back from 'signing an MoU' to 'statement of consensus'. We have learned that signing an MoU between the government and communities is not a common practice in Bangladesh.
Output 4. Sustainable national hilsa conservation fund proposed and agreed by DoF.	Indicator 1 The principles of setting up Hilsa conservation fund in Bangladesh are defined Indicator 2 Hilsa conservation fund proposal Consultation workshop with DoF, Ministry of Finance, Civil Society and the Private Sector is held	A background document that lays out the business case and the Memorandum and Articles of Association of the for the hilsa conservation fund have been completed and submitted to the DoF. The workshop has been scheduled to Q1 of Y3 at the request of the DoF. Currently, the government officials are reviewing the documents.
Activity 4.1 A preliminary report on the principles of Hilsa conservation fund by quarter 2 of year 2		Completed
Activity 4.2 Hilsa conservation fund proposal produced in the second quarter of year 2		Completed
Activity 4.3 Consultation workshop held in 3rd quarter of year 2		The workshop has been scheduled to Q1 of Y3 at the request of the DoF. Currently, the government officials are reviewing the documents.
Output 5. Project outputs are disseminated to influence decision making in Bangladesh and beyond	Indicator 1 Number of workshops, research outputs, news articles and press releases	1 (equitable benefit sharing) workshop, 8 reports/publication, 2 press releases, 4 blogs, and 6 media mentions
Activity 5.2 Presentation of research products in major international conferences		Presented at the 16 th Annual BIOECON Conference on Biodiversity, Ecosystem Services and Sustainability, 21-23 September 2014, Kings College, Cambridge, United Kingdom (please see narrative report)
Activity 5.4 Press releases		2 press releases produced

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.</p>			
<p>Outcome: By the end of the project, an improved mechanism for ensuring sustainable management of hilsa fishery is put in place, incorporating incentives conditional on compliance with fishing restrictions and other provisions of management plans. These plans are based on ecological and socioeconomic assessment and agreed in a bottom-up participatory process with fisher communities. An effective payment mechanism reduces threats to marine biodiversity and contributes to poverty alleviation through improved targeting of those affected, maintaining a food source for the poor, and enabling continued employment of small-scale fishers in Bangladesh and beyond; Myanmar and India.</p>	<ol style="list-style-type: none"> 1- Increased number of “impacted” households and individuals involved in the payment scheme 2- Equitable benefit distribution system reflects the preference of the fisher communities 3- A sustainable national hilsa fish conservation fund to finance the scheme fits existing institutional and technical capacity 4- Exploitation rate (ER) of hilsa fishery in the lower Meghna reduced to optimal level (0.5) 5- The project outputs influence decision making process in Bangladesh and beyond. 	<p>Baseline and end of project assessment of socioeconomics of hilsa fishery</p> <p>Benefit distribution system report</p> <p>Benefit distribution system agreed by DoF and fisher communities</p> <p>National hilsa fish conservation trust fund – proposal document</p> <p>Ecological baseline and end of project assessment report</p> <p>Revision of the payment scheme based on the results of the research project</p> <p>Discussion on setting up similar schemes in Myanmar and India</p>	<ul style="list-style-type: none"> ▪ Overfishing is the main cause of depletion of hilsa fish stock ▪ The DoF continues to support the scheme during the project period and is not subject to political (in)stability
<p>Outputs</p> <ol style="list-style-type: none"> 1- Improved understanding of current ecological and socio economic characteristics of hilsa fishery 	<ol style="list-style-type: none"> 1a. Ecological baseline assessment 1b. Clear understanding of the costs of refraining from fishing during off season 1c. Clear understanding of the preference of the fisher communities for payment type and level 1d. Cost benefit analysis of conserving hilsa fish stocks 	<ol style="list-style-type: none"> 1a. Report on physical hydrological parameters of hilsa fishery by quarter 4 of Year 1 1b. Report on chemical and biological parameters of hilsa fishery including length-weight relationship by first quarter of Year 2 1c. Spawning and reproduction seasonality of hilsa fish by first quarter of Year 2 	

		<p>1d. report on the opportunity cost of participating in the payment scheme by quarter of 4 of Year 1</p> <p>1e. report on the cost of running the scheme (administrative/transaction costs) by quarter 4 of year 1</p> <p>1f. A report on the preference of the public for payment types and levels by quarter 1 of year 2</p> <p>1g. A paper on cost and benefit of the payment scheme and long term economic feasibility by quarter 2 of year 2</p>	
<p>2- Improved understanding of institutional capacity needs, opportunities and gaps to ensure the effective management and functioning of the repayment scheme</p>	<p>2a. Existing legal and policy frameworks assessed</p> <p>2b. Technical and institutional capacity needs identified</p> <p>2c. Capacity-strengthening action plan and strategy</p>	<p>2a. A report on legal and policy frameworks assessment relevant to hilsa fishery and the implementation of the payment mechanism by quarter 4 of year 1</p> <p>2b. Technical and institutional capacity needs assessment report by quarter 4 of year 1</p> <p>2c. Capacity-strengthening action plan drafted by quarter 1 of Year 2</p> <p>2d. Capacity strengthening strategy developed by quarter 2 of Year 2</p>	
<p>3- Enhanced engagement between the Department of Fisheries and fisher communities in the lower Meghna</p>	<p>3a. Based on output 1 and 2 above, 'equitable' benefit distribution system is formulated</p> <p>3b. Terms of benefit distribution system are agreed by both the implementing governmental agency (DoF) and the impacted communities</p>	<p>3a. Equitable benefit distribution system document and community stakeholder consultation report by quarter 3 of year 2</p> <p>3b. Community and stakeholder consultation report</p> <p>3c. Memorandum of understanding is signed between DoF and fisher communities by quarter 4 of year 2</p>	
<p>4- Sustainable national hilsa conservation fund proposed and agreed by DoF</p>	<p>4a. The principles of setting up hilsa conservation fund in Bangladesh are defined</p> <p>4b. Hilsa conservation fund proposal</p>	<p>4a. A preliminary report on the principles of hilsa conservation fund by quarter 2 of year 2</p> <p>4b. hilsa conservation fund proposal</p>	

	<p>4c. Consultation workshop with DoF, Ministry of Finance, Civil Society and the Private Sector is held</p> <p>4d. The proposal is amended and agreed</p>	<p>produced in the second quarter of year 2</p> <p>4c. Consultation workshop held in 3rd quarter of year 2</p> <p>4d. Hilsa conservation fund is agreed and ratified in the 2nd quarter of year 3</p>	
<p>5- Project outputs are disseminated to influence decision making in Bangladesh and beyond</p>	<p>5a. Number of workshops, research outputs, news articles and press releases</p> <p>5b. Regional workshop involving policy makers from Myanmar and India</p>	<p>5a. 3 national workshops held (one workshop in years 1, 2 and 3)</p> <p>5b. 2 Presentation in international conferences (in year 2 and 3)</p> <p>5c. 5 research paper published in academic journals (in year 2 and 3)</p> <p>5d. 3 press releases (during inception workshop, national/regional workshop, and ratification of the hilsa conservation fund)</p> <p>5e. 12 articles in prominent national and regional newspapers (during the project period)</p> <p>5f. Workshop report</p> <p>5g. Participation of delegates from Myanmar and India.</p>	
<p>Activities</p> <p>Activity 1.1 Inception workshop</p> <p>Activity 1.2 Physical and hydrological assessment of hilsa fishery</p> <p>Activity 1.3 Chemical and biological assessment of hilsa fishery</p> <p>Activity 1.4 Assessment of spawning and reproductive seasonality of hilsa</p> <p>Activity 1.5 Assessment of the opportunity cost of participating in the payment scheme</p> <p>Activity 1.6 Estimation of the transaction and administrative cost the scheme</p> <p>Activity 1.7 Assessment of the preference of the public for payment formats (level and type)</p> <p>Activity 2.1 Existing legal and policy framework analysis</p> <p>Activity 2.2 Technical and institutional capacity needs assessment</p> <p>Activity 2.3 Capacity-strengthening action plan</p> <p>Activity 2.4 Developing capacity strengthening strategy</p>			

Activity 3.1	Design of equitable benefit distribution system
Activity 3.2	Workshop on benefit distribution system
Activity 3.3	Signing Memorandum of Understanding (MoU) between DoF and the fisher communities
Activity 4.1	Study on the principles of hilsa Conservation Fund
Activity 4.2	First draft of hilsa Conservation Fund document
Activity 4.3	Consultation workshop to refine the hilsa Conservation Fund document
Activity 4.4	Ratification of hilsa Conservation Fund
Activity 5.1	National/regional workshop
Activity 5.2	Presentation of research products in major international conferences
Activity 5.3	Submission of research products to academic journals
Activity 5.4	Press releases

Annex 3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Number planned for reporting period	Total planned during the project
Established codes							
1A	A PhD candidate from the DoF has been enrolled at the BAU. This is done to build technical capacity of the department			1			1
6A	2 researchers from BCAS have been given training on choice experiment	2				2	2
8	Number of weeks to be spent by UK project staff on project work in the host country	3	3	3		3	9
11A	Number of papers to be published/submitted in peer reviewed journals	1	5			1	9
11B	Number of papers to be submitted to peer reviewed journals			3			
12A	Number of computer based databases to be established	1				1	1
14B	Number of conferences/seminars/workshops attended at which findings from Darwin project work will be presented/ disseminated.	3	2	2		3	7
15A	Number of national press releases in host country(ies)	1		1		1	2
15C	Number of national press releases in UK	1	1	1		1	3
16A	Number of newsletters		1	1			2

	to be produced						
17A	Number of dissemination networks to be established	1				1	1
17B	Number of dissemination networks to be enhanced/ extended	1				1	1
18A	Number of national TV programmes/features in host country(ies)			1			1
23	IIED, BCAS, and BAU co-funding						

Table 2 Publications (all publications are available here >>
<https://www.dropbox.com/work/20-015%20Darwin%20hilsa%20project>)

Title	Type	Detail	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from
Transaction and administrative cost for the compensation scheme for hilsa management in Bangladesh. IIED Working Paper, IIED, London, UK.	Working paper	Haldar, G.C., and Ali, M.L. 2014.	Male	Bangladeshi	IIED, London	http://pubs.iied.org/15522IIED.html
Payments for ecosystem services in developing world fisheries.	Journal article	Bladon, A., Short, K., Mohammed, E.Y., and Milner-Gulland, E.J. 2014.	Female	British	Journal of Fish and Fisheries.	http://onlinelibrary.wiley.com/doi/10.1111/faf.12095/pdf
Mitigating unintended local economic impacts of the compensation scheme for hilsa management. .	Briefing paper	Mohammed, E. Y., Chowdhury, S. A., and Ali, L. 2015.	Male	Eritrean	IIED briefing papers. IIED, London.	http://pubs.iied.org/pdfs/17282IIED.pdf?
Economic incentives for hilsa shad fish	Working paper	Islam, M., Mohammed, E.Y.	Male	Bangladeshi	IIED Working Paper, IIED,	http://pubs.iied.org/15523IIED.html

management: legal and institutional framework analysis.		and Ali, L. 2014.			London, UK.	
An assessment of social targeting in a compensation scheme for hilsa fishers in Bangladesh	Draft paper	Bladon, A. Milner-Guland, E.J. and Mohammed, E. Y.	Female	British		(submitted along with this annual report) Dropbox link provided
A Review of Conservation Trust Funds for Sustainable Marine Resources Management: Conditions for Success	Working paper	Bladon, A., Mohammed, E.Y., and Milner-Gulland, E.J. 2014.	Female	British	IIED Working Paper. IIED, London.	http://pubs.iied.org/pdfs/16574IIED.pdf?
Assessment of physical, chemical and biological factors of the environment of the hilsa fishery areas in Bangladesh	Draft to be submitted to academic journal	Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed.	Male	Bangladeshi		Dropbox link provided
Food and feeding ecology with special reference to food preference of hilsa <i>Tenualosa ilisha</i> in the Meghna River basin of Bangladesh	Draft to be submitted to academic journal	Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed.	Male	Bangladeshi		Dropbox link provided
Reproductive seasonality of hilsa shad, <i>Tenualosa ilisha</i> (Hamilton 1822) in the Meghna River, Bangladesh	Draft to be submitted to academic journal	Kaisir Mohammad Moinul Hasan; Zoarder Faruque Ahmed; MD. Abdul Wahab; Essam Yassin Mohammed.	Male	Bangladeshi		Dropbox link provided
Background document: hilsa conservation trust	Draft policy document					Dropbox link provided

fund, and	nt					
Memorandum and articles of association of the hilsa conservation fund.	Draft policy document					

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

This may include outputs of the project, but need not necessarily include all project documentation. For example, the abstract of a conference would be adequate, as would be a summary of a thesis rather than the full document. If we feel that reviewing the full document would be useful, we will contact you again to ask for it to be submitted.

It is important, however, that you include enough evidence of project achievement to allow reassurance that the project is continuing to work towards its objectives. Evidence can be provided in many formats (photos, copies of presentations/press releases/press cuttings, publications, minutes of meetings, reports, questionnaires, reports etc.) and you should ensure you include some of these materials to support the annual report text.

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	No
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	Yes
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	