

## Darwin Initiative Innovation Annual Report

To be completed with reference to the “Project Reporting Information Note”:  
(<https://www.darwininitiative.org.uk/resources-for-projects/information-notes-learning-notes-briefing-papers-and-reviews/> ).

It is expected that this report will be a maximum of 20 pages in length, excluding annexes)

**Submission Deadline: 30<sup>th</sup> April 2023**

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### Darwin Initiative Project Information

Project reference	DARNV008
Project title	Sound Of Safety: Testing Pingers for River Dolphins and Fishers
Country/ies	India, Pakistan
Lead Partner	WWF UK
Project partner(s)	WWF India, WWF Pakistan
Darwin Initiative grant value	£187,981
Start/end dates of project	April 2022 - March 2024.
Reporting period and number	April 2022 - March 2023; Annual Report 1.
Project Leader name	Leanne Quille
Project website/blog/social media	<b>Blog post:</b> <a href="https://wwf.exposure.co/innovative-dolphinsaving-devices-bring-hope-for-remaining-river-dolphins">https://wwf.exposure.co/innovative-dolphinsaving-devices-bring-hope-for-remaining-river-dolphins</a> <b>Darwin Newsletter:</b> FINAL-Darwin-Newsletter-March-2023-A-Watershed-Moment_compressed.pdf ( <a href="http://darwininitiative.org.uk">darwininitiative.org.uk</a> )
Report author(s) and date	Leanne Quille, Suresh Babu, Uzma Khan, Mohd Shahnawaz Khan, Hamera Aisha 28/04/2023

### 1. Project summary

In India and Pakistan, numerous river dolphins die annually as bycatch, further threatening an already endangered species, while also damaging nets and resulting in lost fish catch for fishers. The innovative solution to this problem is called a pinger - an electronic underwater device, around the same size as a banana, that is attached to fishing nets so that the electronic ‘pings’ keep the river dolphins at bay. We aim to demonstrate that pingers can help prevent river dolphin bycatch, while reducing net repair costs and improving local fishers’ income through a decrease in fish loss. While previously utilised in the marine environment, in 2021, Yayasan Konservasi RASI- a local NGO partner in Indonesia- demonstrated that pingers are effective for the Irrawaddy River dolphins on Kalimantan. However, the response varies by dolphin species, meaning the pitch, strength, and frequency must be tested for specific species and river conditions, while also considering effects of habituation. We aim to test this approach in Sindh and Punjab province in Pakistan, and West Bengal in India, while also strengthening community engagement models by

forming a diverse group of motivated citizen-scientists to help monitor and record the fish catch (weight), species composition, fish size, and any net damage caused by dolphins. By the end of the project, we aim to integrate results on the socio-economic and biodiversity effectiveness of pingers and community engagement into holistic policy recommendations for fisheries management and river dolphin conservation.

See Annex- Section1\_ProjectImplementationSites for maps.

## **2. Project stakeholders/ partners**

In Pakistan, Punjab Fisheries Department, Sindh Fisheries Department, Punjab Wildlife and Park Department, Sindh Wildlife Department, Federal Ministry of Climate Change are partners of the project. In India, following a pivot of the project site from Uttar Pradesh to West Bengal, new key stakeholders were identified, including District Magistrate Nadia, the District Administration, Revenue Department, State Forest Department, State Fisheries Department, Wildlife Institute of India, Indian Institutes of Science Education and Research-Kolkata, Central Inland Fisheries Research Institute, Jadavpur University, and Estuaries and Coastal Studies Foundation. Match funded partners include Reckitt and the Engro Foundation.

## **3. Project progress**

### **3.1 Progress in carrying out project Activities**

**Output 1:** Successful model of community engagement for river dolphin stewardship developed and applied

#### **Activity 1.1 IN:**

29 village-level awareness programmes were organized in 29 villages along the river Hooghly in nine districts of West Bengal from 24 March to 08 April 2023. The aim of these meetings was to raise awareness among riparian communities regarding the conservational importance of aquatic biodiversity with a focus on the Ganges River Dolphins. These awareness programmes were designed to make the community members realize the importance of the Ganges River Dolphins for the riverine ecosystem. Since the Ganges River Dolphins are freshwater apex predators, they are crucial to the health of the riverine environment and therefore, have a positive impact on the communities that are dependent on riverine resources. The awareness material including the contact information will also be distributed among the communities so that they may contact us in case they want to contribute to the aquatic biodiversity conservation work. 463 local riparian community members were engaged in these 29 village-level awareness programmes. The participants were from all walks of life and comprised of 61 women, 189 men and 213 children. See Annex- Section3.1\_Activity1.1IN\_AwarenessSessions

#### **Activity 1.1 PK:**

The project team organized and conducted six inception and awareness sessions in selected fishers' villages as part of their community engagement efforts. These sessions took place in four villages in Sindh Province and two villages in Punjab Province. A total of 370 fishers attended these sessions, with 131 females and 239 males participating. The main aim of these sessions was to raise awareness among the fishers about the activities of the project and to establish a sense of trust and rapport with the communities. During these inception and awareness sessions, the project team provided information about the project's objectives, activities, and expected outcomes. They also highlighted the importance of mitigating dolphin bycatch in fishing nets and emphasized the need for community involvement in the project. The team engaged in interactive discussions with the fishers, addressing their concerns and answering their questions. The sessions provided an opportunity for the fishers to voice their opinions, share their knowledge and experiences, and express their expectations from the project. These awareness sessions played a crucial role in building a strong relationship between the project team and the local fishers. By disseminating information and creating awareness about the project, the team aimed to gain the trust and support of the communities for the successful implementation of the project activities. Establishing a positive rapport with the fishers was essential to ensure their active

participation and cooperation in the project's efforts to mitigate dolphin bycatch. The annexed table provides gender-disaggregated statistics of the participants. See Annex- Section3.1\_Activity1.1PK\_AwarenessSessions.

#### **Activity 1.2 IN:**

Questionnaires were conducted with 65 fisher groups comprised of 120 people (117 men and 03 women) of 54 riparian villages along the river Hooghly in nine districts of West Bengal from 24 March to 08 April 2023. The aim of the questionnaire was to collect the baseline of the fisher's socio-economic background, dolphin occurrence, dolphin bycatch, prevailing fishing practices, fish catch, involvement of women in the fisheries and attitude of fishers towards river dolphin conservation in the area. The data about innovative fishing practices for sustainable fisheries were also collected. The field team determines the locations for the pinger tests based on data linked to dolphin bycatch and dolphin occupancy. Most fishers (n=44, 67.7%) reported bycatch of the aquatic species in the fishing, these aquatic species might be Dolphin, Turtles, Gharials and Smooth-coated otters. 36 respondents reported bycatch of Dolphins in the area, though a few of the respondents (n=21) said that the dolphins are very intelligent and therefore it is very unlikely that they entangle in their fishing nets. The depredation of fish catch and net damage were reported to be very common in the area. The field team also came across an incident of net damage by the Dolphin while the fisher (Mr Arun Biswas, R/o Chakdaha village, Nadia, West Bengal) was being interviewed. The dolphin was surfacing very near to the torn fishing net of Mr Arun Biswas. The field team also came across an indigenous model of cage fisheries, made-up using bamboo, fishing net and floats. The cage was developed and owned by Mr Badudev Mondal R/o Hariganj Bandhpur (Murshidabad). The cage river fisheries mean the rearing and growing of fish in the river while being enclosed in a net cage which allows the free flow of oxygenated river water. The cage fisheries set was made of a floating frame (using bamboo and plastic barrel canes), a square-shaped submerged floating net to hold and culture the fishes and a mooring system (with rope and anchor). The set-up of cage fish farming was seeming to be a viable option of sustainable fishers in the river. Further studies can be designed and carried out to better understand the mechanism and suggest improvements for making it more conformity with the requirements of the environment. Prima facie, it seems that this set-up may be more environmentally friendly if only raising native fish species, monitoring the water quality and feed quality, and releasing back a specific proportion of the fishes to the river. See Annex-Section3.1\_Activity1.2IN\_Fisher Baseline

#### **Activity 1.2 PK:**

To gather baseline information on the extent of the Indus River dolphin interactions with fisheries (with a focus on bycatch and depredation) and its socioeconomic impacts on communities (with a focus on loss of fish catch and damage to nets), a questionnaire-based survey was conducted in sections of Punjab and Sindh from 2022-01-08 to 2022-09-29. The specific areas were selected as they host the largest and second largest populations of the Indus River Dolphin. During the survey, a total of 340 fishermen from 11 villages were interviewed. The survey indicates that the overall dolphin bycatch level in the study area is low. In both Sindh and Punjab, almost all respondents stated that bycatch is either rare or doesn't happen at all. Similarly, when it comes to dolphins' interactions with fisheries apart from bycatch (approaching net or actual depredation), the survey indicates that it's fairly uncommon. It seems to be slightly more common in Punjab, however, where 15% of respondents reported that they witnessed dolphins taking fish out of their nets on a frequent basis (compared to 5% for Sindh). As for the socio-economic impacts on communities from dolphin-fisheries interactions, the survey indicates that damages resulting from bycatch or depredation are limited. Most respondents (91% for Sindh and 98% for Punjab) stated that they experienced no or rare loss or damage of their fishing nets due to dolphin attacks and bites. However, there can still be significant costs associated with repairing or replacing the nets for the instances when bycatch or depredation do occur. In Sindh, the average cost of repairing a net damaged by dolphins is estimated to be around 7,900 PKR, and in Punjab 22,200 PKR, which can be put into relation to the average monthly income from fishing during fishing season, which is 31,000 PKR for Sindh and 27,000 PKR for Punjab.

#### **Activity 1.3&1.4 IN:**

The pictured based dolphin monitoring tool has been developed in consultation with Forest Directorate, West Bengal. The monitoring booklet is in the editing phase and will be published soon. See Annex-Section3.1\_Activity1.3IN\_Dolphin Monitoring Tool.

**Activity 1.3&1.4 PK:**

The project team, in close consultation with the community and the wildlife department, recognized the need for a practical and user-friendly approach to gather data for their citizen science work. To achieve this, a paper-based tool was developed that fishers could use to record data on dolphin sightings, threats, and incidents of dead dolphins. The tool is designed based on infographics and includes clear signs and symbols to facilitate data collection. For dolphin sightings, fishers can record information such as the time of day and the size of the dolphin, which helps in understanding the behavioural patterns and distribution of dolphins in the area. The tool also includes symbols to indicate threats that dolphins may face, such as fishing nets, pollution, and dolphin killing, allowing fishers to quickly and easily record such observations during their fishing activities. Additionally, the tool includes a section dedicated to collecting data on dead dolphins, including recording their size and the condition of the carcass. This information can provide valuable insights into mortality rates, causes of death, and potential threats to dolphin populations in the area. To ensure that the tool is accessible to the local fishers, it has been translated into both Sindh and Urdu (local and national languages), which are commonly spoken in the project area. Considering the limited literacy rate among fishers, the tool relies heavily on symbols and infographics to facilitate easy understanding and data collection. Each fisher has been provided with a booklet containing data recording sheets, along with a stationary bag containing necessary accessories, such as pens and pencils, for collecting data during their fishing activities. See Annex-Section3.1\_Activity1.3PK\_Dolphin Monitoring Tool.

**Activity 1.5 IN:** Activity occurring in Year2 Q1.

**Activity 1.5 PK:** *Bhulan Dost* Programme engagement and registration sessions:

The process of fisher community engagement and awareness was initiated in six communities located in Punjab and Sindh regions as part of the *Bhulan Dost* (Friends of Dolphins) Programme. This initiative aimed to actively involve and educate fisher communities about the importance of protecting the Indus Dolphin and engage them in the monitoring and data collection related to dolphin sightings and various threats they face. The awareness sessions were designed to build trust and establish rapport with the fishers. Through various interactive activities, discussions, and information sharing, the sessions aimed to increase the fishers' understanding of the *Bhulan Dost* programme and its goals. The fishers were informed about the significance of the Indus Dolphin as an endangered species and the role they could play in conserving their habitat. The sessions were attended by more than 350 male and female members from the fisher communities in the targeted areas. They actively participated in the awareness activities and demonstrated keen interest in learning about the *Bhulan Dost* initiative. During these sessions, the fishers were also encouraged to register themselves as *Bhulan Dost/Saheli*, which translates to "Friends of Dolphins" in the national language (The word '*dost*' refers to a male friend & '*Saheli*' for a female). As a result of these efforts, around 232 fishers (156 males and 76 females) registered themselves as *Bhulan Dost/Saheli* at both project sites in Sindh and Punjab. The registration process involved filling out a *Bhulan Dost/Saheli* registration form, which was developed in collaboration with the local communities. To ensure better understanding, the registration form was translated into Sindhi and Urdu languages, which are commonly spoken in the region. This comprehensive approach to engagement and awareness-building helped to foster a sense of ownership and commitment among the fisher communities towards the *Bhulan Dost* Programme. It not only empowered them with knowledge about the importance of conservation but also motivated them to actively participate in protecting the habitat of the Indus Dolphin, contributing towards the overall conservation efforts in the region.

**Trainings of *Bhulan Dosts*:** Following the registration process, a comprehensive training programme was organised to provide them with the necessary skills and knowledge for effective participation in the programme. The main focus of these training sessions was on paper-based reporting tools to enable the *Bhulan Dosts* to accurately report dolphin sightings and contribute to the conservation efforts of the Indus Dolphin habitat. Prior to the initiation of the training sessions, careful preparations were made. An infographic dolphin sighting tool, designed to

facilitate easy identification and reporting of dolphin sightings, was developed. Additionally, a training manual was created in English language, providing step-by-step guidance on how to use the reporting tools effectively. To ensure inclusivity and accessibility, the training manual was also translated into local Sindhi and Urdu languages, which are widely spoken in the region where the programme was being implemented. Four training sessions on paper-based reporting were conducted for the 232 registered Bhulan Dosts. Each training session was carefully structured and consisted of two parts. The first part comprised a briefing and presentation session, where the Bhulan Dosts were introduced to the reporting tools, provided with detailed information on the importance of accurate reporting, and instructed on the proper usage of the tools. The second part of each training session involved a mock exercise, where the Bhulan Dosts had the opportunity to practice using the reporting tools in simulated scenarios, ensuring that they were familiar and proficient in their use.

See Annex- Section3.1\_Activity1.5\_DostRegistration&Training

**Activity 1.6 IN:** Activity occurring in Year2 Q1.

**Activity 1.6 PK:**

The Bhulan Dosts are responsible for gathering Indus River Dolphin (IRD) sighting data through visual observation and recording the distance of IRDs surfacing from the pinger nets on data recording sheets. The data recording sheet was initially developed in English and then translated into the local Sindhi language to ensure better understanding. The *Bhulan Dosts* conduct visual observations for 6 hours daily and record the data on the data sheets. The field team collects the data on a bi-weekly basis, while the WWF team collects the sheets on a weekly basis and also addresses any challenges faced by the Bhulan Dosts during data collection. The data is then collated into an Excel sheet for further analysis. To ensure accurate data collection and monitoring, each Bhulan Dost has been assigned a unique code. This allows the recording of individual contributions of fishers to be tracked and monitored, ensuring the integrity of the data. This meticulous process of data collection and monitoring helps in maintaining the quality and reliability of the IRD sighting data and individual contribution of fishers in the process.

**Activity 1.7 IN:**

The pinger experiment was initiated on April 10<sup>h</sup> 2023. The field team will collect feedback with the stakeholders after the first trial in the next quarter.

**Activity 1.7 PK:**

The field teams have initiated the process of gathering feedback from the fishers engaged in *Bhulan Dost* Programme. This feedback helps to identify any challenges or issues that the fishers may face while using the data collection tool and following the data collection process. So far, a total of four feedback sessions have been conducted, with three sessions taking place in Sindh and one session in Punjab. The sessions are also aimed to gather suggestions from the fishers on possible solutions for each problem or issue they faced. Based on the feedback received, it was found that nearly 90% of the Bhulan Dosts did not encounter any problems while using the data collection tool. However, about 10% of the fishers faced challenges mainly due to their illiteracy and difficulty in identifying and choosing the correct symbols for threats on the data sheets. As a result, the team discussed these challenges with the fishers and arranged for additional training sessions, focusing on providing briefings about the symbols used for various sites, dolphins, and threats. This will help the fishers better understand the data collection process and use the data sheets more effectively. Another issue that was identified during the feedback sessions was the frequency of data collection on the data sheets. It was agreed upon that the Bhulan Dosts should fill the data sheets whenever they go for fishing trips. This will ensure that the data collected is more accurate and up-to-date, as it will be captured during their regular fishing activities. See Annex Section1.3\_Activity1.7PK\_DostFeedbackSessions

**Output 2:** Effectiveness of pingers as a technology tested with fishers in Pakistan and India

**Activity 2.1 IN:**

Permission to undertake the project activities in the River Hooghly and River Roopnarayan has been granted by the Principal Chief Conservator of Forest (Wildlife), Forest Directorate, West Bengal, on October 21, 2022. The permission is valid until September 2024.

**Activity 2.1 PK:**

The relevant government departments are very supportive of this innovative research using pingers, exclusive permits were not required for the pinger trials in the Indus River. Consultative meetings and sessions were held with Punjab and Sindh Fisheries and Wildlife Departments for finalising the pingers trials methodology and sought support for the pingers trials. Based on the in-depth analysis of the field situation and fishing practices, the experiment will involve three different types of pingers including banana, loud, and cycling pingers to determine their effectiveness in deterring dolphins, their use as a potential solution to mitigate dolphin bycatch, and testing habituation of dolphins to the pings.

**Activity 2.2 IN:**

In collaboration with the Wildlife Institute of India and international experts Mr. Nick Tregenza (Chelonia Ltd.) and Mr. Rob Enever (Fishtek Marine), WWF-India developed a scientific methodology for the pinger field trials. The pinger trial sites will be selected based on good dolphin abundance and fishing pressure in River Hooghly and River Roopnarayan in West Bengal. At each selected trial site, three dolphin recording devices (F-PODs) will be moored—one at the fishing area and two 400m upstream and downstream of the fishing areas. The study comprises three phases namely phase I (Non-Pingered pre-treatment phase), phase II (Pingered treatment phase) and phase III (Pingered treatment phase) which will be carried out at all the selected sites with different typologies based on dolphin abundance and fishing pressure etc. The first ten-day of the non-pinger period as the pre-treatment phase (or Phase I), followed by two phases of pingered (treatment phase) and non-pingered (post-treatment phase), each lasting ten-days and occurring three times in an alternate manner.

See Annex-Section3.1\_Activity2.2IN\_Experiment methodology.

**Activity 2.2 PK:**

With the assistance of the expert group, including Mr. Nick Tregenza from Chelonia Ltd. and Mr. Rob Enever from Fishtek Marine, a comprehensive methodology has been developed for conducting trials of three types of pingers as a potential solution to mitigate dolphin mortality in fishing nets and its impact on fish catches. After consulting with specialists, the experimental design for the Sindh stretch of the Indus River in Pakistan has been finalized. The fishing techniques involve the use of fixed and drag nets. To prevent depredation, a region upstream of the fixed net is being cleared of dolphins using anti-depredation pingers. Banana pingers are also mounted on fixed nets at intervals of 35 meters across the width of the main river channel/side channel. These loud pingers are deployed on a rope and activated for 3-5 minutes during fishing activities to deter dolphins from the area. Controlled days without pingers are included in the experiment for comparative purposes, with alternate days of pingers on and off. Additionally, pingers are tested on the Punjab side of the Indus River, where all forms of commercial fishing operations have been banned by the provincial government. The trial is being conducted at a single site, Ghazi Ghat, which has been identified as a hotspot of Indus dolphin bycatch. The experimental design is assessing the responses of dolphins to pingers, whether they become accustomed to them over time. Data from FPODs are being downloaded and observation data will be recorded on the data sheets on a weekly basis to track the effectiveness of the pingers in mitigating dolphin mortality in fishing nets.

**Activity 2.3 IN & PK:**

WWF-Nepal organized a training in Nepal from 5-9th December 2022 under another project that involves tracking river dolphins through passive acoustic monitoring (PAM) using FPODs. The training was led by Nick Traganza (Chelonia/University of Exeter) and Mariana Ferreira (WWF Brazil who has extensive experience of FPODs in the Amazon River). Output 2.3 was to organise online training, however this training in Nepal provided a great opportunity for the teams to learn through actual field deployment of dolphin PAM and data handling from FPODs and its analysis. Therefore, this training was shifted and combined the FPODs training with the one in Nepal. A four-member team from Pakistan and India attended the training; Mr Mohd Shahnawaz Khan (experiment lead of WWF-India), Ms Gitanjali Kanwar from WWF-India, Muhammad Imran Malik (WWF-Pakistan) and Muhammad Munawer Iqbal (WWF-Pakistan). As a following up there is an

additional series of virtual trainings planned (six session) with the same expert groups continued throughout the length of the Year-1 to guide teams on various aspects of designing, installation and analysis of the pinger trials and results.

#### **Activity 2.4 IN:**

F-PODs and pingers were field tested in the River Hooghly from February 21-22, 2023. The training for the handling of these equipment were also given to the WWF-India's field team, which included Dr. Kuldeep Roy, Ms. Sampurna Sarkar, and Ms. Dabolina Bannerjee and peoples of the local riparian community namely Mr Tanmoy Ghosh (resident of Belun, Purba Bardhaman), Mr Lekhak Rajbanshi (resident of Naliyapur, Purba Bardhaman). During the training and field trial exercises, 02 F-PODs were deployed and retrieved in the River Hooghly at Kalyanpur Ghat and Nalipur Ghat which are 5km apart. Pingers were also tested on the fishing net (current net, 4cm mesh size, 120x10m size). The equipment and setup were found to be working fine in the field conditions. The participants also got trained on F-POD, Pinger, fish catch, and visual observation data collection at pinger set-up. See Annex-Section3.1\_Activity2.4IN\_Equipment testing and training of local field team and Community members

#### **Activity 2.4 PK:**

The active involvement of fishers was of utmost importance in the pinger trials, as they played a critical role in collecting data and monitoring the movements of dolphins around the experiment sites. To equip them with the necessary skills, training sessions were organized at all three pinger application sites. A total of 42 bhulan dost were trained, with 32 from the Sindh site and 10 from the Punjab site. The training focused on building their capacity in pinger application, F-POD mooring, and recording data on the data recording sheet, ensuring that they were proficient in these tasks. The details of the training, including the training content and methods, are documented in the annex. Furthermore, to ensure that the skills acquired during the initial training were retained, two refresher training sessions were conducted for the already trained bhulan dost at the Sindh site. A total of 32 bhulan dost/saheli from two villages participated in these sessions, aimed at reinforcing their knowledge and skills in pinger application, F-POD mooring, and data recording. These refresher sessions served as a reinforcement mechanism to prevent loss or fading of skills over time, ensuring that the bhulan dost were well-equipped to carry out their responsibilities effectively. See Annex- Section1.3\_Activity2.4\_PK\_BhulanDostTraining

#### **Activity 2.5 IN:**

A preliminary assessment of dolphin population, distribution, habitat and threats in Hooghly River was carried out from 24th March – 08th April 2023. A joint field team of the West Bengal Forest Directorate and WWF-India undertook the Hooghly River survey with the following objectives

- Population, habitat & threat monitoring of Ganges River Dolphin in River Hooghly.
- Awareness generation among riparian people for the conservational importance of the Ganges River Dolphin.
- Baseline collection of fishers' socio-economic data and dolphin bycatch.
- Identification of potential sites for pinger experiment.

321 Ganges River Dolphins including 19 calves were recorded between Farakka and Jambudwip in river Hooghly covering 547kms. 463 local riparian community members were engaged in these 29 village-level awareness programmes. The participants were from all walks of life and comprised of 61 women, 189 men and 213 children. The questionnaires were also conducted with the 65 fisher groups of 54 riparian villages. The potential site for the pinger experiment was assessed based on the current survey data and discussions with fishers during the awareness programmes and questionnaire surveys. Each potential site was then assessed on the following criterion.

See Annex-Section3.1\_Activity2.5IN\_Site selection criteria for pinger experiment.

#### **Activity 2.5 PK:**

The comprehensive assessment of bycatch and evaluation of prevailing fishing techniques led to the selection of two villages of fishers at the Sindh site and one in the Punjab site for an experiment testing pingers on their fixed nets. The methodology developed in activity 2.2 was followed, with banana and loud anti-depredation pingers being tested on alternate days at the Sindh site, while cycling pingers were tested at the Punjab site due to the fishing ban imposed

by the Punjab Government for 10 years. The experiment at the Sindh site started on 26 December 2022, and is scheduled to end in the last week of April 2023, while the experiment at the Punjab site started on December 15, 2022, and will be completed on August 15, 2023.

#### **Activity 2.6 IN:**

To evaluate the efficiency of pingers in reducing Dolphin bycatch in fishing nets, we are only using banana pingers (50-120kHz) in India in accordance with the scientific methodology developed in consultation with the Wildlife Institute of India and international experts Mr. Nick Tregenza (Chelonia Ltd.) and Mr. Rob Enever (Fishtek Marine).

#### **Activity 2.6 PK:**

The experiment was designed for two years; in Sindh the experiment will be conducted in dry season for 4 months each year and since fishing was banned for ten years in Punjab only cycling pinger tested to see the habituation of the IRD in response to the pingers. The experiment was carried out in two provinces of Pakistan "Sindh" and "Punjab". In Sindh the experiment is being conducted at one site; downstream Guddu Barrage. Two types of pingers, Banana Pinger (50-120kHz) and the loud Anti-depredation Pinger (40 kHz) being tested. The banana pingers tested on the fixed gill nets (150 – 500m nets) and the anti-depredation pingers used before dragging another net in an already fixed net for 4-5min to clear the area. The Passive Acoustic Monitoring F-POD was also deployed at 500m distance from the experiment site to record the acoustic data of the IRD within the experiment area. Buoys placed vertically in front of the pingered net to estimate the surfacing distance of the IRDs from the pingered net. Ten buoys attached with a rope at each 10m distance. The experiment duration is 4 months (Dec. 27, 2022 – April 2023) but here we are sharing the 95 days experiment's results. The results are optimistic and positive because pingers deter the IRD and kept them 20-40m away from the pingered nets but did not lead to IRDs avoiding important feeding areas. The pinger study significantly showed that when the pinger is active, dolphins surfaced less frequently at 0-20m distance from the pinger and highest surfacing frequency 43.17% in January, 40.60% in February and 44.20% in March 2023 were recorded through visual observation compared to when the pinger was inactive. On the other hand, surfacing frequencies increased significantly at 20-40m distance and highest at > 100m distance when the pinger was active, indicating that IRDs were to some extent displaced at the most <20m distance from the pinger. Additionally, behavioural observations indicated that dolphins never appeared to feed in the 0-20m zone when the pinger was active whereas they were still feeding in the 0-10m distance zone when the pinger was off. Feeding activities were still carried out at <20m distance or further away when the pinger was active. Acoustic data of the IRD recorded on the F-POD SD cards were also evident that the IRD feeding clicks train and socializing activity decreased at 0-10m, 10-20m and 20-40m zones and gradually increased from <40m zone and reached at high at <100m when the pingers was active as compared when the pingers were inactive. There was no evidence of increased aggressive behaviours when the pinger was on and IRDs were not excluded from the feeding site and returned to the area when the pinger was off on controlled days. No significant behaviour changes and habituation recorded yet. Not a single IRD died due net entanglement yet, thus no net damage and fish catch losses recorded from the experiment sites in Sindh province. No significant difference in fish catch (quantity) recorded during the first month of the experiment, however species composition is different when the pinger is "ON" or "OFF". But the fish catch data recorded in Feb and March indicated the slight difference in terms of quantity and species composition. A total of 190 kg of fish was caught when the pinger was active compared to the total catch of 172.9kg when the pinger inactive.

*Cirrhinus reba* (Sunni), *Eutropiichthys vacha* (Jhalli) and *Clupisoma garua* (Dhungno) are the most common species caught when the pingers are active or inactive. While the *Cirrhinus mrigala* (Morakhi), *Labeo gonius* (Sereeha), *Bagarius bagarius* (Terbeli Khagga), *Gibelion catla* (Thaila), *Labeo rohita* (Dhambra/Rahu), *Rita rita* (Sindhi Khagga), *Oreochromis aureus* (Sonheri), *Labeo calbasu* (Calbans (Morakhi) and *Bagarius bagarius* (Fauji Khagga) fish species caught when the pinger active, only few individuals of *Gibelion catla* (Thaila) and *Labeo rohita* (Dhambra/Rahu) species also caught when the pinger was inactive. These are the commercially valuable species and sold at PKRs. 250 to 350/kg in the market. See Annex- Section1.3\_Activity2.6\_PK



**Activity 2.7 IN:**

To evaluate the efficiency of pingers in reducing Dolphin bycatch in fishing nets, we are only using banana pingers (50-120kHz) in India in accordance with the scientific methodology developed in consultation with the Wildlife Institute of India and international experts Mr. Nick Tregenza (Chelonia Ltd.) and Mr. Rob Enever (Fishtek Marine).

**Activity 2.7 PK:**

The habituation study was conducted between 15 December 2022 to 31 March 2023 in River Indus at Ghazi Ghat site which is the hotspot of Indus River Dolphin entrapment in fixed/drag nets. This study covered results of the initial 104 days. The pinger was placed at a point where the Dolphin would most often pass, and feed based on the visual observations of marginal fishing communities. Nevertheless, the pinger could not be placed at the exact location where dolphins most often surfaced due to strong currents or boat passage that did not comply or interfered with the physical setup involving anchored buoys. Nevertheless, the location was considered to provide enough surfacing data for the study. The pinger was attached with a rope about 300-400 metres ahead of the F-Pod at the experiment site and remained switched on during the whole experiment period that suited the purpose of studying the dolphin's habituation effect. The direction of the cycling pinger was downstream along the riverbed. The control site where no pinger installed was about 1000 metre upstream. To record the data of visual observations of IRD in each surfacing distance, the buoys were attached with rope entangled with electricity poles in River Indus at distance of 0-10m, 10-20m, 20-40m, 40-60m, 60-80m, 80-100m and  $\geq 100$ m at experiment site and control site. The cycling pinger was placed with buoy 1 about 20cm under water. During the training day the observers were trained in distance estimation by having a small boat by circling around the buoy 1 and stop at different radial distances. The studies were not conducted "Blind" as has been done in other studies. Nevertheless, because observers were explained that the study had no expected or preferred outcome and that they objectively had to record all field observations including the fact that they had to instantly count every dolphin sighting within the distance ranges to the pinger that were indicated by the buoys and because of the distance training mentioned earlier, no bias was expected. The observer team involved three members of which one was the data recorder and the other two scanned the river with naked eyes as well occasional scan using binocular. Time to start of dolphin sighting was recorded as well as last time of surfacing after which dolphins were no longer observed for more than 15 minutes within a radius of 300 meters. Group size estimates and dominant group behaviour were recorded per sighting. Each dolphin surfacing or individual surface behaviour was counted within the specific radial distance zone towards the buoy 1 (where the cyclic pinger was attached to the Buoy) representing the point 0. Individual reactions when entered 0-10 radial distance were qualitatively described. Behaviours were only recorded within a 100-meter distance of the pinger as only with 100m distance each behaviour could be reliably linked to a distance range from the pinger. For each individual sighting, environmental parameters were recorded at the start of each sighting as well as sun glare (weak, medium, strong) cloud coverage

(scale 0-9(rain scale 1-5). The underwater acoustic observations were recorded by F-Pods. Two F-Pods were installed, one at the experiment site where the water depth was 20 feet and another one at the control site where the water depth was 25 feet, having a distance of 1000 metres between each other. The acoustic data was downloaded after every week and was interpreted through P-Pod exe. software.

A land-based observation of Indus River Dolphins was performed during an experimental pingers habituation study for 104 days lasting from 18 December 2022 to 31 March 2023 in the River Indus at Ghazi Ghat. The study involved an active cycling pinger at the experiment site and no cycling pinger at the control site. A total number of 5200 observations were made at the experiment site and control site. Total number of individual surfacing of Indus River Dolphin in the visible study area ( $\geq 100$  m) were 5208 surfacing and 2383 surfacing were recorded within 100 meters from the pinger buoy. Total number of individual surfacing of Indus River Dolphin in the visible study area at the control site ( $\geq 100$  m) were 1199 surfacing and 4004 surfacing were recorded within 100 meters from the pinger buoy. The total Dolphin observation time was 624 hours for initial study trials of 104 days both at experiment site and control site. Acoustic observations were recorded during the whole study period at experiment and control site.

Total number of Indus River dolphins in the visible study area ( $\geq 100$  m) were 229 and 314 Dolphins were recorded in the area of 100 meters from the pinger buoy. Total number of Indus River Dolphin in the visible study area at the control site ( $\geq 100$  m) were 121 and 710 Dolphins were recorded in the area of 100 meters from the buoy 1 (Non-Pinger Buoy). The results clearly depict that no surfacing of Indus River Dolphin was observed in the distance range between 0-10m, 10-20m and 20-40m at the experiment site where a cycling pinger was installed and remained switched on for the whole study period. However, at the control site where no pinger was installed, 10.34%, 9.13% and 10.49% IRD surfacing was observed in the distance range between 0-10m, 10-20m and 20-40m respectively. 54.32% IRD surfacing was observed in the distance zone  $\geq 100$ m at Pinger site and 23.05% IRD surfacing was observed at the control site or non-pinger site. In case of Dolphin numbers, no dolphins were observed in the distance range between 0-10m, 10-20m and 20-40m at the experiment site where a cycling pinger was installed and remained switched on for the whole study period. However, 124, 118 and 120 Dolphins numbers were recorded in the distance range between 0-10m, 10-20m and 20-40m respectively at the control site or non-pinger site. 229 Dolphins were recorded at a distance  $\geq 100$ m in comparison to 121 ( $\geq 100$ m) at the control site or non-pinger site. See Annex - Section 1.3\_Activity2.7\_PK.

### **Activity 2.8 IN:** Activity occurring in Year 2.

#### **Activity 2.8 PK:**

No mortality of Indus River dolphins (IRD) due to net entanglement was recorded from the experiment sites in Sindh province, with no significant difference in fish catch quantity during the first month (Jan 2023) of the experiment; however, differences were recorded in species composition when the pinger was turned "on" and "off", while considerable variations in catch quantity and species composition were recorded in February and March experiment. There are significant differences in species composition between pingers "on" and "off" days. Mostly the commercially important fish species caught in the net when the pingers were "on" compared to pingers "off". A total of 190 kg of fish caught when the pinger was active compared to 172.9 kg when inactive, including commercially valuable species such as *Cirrhinus reba* (Sunni), *Eutropiichthys vacha* (Jhalli), and *Clupisoma garua* (Dhungno), with a few individuals of *Gibelion catla* (Thaili/Thaila) and *Labeo rohita* (Dhambra/Rahu) caught only when the pinger was inactive, all of which are sold at PKRs. 250 to 350/kg in the market. It was observed that catches of some of the carnivorous fish species increased when the pingers were 'on' for example catfish was only caught in the net when the pingers were "on" these are *Bagarius bagarius* (locally known as Fauji Khagga), *Rita rita* (locally known as "Sindhi Khagga"), *Ompok pabo* (Pabo Catfish), *Pachypterus atherinoides* locally known as Indian potasi (catfish). This could be attributed to the absence of a larger predator- Indus River Dolphin- because of pingers, encouraging other carnivorous fish to approach the nets; something welcomed by the fishermen!

*Cirrhinus reba* (Sunni), *Eutropiichthys vacha* (Jhalli) and *Clupisoma garua* (Dhungno) are the most common species caught when the pingers active or inactive. While the *Cirrhinus mrigala* (Morakhi), *Labeo gonius* (Sereeha), *Bagarius bagarius* (Terbeli Khagga), *Gibelion catla* (Thaila), *Labeo rohita* (Dhambra/Rahu), *Rita rita* (Sindhi Khagga), *Oreochromis aureus* (Sonheri), *Labeo calbasu* (Calbasu (Morakhi) and *Bagarius bagarius* (Fauji Khagga) fish species caught when the pinger active, only few individuals of *Gibelion catla* (Thaila) and *Labeo rohita* (Dhambra/Rahu) species also caught when the pinger was inactive. These are the commercially valuable species and sold at PKRs. 250 to 350/kg in the market. As fishermen are paid by weight and the price per kg depends on the type of species and size. The price/kg of the species mentioned in the above table ranges from 150 – 350/kg. The species composition changes also increased the weight as well as the price of the catch and group of fishermen involved in the study earned extra money due to the variation in the species composition when the pinger were "on". See Annex-Section1.3\_Activity2.8\_PK

### **Activity 2.9 IN:** Activity occurring in Year 2.

#### **Activity 2.9 PK:**

Throughout the course of the experiment, the field team diligently collected data sheets on a weekly basis to monitor the activities and behaviour of the Indus River dolphins (IRD). They maintained open communication and conducted discussions with local fishermen, who were referred to as "bhulan dost" or dolphin friends, to gather valuable insights and feedback to improve the data collection process and ensure effective monitoring of the IRD population. During these discussions, the field team and the fishermen discussed various aspects related to IRD mortality due to entanglement in fishing nets, aiming to raise awareness and prevent any potential harm to the dolphins. Fortunately, no IRD mortality incidents were recorded during the entire 3-month duration of the experiment, indicating the success of the measures taken to mitigate net entanglement risks. In addition to addressing issues related to IRD mortality, the field team also provided support to the fishermen in filling out the visual observation data collection sheets. These sheets were used to record important information on dolphin sightings and behaviours, and the field team actively engaged with the fishermen to address any difficulties they encountered in completing the sheets accurately. Overall, the field team conducted a total

of 12 discussions with the fishermen since the initiation of the experiment, showcasing their proactive approach to building a collaborative relationship and involving local communities in the research and monitoring efforts

**Output 3:** Recommendations for decision makers on whether pingers can be scaled up in the Ganges and Indus River systems developed

**Activity 3.1 IN:**

Events were organised on Indian River Dolphin Day (Oct 5) to commemorate the National River Dolphin Day in the Ganga. Five awareness programmes were organised in the Hastinapur Wildlife Sanctuary and the Upper Ganga Ramsar Site from October 2–8, 2022. Dolphin Mitras village head (Pradhan), riverbed farmers, fishers, schoolchildren, and officials took part in these programmes. Posters and pictures with descriptions have also been posted on the official social media accounts of WWF-India on October 5th 2022, to spread awareness for River Dolphin Conservation far and wide. The meetings with different stakeholders- especially the local forest Department and district administration officials in West Bengal- were also undertaken to understand their perspectives and interest in the project. The team of WWF-India also presented the project to the senior forest officials (at the state level) to get their support and principal agreement on the project work in the state. The project work through community engagement, research and capacity building had been presented to Mr Debal Ray, Principal Chief Conservator of Forest (PCCF), (Wildlife) and Chief Wildlife Warden (CWLW), West Bengal on November 24th, 2022. During this meeting, the PCCF (WL) & CWLW assigned Dr Pradeep Bauri, DFO-Nadia-Murshidabad to facilitate the coordination with all concerned DFOs for the inception meeting for the project. Later, the team of WWF-India met with Dr Pradeep Bauri on December 28th, 2022. Dr Pradeep Bauri had proposed holding two different inception meetings, one in Nadia to cover Nadia, Murshidabad, Maldah, and Bardhaman, and the other in Kolkata to cover the divisions of the North and South 24 Pargangas, Howrah, Hooghly, and Medinipur.

The first project inception workshop was held on February 16, 2023, at Bethuadahari Nature Interpretation Center, Nadia district, one of the key locations for the project implementation, with the goal of generating awareness, discuss methodology and approach, timelines as well as identifying potential partners and collaborators from relevant stakeholders for implementation of the project. The workshop chaired by the District Magistrate Nadia saw the active participation from the District Administration, Revenue Department, State Forest Department, State Fisheries Department, Wildlife Institute of India, Indian Institutes of Science Education and Research-Kolkata, Central Inland Fisheries Research Institute, Jadavpur University, and Estuaries and Coastal Studies Foundation. Twenty-six participants, including the District Magistrate for Nadia, the Divisional Forest Officers for Murshidabad and Nadia, the Assistant Divisional Forest Officer for Purba Burdawan, the Deputy Superintendent of Police for Nadia, the Training Superintendent for the Fish Farmers Development Agencies, and the Fisheries Department for Nadia, participated in the meeting along with several experts, including species experts, geologists, and oceanographers. The synergies and the possibility of collaborations among the participating stakeholders were also discussed and mapped. See Annex-Section3.1\_Activity3.1IN\_Stakeholder engagement.

### **3.2 Progress towards project Outputs**

**Output 1:** Successful model of community engagement for river dolphin stewardship developed and applied

**IN:** To date, 463 local riparian community members have been engaged in 29 riparian villages through awareness programmes. The participants of these awareness programmes were from all walks of life and comprised of 61 women, 189 men and 213 children.

**PK:** All indicators corresponding to the output 1 are on track. In Pakistan, six inception and awareness sessions in selected fishers' villages in Sindh and Punjab provinces were conducted. A total of 370 fishers attended, with 131 females and 239. Sessions aimed to raise awareness about the project, build trust, and involve the community. Fishers were provided info on project objectives, activities, and outcomes, and engaged in discussions with fishers. Sessions facilitated community input and helped establish a positive rapport.

A survey based on fishers' perceptions was conducted to establish a baseline of the scale of Indus River dolphin bycatch, intensity of dolphin interactions with fishing practices, and economic implications for local fishers. The survey also aimed to determine the extent of local communities' dependence on the Indus River for their livelihood through fishing. The survey was conducted in two regions: the stretch of Taunsa and Guddu Barrage in Punjab, and in Sindh between Guddu-Sukkur Barrages, with the participation of 340 fishers, including men and women. The findings of the survey revealed that the socio-economic dynamics of the fishing communities revolve around fishing as a major source of livelihood, with fishing serving as the main source of income for many communities, or supplementary source of income for others. The survey also provided valuable insights into the fishing practices used in the region. The survey revealed that the primary types of gear used were gill nets and cast nets, which are deployed across the river channels, with the intensity of fishing increasing during the dry season. The use of multiple nets in a single location is common, which can increase the risk of dolphin entanglements.

A paper-based tool for fishers to record dolphin data was developed, in consultation with the community and wildlife department. The tool uses infographics and symbols for easy data collection, including dolphin sightings, threats, and incidents of dead dolphins. It includes information on time of day, dolphin size, and threats like nets and pollution. The tool is translated into local languages, Sindhi and Urdu, and uses symbols for easy understanding. Each fisher is provided with a booklet and stationary bag for data collection during fishing activities. Fisher community engagement and awareness efforts were successful, resulting in 232 fishers (156 males and 76 females) registering as Bhulan Dosts (friends of dolphins) in Punjab and Sindh regions. The registration process included a translated form in Sindhi and Urdu languages, developed collaboratively with local communities. This comprehensive approach fostered ownership and commitment among fisher communities, empowering them with conservation knowledge and motivating active participation in protecting the habitat of the Indus Dolphin, contributing to overall conservation efforts in the region. A comprehensive training program was organized for the 232 registered Bhulan Dosts, consisting of four structured training sessions on paper-based reporting. Each session included a briefing and presentation on reporting tools, emphasizing the importance of accurate reporting and proper tool usage. The second part of each session involved mock exercises to practice tool usage in simulated scenarios, ensuring familiarity and proficiency. There are currently 232 fishers enrolled in the Bhulan Dost Programme, with 33% of them being women. Bhulan Dosts gather Indus River Dolphin sighting data through visual observation and recording on data sheets. The sheets are translated into Sindhi for better understanding. Bhulan Dosts observe for 6 hours daily and record data. The field team collects data bi-weekly, addressing challenges faced by Bhulan Dosts. Data is collated into an Excel sheet for analysis. Each Bhulan Dost has a unique code for tracking individual contributions and ensuring data integrity. This meticulous process maintains data quality and reliability.

**Output 2:** Effectiveness of pingers as a technology tested with fishers in Pakistan and India

**IN:** The experiment at Naliyapur Ghat in River Hooghly has been initiated on 10 April 2023. It will continue till 70 days as per the methodology developed in collaboration with the Wildlife Institute of India, Chelonia Ltd (F-POD expert) and Fishtek Marine Ltd (Pinger maker and expert). See Annex-Section3.2\_Output2IN\_Pinger Experiment

**PK:** Pingers trials at two sites are ongoing at the currently. The government supports the innovative use of pingers in the Indus River without requiring exclusive permits. Consultations with the Punjab and Sindh Fisheries and Wildlife Departments were held to finalize the methodology for pinger trials and seek their support. The experiment involved testing three types of pingers (banana, loud, and cycling) to determine their effectiveness in deterring dolphins and reducing dolphin bycatch. The experimental design for the Sindh stretch of the Indus River has been finalized after consulting with specialists. Fixed and drag nets are being used, and anti-depredation pingers are being installed upstream of the fixed net to prevent depredation. Banana

pingers are mounted on fixed nets every 35 meters, while loud pingers are activated for 3-5 minutes during fishing activities to deter dolphins. Pingers are also being tested on the Punjab side of the Indus River, where commercial fishing is banned, at Ghazi Ghat, a hotspot for dolphin bycatch. The experimental design will evaluate how dolphins respond to pingers and whether they become habituated to them. The comprehensive assessment of bycatch and evaluation of prevailing fishing techniques led to the selection of two groups of fishers at the Sindh site and one group at the Punjab site for an experiment testing pingers on their fixed nets. The project team attended a four-day training hosted by WWF-Nepal from December 5-9, 2022. Fishers played a crucial role in the pinger trials by collecting data and monitoring dolphin movements. To prepare them, training sessions were held at all three pinger sites. 42 bhulan dost were trained, with 32 at the Sindh site and 10 at the Punjab site. In Sindh, pinger study significantly showed that when the pinger is active, dolphins surfaced less frequently at 0-20m distance from the pinger and highest surfacing frequency 43.17% in January, 40.60% in February and 44.20% in March 2023 were recorded through visual observation compared to when the pinger was inactive. On the other hand, surfacing frequencies increased significantly at 20-40m distance and highest at > 100m distance when the pinger was active, indicating that IRDs were to some extent displaced at the most <20m distance from the pinger. In Punjab, initial findings indicate no surfacing of Indus Dolphins between 0-10m, 10-20m and 20-40m at the experiment site where a cycling pinger was installed and remained switched on for the whole study period. However, at the control site where no pinger was installed, 10.34%, 9.13% and 10.49% IRD surfacing was observed in the distance range between 0-10m, 10-20m and 20-40m respectively. 54.32% IRD surfacing was observed in the distance zone  $\geq 100\text{m}$  at Pinger site and 23.05% IRD surfacing was observed at the control site or non-pinger site.

**Output 3:** Recommendations for decision makers on whether pingers can be scaled up in the Ganges and Indus River systems developed

Expected by the end of Year 2.

### 3.3 Progress towards the project Outcome

**Outcome:** The socio-economic and biodiversity effects of pinger use is tested in the Ganges and Indus River systems, providing recommendations for future fisheries practices.

**Outcome 0.1:** Dolphin mortality numbers due to bycatch decrease to zero in Year 2 from the baseline (to be set) in pinger trial sites, determining if pingers have a positive biodiversity effect.

**Outcome 0.2:** The average monthly household net income increases 10% in Year 2 from the baseline (to be set) for fishers using pingers, determining if pingers have a positive socio-economic effect.

**Outcome 0.3:** Key government decision makers are aware of the lessons learned and recommendations on the socio-economic and biodiversity effectiveness of integrating pingers in fisheries management by March 2024.

Outcome level results are expected at the end of Year 2, however initial results are indicating a positive trend for Outcome 0.1 and 0.2, while active engagement from key government decision makers indicates a keen willingness to scale up pingers if proven to be effective.

### 3.4 Monitoring of assumptions

Assumptions outlined in the project proposal were re-evaluated by the team and still hold true; any requiring updates or amendments are outlined below:

#### Outcome Assumptions:

**Assumption 1:** Fishers and communities in the experiment sites trust the programme team, are willing and able to participate in their respective roles.

**PK:** In case of Pakistan, fishers are supporting in monitoring the pingers trial sites and recording observation of the dolphin surfacing. They are also well-trained in installing, removing as well turning them on/off on alternate days at the experiment sites. Pingers are intact at the experiment sites due to community engagement. F-PODS were washed away with the water current however were recovered with the help of communities within few hours.

**IN:** There is good support from the riparian community as well as the local government departments, particularly the Department of Forest and District Administration.

**Assumption 2:** Dolphins do not permanently leave the river stretch during the project period

**PK:** In Punjab at cycling pinger experiment site, dolphins are seen to be staying in the same area however they shifted their surfacing at least 100 metres away from the pingers experiment site. This has been monitored and recorded continuously. The river is very wide at this point of cycling pinger installation and dolphins can move both upstream and downstream while avoiding the pinger.

**Assumption 3:** Dolphins do not get habituated to the pingers over time

**PK:** In Pakistan, trials are ongoing for three months and habituation has not been recorded at either of the sites so far.

**Assumption 4:** There is no major disruption to conducting two trial periods, such COVID-19 restrictions, devastating flooding events, or an extended monsoon period

**PK:** The experiment sites did not face any extreme weather events and floods during the trial period. However, one F-POD washed away due to the opening of the barrage in Sindh was later recovered with the help of communities within a few hours.

**IN:** The trials were delayed as the project site needed to be shifted due to the delays in Gov permissions, but the project is on track and we will be able to deliver the results within the agreed timeframe.

**Assumption 5:** Fishers provide truthful reporting on lost nets due to dolphins, dolphin mortality numbers due to bycatch, and lost/gained income

**PK:** Fishers are honest in general about providing such information – no dolphin mortality and net loss/damage has been reported so far during the experiment period.

**Assumption 5:** The rates paid for fish catch are stable and/or easily reportable to compare changes in income between fishers using pingers and fishers not using pingers in the same area

**PK:** In Sindh, visible change in the catch size and composition are being observed and this information along with the corresponding cost variation is also being recorded.

#### Output 1 assumptions:

**Assumption 1:** Community members, especially women and fishers, are willing and able to participate in the app design phase and monitoring over the life of the project period using the app or paper-based tools

**PK:** Fishers actively participated in the process of tool development and its improvement together with the wildlife department. Women represent 30% of the fishers group actively engaged in the process.

**Assumption 2:** Community members surveyed and participating in citizen science have a varied range of knowledge on river dolphins and fishing practices at the start of the project

**PK:** Over 340 fishers surveyed during the bycatch assessment process and 232 fishers engaged in the Bhulan Dost Programme are well-aware of the dynamics of fisheries, status of dolphin population and their interaction with fisheries.

**Assumption 3:** Communities feel safe to express their negative and positive feelings about the project.

**PK:** The communities are comfortable in providing concrete feedback to the project activities including the Bhulan Dost Programme and their responses are captured through structured feedback session initiated this year and would continue till the end of the project. Communities also feel safe and comfortable to share information on the dolphin mortalities with the project team as part of the Bhulan Dost programme.

**Output 2 assumptions:**

**Assumption 1:** Buoys are at the right distance from the pingers and are not damaged, destroyed or stolen

**PK:** Buoys are safe at the experiment sites in Punjab and Sindh and are safe from any damage and theft due to community support.

**Assumption 2:** Fishers are correctly applying and using pingers

**PK:** In case of Pakistan, fishers are supporting in monitoring the pingers trial sites and recording observation of the dolphin surfacing. They are also well-trained in installing, removing as well turning them on/off on alternate days at the experiment sites.

**Assumption 4:** - F-PODS and cycling pingers are not stolen or damaged

**PK:** Pingers are intact at the experiment sites due to community engagement, F-PODS were washed away with the water current which were recovered with the help of communities within few hours.

**Assumption 5:** Fishers follow legal regulations (e.g., not fishing during the night/ not using illegal gear)

**PK:** In Punjab, legal fishing is still banned and hence no fishing is ongoing at the experiment sites. Only hook and line fishing is allowed which is not practiced at the pinger trial site in Punjab. In Sindh, fishers engaged in the project do not use illegal means of fishing, The community especially women in Sindh however catch fishing during night using hook and line. Fix-nets are also left over night in Sindh.

**Output 3 assumptions:**

**Assumption 1:** Government departments participate in the project and are willing to discuss the results and next steps

**PK:** Wildlife and Fisheries Departments at both sites are well-aware of the project design and ongoing experiments. Their staff are engaged regularly in monitoring visits, awareness events and feedback sessions.

**IN:** There is a keen interest and therefore a good support from government departments in the West Bengal for the conservation of Ganges River Dolphin.

**Assumption 2:** Fishing contract holders from the project sites are willing to participate

**PK:** In Punjab, the contract system is currently suspended however the fishers and contractors are willing to engage.

### **3.5 Impact: achievement of positive impact on biodiversity and poverty reduction**

**Impact:** Pingers are supporting the long-term coexistence of healthy river dolphin populations and thriving riverine communities in the Ganges and Indus River systems.

We do not expect to measure Impact level results as part of this 2-year project, but initial results and early indicators from Government stakeholders show an interest in incorporating pingers into wider river dolphin protection strategies. The project provided some support to bring the fisheries



department officers from all the three provinces in Pakistan to come together in Islamabad in October 2022 to join a larger meeting of the Asian region to discuss the way forward to address the threats from fishing practices to river dolphins. This proved to be excellent towards achieving their support towards the project and building consensus towards prioritising the threats from fisheries to river dolphins. The most rewarding impact we have seen is that governments have agreed to develop a Conservation Management Plan under the International Whaling Commission focused on addressing the threats from fishing practices to river dolphins.

#### **4. Project support to the Conventions, Treaties or Agreements**

The Indus River dolphin is listed as a species of special concern in NBSAP led by the Ministry of Climate Change, Federal Government of Pakistan. There are numerous targets that directly relate to the project and the project is contributed to them for example Target 2: includes low-cost tools and methods for valuation of biodiversity that provide economic value and recognise social and cultural values. It supports targets of sustainable harvest of fish stock to minimize impact on threatened species and vulnerable habitats. Considering that fishing practices is one of the most pressing threats to river dolphins globally, WWF-Pakistan organised a meeting of the Asian region which was attended by over 60 participants. During three days in October 2022, government representatives, cetacean experts and fishery experts from all eight Asian river dolphin countries gathered, some joining virtually, with the objective to discuss how to best tackle this threat; reducing river cetacean mortality and seeking more sustainable fishery practices for people and nature. All participants agreed to the 'Islamabad Recommendations': develop together a fishery-focused river dolphin Conservation Management Plan under the International Whaling Commission for Asia, improve legislation and fisheries database and enhance community participation in co management. At least five governments actively participated in this development: Bangladesh, Cambodia, Indonesia, Nepal & Pakistan. This is an important step ahead which was inaugurated by the focal point of conventions & treaties in Pakistan from the Ministry of Climate Change.

Declaration: WWF-Pakistan hosts international conference to tackle fisheries threats to river dolphins in Asia ([dailypakistan.com.pk](http://dailypakistan.com.pk))

The Ministry of Climate Change, Government of Pakistan representative Mr Samar Khan joined the WWF side event at the Ramsar COP in Geneva in November 2022 and shared the successes of the Indus River dolphin conservation. He also highlighted the lead role that Pakistan played in bringing together the Asian region for the collaboration to address the threats from fishing. Mr Khan also highlighted the new developments of field trials of pingers as an innovative development for the conservation of Indus River dolphin. The Government of Pakistan is fully onboard and committed at the UN Water Conference, Government of Pakistan presented the Water Recharge project which aims to establish connectivity and restore Indus River floodplain while addressing the threats at the systemic level. As a follow up of the Islamabad workshop the Government of Khyber Pakhtunkhwa has developed a proposal for the Ministry of Climate Change to support the designation of the Indus River dolphin habitat in the province as the UNESCO Man & Biosphere Reserve. This fits in with the CBD 30x30 target of translating into 30% rivers and wetlands as protected, restored by 2030.

#### **5. Project support to poverty reduction**

The project aims to support poverty reduction by decreasing fish loss or increasing the catch of commercially important fish species for fishers, while reducing associated costs of repairing damaged fishing nets. Please see Section 1.3\_Activity 1.7 for more.

#### **6. Gender equality and social inclusion.**

To engage both genders equally, we have chosen specific places and times for the community meetings to ensure diverse attendance and accessibility. While acknowledging that fishing is largely restricted to men, we have designed the programme to ensure that women participate through the citizen science network, and also benefit by freeing up time required to mend fishing nets. We have chosen female project team members to help us actively mobilize more women to participate in the programme, we reach out to women and girls outside of the fishing communities, and in engagement surveys, we strive for a 50% gender balance. We endeavour

to improve our gender equality and social inclusion strategies; therefore, we're exploring the feasibility of including wellbeing assessments to gauge the level of benefits being realised for women and girls.

Please quantify the proportion of women on the Project Board <sup>1</sup> .	45% of the Thriving Habitats a Species Goal Board are women.
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women <sup>2</sup> .	66% of project partners are led by women.  In Pakistan, Bhulan Dost has 30% women representation. All engagement events and training has at least 25% women representation.

## 7. Monitoring and evaluation

Both WWF IN and WWF PK have dedicated M&E officers who meet once a month online with country leads, WWF UK lead and River Dolphin Rivers Initiative Lead to review progress relative to the log frame and timeline and discuss adaptive management as required. Dedicated M&E folders were set up in a shared Google Drive to collect Means of Verification to evidence progress against outputs, and shared documents are used to ensure close collaboration and input from each organisation. Agendas, summary and action points are collated and shared after each monthly call, action points are followed up via email and general project progress is tracked on a Trello board. See Annex- Section 7\_M&E.

## 8. Lessons learnt

**PK:** Operational: The opening of the Guddu Barrage gates resulted in the deposition of silt, which buried the Floating Passive Acoustic Observing Device (FPOD), therefore we moved the FPODs further away from the gates. The silt deposition altered the orientation of the FPODs, leading to suboptimal data recordings. Therefore, regular checks are required to ensure their proper anchoring. Additionally, the FPODs are affected by vegetation carried by the river flow, necessitating periodic checks of their anchor points. The FPODs rely on battery power, with rechargeable batteries lasting just over a day and D-cell batteries providing longer-lasting power for both the FPOD and pingers. Although rechargeable batteries are more cost-effective than D-cell batteries, the field costs associated with their frequent replacement offset this benefit. Distance between FPOD and pingers also needs to be adjusted at an earlier stage of installation so that pingers do not detect the frequencies of pingers.

**UK:** Lessons learned include incorporating a longer inception phase and ensuring the project is adequately resourced regarding staff capacity. With the intention to ensure value-for-money and operate with lean staff costs, we relied on match-funding for much of our core team, leveraging the synergies with one of our corporate funded partnerships in India. However, when the project site shifted due to lack of government permissions, those synergies were lost, and it became apparent that we should have costed more of our direct staff time to the project. Similarly, having a longer inception phase could have helped offset implementation delays. Lastly, I would include more budget for outreach activities; there has been great interest in the project and opportunities to showcase at conferences and other global stages have been identified, which now requires additional fundraising.

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<sup>1</sup> A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

<sup>2</sup> Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

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

n/a

## 10. Risk Management

- 1) One of the experiment sites in Sukkur, Sindh Province was changed because of security concerns arising from ongoing tribal conflict. However, this will be a persistent risk as now there is government led operation against tribes that are giving refuge to criminals which may disrupt the trials or the project location may be changed.
- 2) Update to risk 'Funding/equipment mishandled': Community engagement was conducted prior to the initiation of the experiment at the Punjab site, yet some individuals removed the equipment and falsely implicated their rival community, possibly seeking financial gain. However, this situation was successfully resolved by community involvement. Some community members expect monetary compensation for their support, particularly in light of the fishing ban enforced in the Punjab province since June 2022. We will reiterate that participation is voluntary and communicate the expected benefits of utilising pingers.

These risks have been added/updated in the risk register and are actively being monitored, however we don't anticipate any threat to delivery of the project. All other risks remain valid, and the team reviews the risk register bi-monthly.

## 11. Other comments on progress not covered elsewhere

As Section 8.

## 12. Sustainability and legacy

**PK:** The Fisheries departments of Punjab and Sindh in Pakistan have shown considerable enthusiasm towards the pingers experiment, actively participating in and supporting the study. They have provided reassurances regarding their intention to incorporate pingers as a mandatory requirement in fishing licences if the pingers are successful in deterring dolphins away from the fishing nets. The departments felt that pingers do offer a cost-effectiveness solution, as only a limited number of these devices are required for each net, enabling the government to undertake this as a potential future project in their Annual Development Plan (ABP). A group of 50-60 fishermen frequently work together, selling their catch to a contractor, with some contractors demonstrating interest in implementing pingers in their operations. This seems like a profitable solution to the contractors as earlier findings have demonstrated that the fish catches have improved and also the variety of fish is better. In response to reports of dolphin mortalities, the Wildlife and Fisheries Departments of Sindh and Punjab are involved in database development aimed at identifying the underlying causes of these mortalities. Additionally, efforts are underway to rescue and safely release bycatch species, such as freshwater turtles.

## 13. Darwin Initiative identity

In line with BCF guidelines, project communications always feature the BCF/Darwin logo, including project communication and sensitization materials, presentations, conferences/events (see Annex) and online blogs and articles (Page 1). To launch the project, we hosted a technical webinar on 07 July 2022 with speakers from the WWF network, Wildlife Institute of India, and Chelonia Ltd, beginning with an introduction to the Darwin Initiative scheme, and the Darwin Initiative logo was featured at a technical workshop on the protection of river dolphins in Asian range countries, 5-7 Oct 2022 (See Annex- Section13). Strategically within WWF-UK, SoS Pingers is part of a larger Thriving Habitats & Species Goal, sitting within the Species Initiative alongside our other global river dolphin work.

## 14. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been investigated in the past 12 months	No

Does your project have a Safeguarding focal point?	Yes Pakistan: <a href="#">Neshmiya A. Khan</a> India: <a href="#">Vishaish Uppal</a>	
Has the focal point attended any formal training in the last 12 months?	Yes. All WWF staff attend annual refresher training on ESSF and safeguarding.	
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 100%	Planned: 100%
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. No		
Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify. No.		

## 15. Project expenditure

**Table 1: Project expenditure during the reporting period (1 April 2022 – 31 March 2023)**

Figures in Table 1 below are indicative figures only.

Project spend (indicative) since last Annual Report	2022/23 Grant (£)	2022/23 Total Darwin	Variance %	Comments (please explain
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		Initiative Costs (£)		significant variances)				
		<b>DRAFT*</b>						
Staff costs (see below)								
Consultancy costs								
Overhead Costs								
Travel and subsistence								
Operating Costs								
Capital items (see below)								
Monitoring & Evaluation (M&E)								
Others (see below)								
<b>TOTAL</b>					<b>£95,645</b>	<b>£95,645</b>		


### 3) Annex 1: Report of progress and achievements against logframe for Financial Year 2022-2023

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
<p><b>Impact</b></p> <p>Pingers are supporting the long-term coexistence of healthy river dolphin populations and thriving riverine communities in the Ganges and Indus River systems</p>			
<p><b>Outcome</b> The socio-economic and biodiversity effects of pinger use is tested in the Ganges and Indus River systems, providing recommendations for future fisheries practices</p>	<p>0.1 Dolphin mortality numbers due to bycatch decrease to zero in Year 2 from the baseline in pinger trial sites, determining if pingers have a positive biodiversity effect</p> <p>0.2 The average monthly household net income increases 10% in Year 2 from the baseline for fishers using pingers, determining if pingers have a positive socio-economic effect</p> <p>0.3 Key government decision makers are aware of the lessons learned and recommendations on the socio-economic and biodiversity effectiveness of integrating pingers in fisheries management by March 2024</p>	<p>0.1 - Zero dolphin bycatch deaths reported to date</p> <p>0.2 - Data pending.</p> <p>0.3 - Expected March 2024.</p>	
<p><b>Output 1.</b> Successful model of community engagement for river dolphin stewardship developed and applied</p>	<p>1.1.1 Monthly analysis reports of App records from participants, collected directly by WWF's database and/or downloaded monthly by field teams</p> <p>1.1.2 Monthly analysis reports of paper-based records from participants, collected monthly by field teams</p>	<p>1.1.2 PK: Data carrying information gathered by 232 fishers using paper-based tool compiled and four monthly reports generated.</p>	

	<p>1.2 Annual Questionnaire/Interview Feedback</p> <p>1.3 Household survey/village focus groups on knowledge and awareness</p>	<p>1.3 PK: Baseline survey carrying responses of 340 fishers about the income level and knowledge about dolphins completed.</p>	
<p>Activity 1.1: Field teams raise awareness on the project with communities in India/Pakistan, building trust and confirming fisher and community Mitras/Dost/Saheli (“Friends of the River Dolphins”) participants.</p>	<p>PK: Reports of six sessions engaging 370 fishers developed.</p> <p>IN: 29 village-level awareness programmes engaging 463 community members (61 women, 189 men, 213 children).</p>		
<p>Activity 1.2: Field teams collect data on river dolphin bycatch numbers, dolphin-related costs incurred by fishers, fish catch mix, and community knowledge on dolphins/sustainable fishing practices.</p>	<p>PK: Bycatch survey report carrying responses on 340 fishers compiled.</p> <p>IN: Surveys conducted with 120 people (117 men, 03 women)</p>		
<p>Activity 1.3: Field teams hold design workshops with participants on monitoring tools for river dolphin sightings, possibly including a Smartphone App, and fisher logs for pinger trials.</p>	<p>PK: Six design workshops organised in Punjab and Sindh.</p> <p>IN: Monitoring tool developed with West Bengal Forest Department.</p>	<p>IN: Monitoring booklet to be published in Yr2Q1.</p>	
<p>Activity 1.4: Field teams develop citizen science/engagement tools by adapting Mitras tools (India) and developing new tools for Dost/Saheli (Pakistan) where the citizen science approach is new.</p>	<p>PK: Paper based tool in English, Urdu and Sindhi developed.</p>		
<p>Activity 1.5: Field teams train Mitras/Dost/Saheli/fishers on the App-based and paper-based reporting tools. Refresher training in Y2.</p>	<p>PK: 232 fishers (156 males and 76 females) registered data added in an excel sheet trained in four trainings</p> <p>Three refresher training, three feedback sessions.</p>	<p>IN: Activity occurring in Year2 Q1.</p>	
<p>Activity 1.6: Mitras/Dost/Saheli/fishers report river dolphin sightings over the two trial periods. Field teams collect real-time App data and monthly paper-based data.</p>	<p>PK: Data of four months of reports from the Bhulan Dost compiled.</p>	<p>IN: Activity occurring in Year2 Q1.</p>	

<p>Activity 1.7:7 Field teams collect feedback and provide supportive supervision to Mitras/Dost/Saheli/fishers monthly, review the approach and adapt from their feedback at the start of Y2.</p>	<p>PK: Three feedback session with 180 fishers organised and reports generated</p>	<p>IN: Activity initiated 10 April 2023; feedback with stakeholder expected Year2Q1.</p>
<p><b>Output 2.</b> Effectiveness of pingers as a technology tested with fishers in Pakistan and India</p>	<p>2.1 Monthly analysis reports from field team daily observation logs, and daily logs / weekly interviews with fishers</p> <p>2.2 Monthly analysis reports from field team daily observation logs, and daily logs / weekly interviews with fishers</p> <p>2.3 Monthly analysis reports from F-POD data</p> <p>2.4 Monthly analysis reports from daily logs and weekly</p>	<p>PK: 2.1 Monthly analysis reports available for Jan, Feb and Mar 23.</p>
<p>Activity 2.1: Country teams obtain government permits, order equipment. Pinger types decided based on fishing methods, dolphin behaviour, background noise level, and might be adapted in Y2.</p>	<p>IN: Completed. PK: Completed.</p>	
<p>Activity 2.2. Regional Lead and country teams develop detailed experimental designs for 4-month trials in two dry seasons, with external experts and fishers from experiment/control groups.</p>	<p>PK&amp;IN: Detailed experiment designs developed involving testing three types of pingers (banana, loud, and cycling) to determine their effectiveness in deterring dolphins and reducing dolphin bycatch.</p>	
<p>Activity 2.3 External experts train field teams on F-POD and pinger use, data collection and analysis. Internal trainings on observation tools, supportive supervision techniques for fishers/<i>Mitras/Dost/Saheli</i>.</p>	<p>PK &amp; IN: three-day training organized in Nepal, two team</p>	



	members participated from India and two from Pakistan.	
Activity 2.4 Field teams train experiment/control group fishers on pinger application and additional monitoring, including fish catch composition and fishing net damage. Refresher training in Y2.	<p>PK: To prepare fishers, training sessions were held at all three pinger sites. A total of 42 bhulan dost were trained, with 32 at the Sindh site and 10 at the Punjab site.</p> <p>IN: Initial field testing of FPODs and pingers 21-22 Feb 22, inc. 3 WWF field staff and 2 local fishers.</p>	
Activity 2.5 Fishers test pingers on fixed nets being used during 4-months of dry season. Control group will be at least 1000 meters away in same site.	<p>PK: Experiment will complete at the end of April 2023. In Sindh, pinger study significantly showed that when the pinger is active, dolphins surfaced less frequently at 0-20m distance from the pinger and highest surfacing frequency 43.17% in January, 40.60% in February and 44.20% in March 2023 were recorded through visual observation compared to when the pinger was inactive (banana pingers and loud pingers).</p> <p>IN: Preliminary assessment and experiment site selection undertaken 24 Mar-08 Apr 23.</p>	IN: The experiment at Naliayapur Ghat in River Hooghly has been initiated on 10 April 2023. It will continue till 70 days as per the methodology developed.
Activity 2.6 Fishers test loud pingers on alternate days of drag/fixed net use during 4-months of dry season, observing if dolphins stay 1-2 kilometres away.	PK: Cycling pingers, In Punjab, initial findings indicate no surfacing of Indus Dolphin e between 0-10m, 10-20m and 20-40m at the experiment site where the cycling pinger was installed and remained	IN: The experiment at Naliayapur Ghat in River Hooghly has been initiated on 10 April 2023. It will continue till 70 days as per the methodology developed.

		switched on for the whole study period.	
<b>Output 3.</b> Recommendations for decision makers on whether pingers can be scaled up in the Ganges and Indus River systems developed	<p>3.1 100% of participating villages say they feel engaged in the development of pinger/fisheries recommendations for their respective governments by March 2024 (disaggregated by country)</p> <p>3.2 Awareness of pinger technology among relevant fishing contract holders increases to 90% by the end of Year 2 from an expected baseline of 0% (disaggregated by country)</p> <p>3.3 At least 2 recommendations reports developed with relevant Government Departments that take into account citizen and fishing contract holder input by March 2024 (disaggregated by country)</p>	Output 3 to be evidenced in Year 2.	
Activity 3.1: Country teams hold quarterly meetings with relevant government departments for awareness, buy-in, and ownership over the results and next steps.		IN: Project inception workshop held 16 Feb 2023, including 26 participants.	
Activity 3.2 Country and field teams engage fishers/ <i>Mitras/Dost/Saheli</i> and wider community in sharing of results and development of their prioritized fisheries recommendations.			
Activity 3.3 Country teams engage fishing contract holders that employ the fishers, raising awareness on pingers as part of contracting arrangements and receiving feedback on next steps.			
Activity 3.4 Country teams develop final recommendations with relevant government departments, national experts, and international experts.			

Activity 3.5 Country teams share with relevant ministries and institutions in each country, tailoring discussions to different department / ministry / institutional policies.		
Activity 3.6 Regional Lead and country teams jointly begin developing a scientific article from the project results in the two countries.		
Activity 3.7 Regional Lead organizes joint virtual learning session with colleagues and stakeholders from Pakistan, India, and other regional partners - such as in Bangladesh and Nepal.		

**4) Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)**

Attached to email.

### Annex 3 Table 1 Project Standard Indicators

Please note this is an indicative list of potential indicators we could adapt, and revised metrics still need to be agreed with the field and M&E teams.

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Total to date	Total planned during the project
DI-D15	0.1 Dolphin mortality numbers due to bycatch decrease to zero in Year 2 from the baseline (to be set) in pinger trial sites, determining if pingers have a positive biodiversity effect	Net change in dolphin mortality due to bycatch	Number	By country				0 dolphin deaths due to bycatch
DI-D16	0.2 The average monthly household net income increases 10% in Year 2 from the baseline (to be set) for fishers using pingers, determining if pingers have a positive socio-economic effect	Number of households reporting net income increases for fishers using pingers	Households	By country				How many households could we set as target for demonstrating increased income
DI-C01	3.3 At least 2 recommendations reports developed with relevant Government Departments that take into account citizen and fishing contract holder input by March 2024 (disaggregated by country)	Number of best practice guides developed with relevant Government Departments that take into account citizen and fishing contract holder input	Number	By country				>2
DI-B05	475 Mitras/Dost/Saheli are reporting monthly on river dolphin sightings using citizen-designed, standardized methods in Year 2 from a baseline of 55 people.	Number of people with increased participation in river dolphin citizen science groups	Number	Country, gender, smartphone/paper reporting tool)	232	Bhulan dost in Pakistan		475

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Total to date	Total planned during the project
DI-B05	100% of participating villages say they feel engaged in the development of pinger/fisheries recommendations for their respective governments by March 2024	Number of people with increased participation in Governance	People	By country, gender				# of people target

**Table 2 Publications**

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)

## 6) Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the <b>correct template</b> (checking fund, type of report (i.e. Annual or Final), and year) and <b>deleted the blue guidance text</b> before submission?	Y
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:BCF-Reports@niras.com">BCF-Reports@niras.com</a> putting the project number in the Subject line.	Y
<b>Is your report more than 10MB?</b> If so, please discuss with <a href="mailto:BCF-Reports@niras.com">BCF-Reports@niras.com</a> about the best way to deliver the report, putting the project number in the Subject line.	N
<b>Have you included means of verification?</b> You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
<b>Do you have hard copies of material you need to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	N
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 16)?	n/a
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	