

### Name of the Programme / Project

Infrastructure for Climate Resilient Growth in India

### Delivery Partner(s)

IPE Global; PwC India; Ricardo Energy & Environment; University of Manchester

### Start & end date of project:

2016-2020

## THE STORY

### Livelihood opportunities generation and strengthening the local economy

#### What is the context? What is the problem we are trying to address?

Garhpura block is in Begusarai district in Bihar. Situated in the northern side of River Ganga. Garhpura is one among the 18 blocks of Begusarai district and its coordinates are between 25°35'19.393"- 25°43'7.281" North Latitude and 86°7'17.55" - 86°15'36.228" East Longitude. The Garhpura block has 9 GPs comprising of 51 villages. According to the 2011 Census the total population of the block is 1.11 Lakh of which 0.58 Lakh are males and 0.52 lakh are females. The total geographical area of the block is 6843 hectares and the average elevation of the block is 28.17 m from the mean sea level. The general slope in the block ranges from 0-3% in the direction of North-West to South-East. In the southern part in some patches the slope ranges from 3-8%.

The area is exposed to soil erosion, occasional floods and mild to moderate occasional droughts. Some parts in the block are water logged. The common landscape features present in the area are ox-bow lakes, back swamps or flood plains and *chaur*<sup>1</sup> land which forms the wet area occurring mostly in southern part. In Garhpura block agriculture is the primary occupation of the villagers. The gross cropped area is 9910 ha and the net sown area 3480 ha. The land is fertile and people practice multi cropping.



Site discussion with MGNREGA functionaries

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<sup>1</sup> Chours are waterlogged land in North Bihar which is fertile but usually submerged 3 to 9 months or even more in a year. Chours are the flood plains or the shallow transitional lands in Northern Bihar, which act as nurturing grounds for large amount of fish resources. Both culture and capture fisheries are practiced in this area.

The Garhpura block has a mean maximum temperature of 38.6 °C for the past historical period of 1984-2014. During this period the block received the mean rainfall of 988 mm of rainfall per year. Moreover due to the geographic location of the block both South-West monsoon is active and there are strong winds from the South-East; this maintains the required amount of humidity across the year. Further the block is well connected to big markets in the nearby states. All these factors make the area very suitable for fish farming.

Koraima GP, where the site is located, is situated seven kms away from Garhpura block headquarter and has 1,181 households. The region mostly comprises of SC and OBC community with the primary occupation being agriculture and labour.



Pre-work community and farmers team visit in Koraima

### What is the ICRG intervention?

ICRG team started its intervention in Garhpura block in early months of 2017-18 when ground level administrative and technical functionaries were trained and informed about designing and importance of Climate Resilient Works (CRWs). ICRG team studied the entire catchment area and considered both biophysical and sociological dynamics prevalent in the area. The field staff continued assisting MGNREGA functionaries, PRI members and farmers to identify and implement CRWs.

The community proposed redesigning of the natural depression region of the area in the village which had been submerged by constructing a series of ponds in the Parvatipur ward number seven. This patch of around 1.5 ha otherwise remains submerged during peak rainy season. ICRG field and technical team analysed the situation and designed the structures which will have catchment area of around 35 ha and command area of around 10 ha. Through community consultation, and sharing the benefits of the ponds along with irrigation and fishery benefits, the ICRG team designed the ponds along with plantations to strengthen the bunds considering the other climatic factors. The proposal was subsequently approved through annual action plan of MGNREGA by Gram Sabha.

The main features of the design were: a. Dividing the entire farmland into three separate smaller ponds based on land availability and catchment area, b. Embankment construction for strengthening banks, c. Double row



plantation on embankment and d. Linking the traditional farmers to fishery.

300 Agro-horticultural plants of mango, guava and mahogany were also planted in two rows on the bunds. The selection of these plants were done by the community and recommended by ICRG team on the basis of the agro-climatic condition of the block.

### What is the impact?

The land of Parvatipur which was earlier submerged during rainy season and remained fallow during lean agricultural season due to lack of irrigation facilities has been partially converted into economic use by farmers of the area. The ponds will be used for irrigation purpose as well as, as a fishery by the three families.

The two units of horticultural plantation on the embankment will support the economic upliftment of the families in years to come.

Two ponds are already completed with plantation in the bunds. Farmers started cropping fish spawns in the newly constructed pond. The ICRG team is working with MGNREGA functionaries, PRI members, farmers and beneficiaries to further link other ponds located in the area. Vikram, District engineer under ICRG says- ***“The area being submerged needed to be replanned. We studied catchment and command area and suggested minimum 0.3m water level for fisheries. The extra available water could be now used for irrigation purpose. We convinced MGNREGA functionaries and communities for this work. In case of later part of the year when there is dearth of water and level of the water level goes below 0.3m, the farmer use other source of water to maintain 0.3m level ”***

Apart from fisheries, horticulture and timber plantation and extra harvested water would help the farmers to have 5 hectare irrigation for maize cropping and vegetables.



Completed view of pond



Ongoing plantation of horticulture and timber trees at pond embankment

### Who is this benefiting?

**Rajdeep Mahato, 45** is a progressive farmer of Parvatipur village. Earlier Rajdeep was dependent only on his agricultural produce and milk production for his living. Upon consultation and continuous dialogue with the ICRG team, he started fish farming which is what his family had traditionally engaged in. By construction of a pond as a CRW his unproductive land also became productive. He proudly says- ***“7-8 saal pehle, jab hum sabhi bhai saath the, tab hum log ek saath machlipalan karte the. Fir ye hamara peshwa piche reh gaya. Ab hamare liye yeh nayi shuruwat hai.”*** (7-8 years back when all my brothers and our family lived together we used to collectively be involved in fish rearing. But for some years this traditional occupation of ours took a backseat, now this is a new beginning for us).

He proudly speaks about his existing knowledge on fish rearing being used now with the newly constructed pond. On listening to the conversation with Rajdeep about the pond, his wife shyly comes around offering us tea and happily says, ***“Bahut accha kaam hua hai, humlogo ko aasani se teen guna fayada milega. Ye machliyan yahi gaon me nikalte hi haatho haath bik jayegi”*** (The work done is very good, our family will easily get three times the benefit of the money invested. The harvested fish will be sold in the local market at a good rate and there will be many takers).

**Ramudagar Mahato, 55** has similar views regarding the works and says, besides giving employment, the mango and mahogany trees will be very useful to us for the future. Due to his poverty he could never study and his two sons had to leave school and work as drivers from a young age. He says- ***“Gaon me bahut samasayen hai, garibi hai, light nahi hai. Par machlipalan aur paudropan se hame sahyog milega. In pedo ko hum bachakar, evam machlio ko acche dam par bechkar pariwar chalane me bahut sahyog milega. Talaab me paani kam hone par bhi hum usko pump se bhar kar machlipalan karenge”*** (There are many problems and issues in the village, there is no light for irrigation, there is poverty, but this work will definitely be a support to us. The trees planted and fisheries will help us in running my family. Even if water level in the pond lowers, I will fill it with a diesel pump).



Rajdeep Mahato showing his fish spawns

**Yogendra Mahato and Kamalkishore Mahato** have also used water from the pond for irrigating their 0.86 acre field for mustard and sugarcane.

In addition, three other beneficiary families (Ramjivan Mahato, Nunupati Yadav, Triveni Yadav) have each used irrigational water for sowing green grass in their 0.15 acre unused land. This green grass will be used as fodder for their livestock saving around Rs. 15,000 which they would earlier spend for market procurement of fodder.

The fish in the ponds will be harvested around March-April 2019, with the onset of summer, the 100 kg spawns are expected to produce around 200 quintal of fish. The fish usually sells at Rs.120/130 per kg.

*There is ample scope of identifying and working on similar lines in the area. The demand of more such CRWs is coming from local MGNREGA functionaries and the villagers in this area. The ICRG team in response to this has facilitated designing of 3 more ponds in Koriama GP. The technical sanctions of these ponds is done. There is a sense of happiness and satisfaction of moving back to their roots (having fishery as a livelihood option) among villagers.*