



Achieving climate resilience and well-being through enhanced water conservation in West Bengal

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Summary

West Bengal is an agrarian state located in eastern India and its agricultural sector is currently under threat by shrinking water resources and growing population. These are two common threats to agriculture, especially in agro-climatic zones (Western Lateritic area, Darjeeling and Sundarbans). There is high surface run off in the western zone leading to soil erosion, while the coastal area suffers from saline water ingress and limited groundwater aquifers. Water springs (locally known as *Jhoras*), which are the lifeline of hilly area in Darjeeling, are drying up as well.

To tackle these challenges, West Bengal launched an initiative in 2012 for the enhancement of agricultural production in several districts including arid regions and coastal belt. The Water Resource Investigation and Development Department (WRIDD) of the state government is doing this through a World Bank assisted project 'West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP)'. The project aims to enhance agriculture production among small and marginal farmers in remote rain-fed areas of West Bengal and is expected to end in December 2019.

Intelligent interventions in the form of minor irrigation and well thought, innovative intercropping and plantation supported by the right information and tools have significantly improved the socio-economic conditions and reduced vulnerability of the farmers in the project area.

Methodology

- Construction of water detention structures and other minor irrigation structures (check dams and dug wells) adjacent to cropping areas or within the plantation area for conservation of soil moisture and increased fertility of the land.
- Support services related to agriculture, horticulture and pisciculture are provided to farmers through Water User Associations (WUAs) to enhance productivity.
- Re-excavation of old creeks in coastal areas to store rain water for additional winter crop as well as for pisciculture.



Results and Accomplishments

- More than 2000 WUAs have been formed and 54,000 Ha has been provided with irrigation services through 2300 minor irrigation schemes - this includes 78 solar based schemes.
- 81,000 farmers are utilizing the irrigation services across the state (79 percent of which are small and marginal farmers) and 49,000 farmers have been provided with agriculture support services.
- In the western lateritic zone, 247 Ha of waste land has been converted to orchards by planting over 1.26 lakh saplings (e.g. mango, cashew, pineapple, etc.) through inter-cropping. In 2019, more than three lakh saplings were planted on 522 Ha of waste land.
- In hilly areas of Darjeeling, horticulture on 165 Ha has been completed and 47 *Hydrant* based irrigation schemes have been installed in Kalimpong.
- 205 km of Water Detention structures (WDS) have been created by re-excavation of creeks in coastal region of Sundarbans. This has increased water availability resulting in an extra winter crop on more than 2000 Ha.
- Pisciculture has been taken up on 90 Ha and the cropping intensity has gone up from 97 percent to 194 percent. All of these practices have increased the income of farmers which has reduced migration.

Enabling conditions

- Project funding: the total project cost is US\$186 million (US\$31 million provided by the state and the remaining from the World Bank).
- The project recognises water user associations as implementation partners which has enhanced the effectiveness of project and ensured its sustainability. The project is designed to provide single-window service in the form of assured source of irrigation and agriculture support services to small and marginal farmers. This has removed the possibility of coordination failure.
- Use of a GIS based platform as a decision support system has helped in accelerating the pace of implementation and measuring the impact of the interventions using satellite images.

Challenges

- It was difficult to discourage farmers from using groundwater during the initial phase of the project as project staff were spread across the state in a uniform manner with little visible impact. With the reformulated project strategy, the prioritisation parameters laid emphasis on rain-fed, single-cropped areas with a higher potential for surface irrigation.
- It also took some time to change the mindset of engineers who were in the habit of focusing only on contractor driven creation of irrigation infrastructure with no emphasis on agriculture and support services.

Key lessons learned

Ensuring efficient use of resources and delivering environmentally sustainable production solutions can work conjunctively and successfully with focused planning supported by the right information and tools. Involvement of community-based organisations, providing single-window agriculture support services and use of web-based tools for planning, supervision and monitoring of different project parameters ensured the success of the project.

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