WATER KNOWLEDGE NOTE

India

Strengthening Irrigation Efficiency and Water Productivity

The World Bank-supported Andhra Pradesh and Telangana State Community-Based Management (APCBTM) project (2007–16) in India benefited 605,052 people by strengthening the capacity of community-based institutions. The project developed and equipped 116,164 hectares of land with irrigation and drainage services. In addition, the project developed and rehabilitated tank irrigation infrastructure, supported farmers to improve their productivity, and increased cropping intensity by over 30%.

Challenge

Andhra Pradesh is a middle-income state on the southeast coast of India with a large agrarian population. The state, the fifth largest population in India, encompasses 8.3% of its land mass, and accounts for 7.1% of its gross domestic

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product (GDP). The state has approximately 74,000 tanks that have the capacity to irrigate about 1.5 million hectares of land. With the largest area irrigated by tanks in the country, the agricultural sector increased by 2.5% per year from 1999 to 2006; almost all of this growth originated from the livestock and fisheries sub-sectors.

In the last decade, amidst droughts and lack of maintenance and management of tank irrigation systems, the tank irrigated area declined significantly, with most tanks performing below their capacity. Due to the lack of maintenance and an increase in the use of groundwater for irrigation, Andhra Pradesh and Telangana experienced suboptimal performance of the agricultural crop sub-sector, which is approximately 60% of state domestic product from agriculture.

Approach

The APCBTM project aimed to support tank-based producers and Water User Associations (WUA) in the Indian states of Andhra Pradesh and Telangana (Andhra Pradesh was bifurcated into two states in 2014). The project focused on improving agricultural productivity, strengthening community-based institutions, and improving the sustainable management of groundwater resources through participatory groundwater management.

Groundwater plays an important role in tank irrigation systems. It is critical to soundly manage groundwater in order to ensure sustainable benefits from tank improvement programs—including enhancing agricultural productivity.

The project adopted a participatory approach through training and capacity development activities that included improved feeding and harvesting techniques and fishery management practices for farmer groups. Fishing Cooperative Societies (FCSs) and Farmer Interest Groups (FIGS) assumed greater responsibility for tank system management and for improvement of tank-based agricultural livelihoods.

Results

The project improved agricultural productivity as well as the diversification (into non-paddy crops) of agriculture commodities by upgrading technology and production practices.

Minor irrigation systems improvements enhanced the efficiency of water use in tank areas selected under the project. Tank systems improvements aimed to improve the physical and operational performance of selected tank systems, secure the safety of the tank structure, and improve water management and water use efficiency. By supporting the physical rehabilitation and modernization of tank and irrigation systems the project strengthened reservoir embankments, renovated sluice/head regulators, and improved water distribution through field channels.

Agricultural livelihoods support services enhanced tank-based livelihoods by increasing the production, productivity, and profitability of agriculture, horticulture, fisheries, livestock, and other significant productive activities.

Sound management of groundwater is crucial for sustainability of tank irrigation systems.

Implemented in Andhra Pradesh between 2007 and 2016, the project showed the following results:

- Rehabilitated 2,157 irrigation tanks, including 1,182 tanks in Telangana and 975 tanks in Andhra Pradesh;
- Provided irrigation and drainage services to 216,164 hectares of land;
- Increased cropping intensity by over 30%, and increase productivity of paddy by 36%, maize by 72%, and milk by 128%;
- Strengthened 2,157 Water User Associations;
- 605,052 people were direct project beneficiaries of these improvements;

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- Organized 7,343 crop technology demonstrations and trained 42,000 farmers, enabling farmers to adopt improved cultivation and water management practices;
- 57.4% farmers in tank command adopted improved production techniques;
- Established 1,500 functioning farmer marketing groups;
- 76% of water users in rehabilitated tank systems communicated satisfaction with WUA operations and maintenance.

Bank Group Contribution

The project was financed through a World Bank Specific Investment Loan worth US$189 million split into an IDA Credit worth US$94.50 million and an IBRD Credit worth US$94.50 million. These amounts were revised at restructuring to US$87 million for each loan. Actual amounts disbursed were US$71.59 million for the IBRD loan and US$86.60 million for the IDA loan. Total amount disbursed was US$158.19 million. US$15 million were cancelled from the original loan amount due to currency devaluation; and an additional US$10 million was saved through savings within the project components; and due to discontinuation of the livestock and foreshore plantation sub-components at MTR. The borrower contributed a total of US$17.58 million of counterpart funding, of which US$7 million were to be contributed by Water User Associations (WUAs).

The Bank's role was critical to the project success by introducing innovative technology, sharing international best practices, and facilitating cooperation between user groups, public departments, and the private sector including irrigation, agriculture, fishery, and agribusiness companies.

Partners

The state governments of Andhra Pradesh and Telangana provided strong leadership for project inception and implementation. The project was managed through a Project Management Unit (PMU) established in the Command Area Development; and Corresponding District Project Units (DPUs) that were established at the district level with smaller multi-disciplinary dedicated teams. After the state split into Andhra Pradesh and Telangana, project management units in Telangana were created and carried out project activities. In addition, a project steering committee was set up to coordinate the annual irrigation, agriculture, fisheries, and rural development departments.

Beneficiaries

The primary project beneficiaries include WUAs, fisheries cooperative societies, and farmer interest groups. Additionally, groundwater users and agricultural producers greatly benefitted from project activities. Commodity Interest Groups (CIG) members also benefitted from trainings on CIG formation, as well as livelihood interventions and exposure visits for tribal CIGs.

Moving Forward

The institutions established or supported by the project have shown potential to support the long-term maintenance of project results. In particular, capacity building activities supported institutions such as the Minor Irrigation Department to continue program activities after the project's closure.

Additionally, the state governments of Andhra Pradesh and Telangana indicated interest in continuing investments into securing the continued functioning of WUAs, including financially supporting minor repairs and maintenance. Many WUAs maintain accurate cashbooks and collect annual assessed water charges; these revenues, combined with state support, may meet the financial requirements for WUAs to continue operation and maintenance activities well into the future.

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SKU W19018