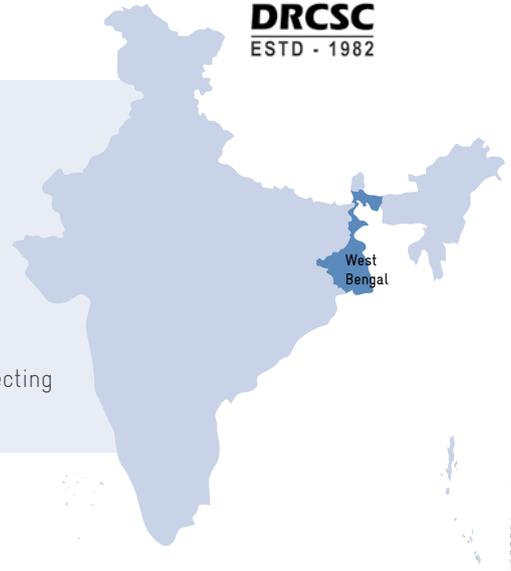


Livelihood diversification through Integrated Production Systems



State:	West Bengal
Location:	Maldah district and Murshidabad district
Project duration:	October 2011 – September 2013
Project implementation:	Development Research Communication & Service Center (DRCS)
Geographic features:	Floodplains of the river Ganges, waterlogged for six months of the year
Climate stress:	Shifting rainfall patterns, erratic rainfall affecting waterlogging, increased temperatures



Project context and need for adaptation

West Bengal is flood prone, mainly due to heavy precipitation during the summer monsoon. Malda and Murshidabad are among the districts in the Ganges basin in West Bengal that are most affected by flooding. Rising temperatures due to climate change are likely to lead to glacier melt in the Himalayas, so that flooding of the Ganges, which is fed by glaciers, would increase.

Rain-fed agriculture remains people's primary occupation in the project area, but due to changes in precipitation patterns and temperature, crop yields are going down. The main crops for small farmers are paddy, jute, wheat and potato.

Paddy and jute production is affected by an increased duration of water logging. The Jute harvest, for example, has often suffered greatly in recent years from the early onset of the summer monsoon, with heavy rains leading to waterlogging starting in July. Thus the growth of jute plants is hampered by stagnant water. In former times, the heavy rains did not begin until August, the month of the jute harvest.

Wheat and potato, which are the major winter crops, mainly suffer from higher winter temperatures and decreasing rainfall.

Additionally, river bank erosion has been causing loss of land and forcing some farmers to move their homes.



To ensure the family's income, at least one male family member now works as an urban labourer.

This project responds to these problems by diversifying and thereby ensuring the livelihoods of rural communities. Farms are redesigned and alternative cropping arrangements introduced so that the waterlogging itself can become a source of income. Fishery, livestock, crops, and other livelihoods are integrated so that farmers have alternatives in the event of crop failure due to climatic stresses. The beneficiaries are also trained to recycle waste materials and conserve seeds, so that they are less dependent on markets for agricultural inputs.

Vulnerability assessment

A socio-economic base-line survey of communities is being carried out to assess their adaptive capacities. Local climatic stresses are being documented with the participation of communities and matched with climate trend analysis in collaboration with research institutions.

Adaptation hypothesis

Adjusting cropping patterns, reshaping land and integrating different agricultural subsystems such as livestock and fisheries increase the livelihood base of farmers, thus reducing their vulnerability to climatic variability and making them more resilient in the event of climatic extremes.

Project activities

In practical terms, the project helps to design and implement integrated farming systems for individual farms so that farmers can rely on other sources of livelihood in case of climate stress. These measures include:

- Land shaping, that is, the redesigning of farmland to permit the use of portions of land during waterlogged periods. Farm ponds, canals and ditches are dug to drain off water. The soil thus excavated is used to elevate beds. Diverse varieties of vegetables and trees are grown on these beds, providing food and fodder throughout the year.
- The introduction of local fish species in the ponds for household consumption
- The introduction of local varieties of water-resistant rice during the waterlogging period
- Preponing the sowing of crops such as paddy and maize within the summer cropping season in preparation for the early monsoon
- Postponing the sowing of crops such as jute, mustard and coriander during the winter cropping season.

The project also organises training sessions for farmers, e.g. on integrated farming and on seed conservation to reduce market dependency on agricultural inputs.

This project is a joint undertaking of the project Climate Change Adaptation in Rural Areas of India (CCA RAI) and the Development Research Communication & Services Center (DRCSC).

CCA RAI is an Indo-German development project that aims to strengthen the efforts of rural communities in India to cope with climate variability and change. CCA RAI is implemented by the Indian Ministry of Environment and Forests and the German development organisation GIZ. It is financed by the German Federal Ministry for Economic Cooperation and Development. Tamil Nadu is one of CCA RAI's four partner states in India. The main responsibilities of CCA RAI in this project are financing, technical support, and institutional capacity building.

DRCSC is a non-governmental development organisation established in 1982. It operates mainly in West Bengal. DRCSC's main concern is to secure the food supplies and livelihoods of the rural poor through the sustainable management of natural resources. The organisation conforms to principles and actions that are environmentally friendly, economically appropriate, socially just and developed through mutual cooperation. DRCSC's main responsibility is project implementation.

All CCA RAI demonstration projects conform to a participatory process of structured, self-evaluative learning called systematisation. By documenting experiences, all CCA RAI projects showcase what adaptation means on the ground.

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