



Managing risk in delta ecosystems to sustain diverse livelihoods

Working to increase land and water productivity for improved food security and livelihoods in coastal zones

■ Research Highlight #9



■ Resource management for diverse livelihoods

In the Mekong and the Ganges River deltas, saltwater intrusion—when saltwater from the sea moves up into the river—poses problems for some farmers and opportunities for others. Saltwater intrusion most often occurs during the dry season when river hydraulic pressure is low. For rice farmers in these regions saltwater

intrusion threatens dry season rice crops that require fresh water, whereas shrimp farmers are able to expand the scale of their farming with the increase in brackish water during low-flow periods.

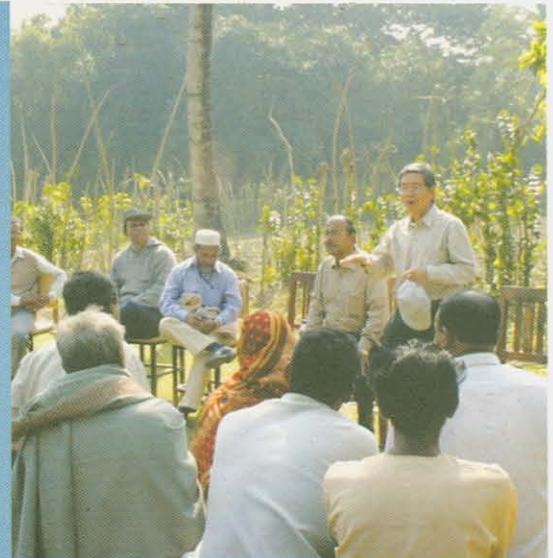


■ Can we manage conflict while protecting the interests of farmers and fishers?

'Managing water and land resources for sustainable livelihoods at the interface between fresh and saline water environments in Vietnam and Bangladesh', a project of the Challenge Program on Water and Food (CPWF), is working to increase land and water productivity for improved food security and livelihoods in coastal zones, in a manner that is environmentally sustainable and socially acceptable to the various resource users.

By carrying out research that takes account of the diverse interests of farmers, fishers, water managers and local and provincial

authorities, the project is exploring options to eliminate poverty through sustainable resource management that addresses the conflict between rice and shrimp farmers. These include developing technologies that reduce or eliminate the harm done to crops by saltwater intrusion, allow double cropping of rice in areas where only one crop is traditionally possible, and transform saltwater intrusion from a problem into an opportunity that diversifies livelihoods. Additionally, the project is working to improve the capacity of institutions to manage the conflicting interests of different water users, including land use planning and zoning.



Stakeholders in Bangladesh

Photo: Chu Thai Hoanh

■ Using rice to mitigate the risks of shrimp farming

Shrimp farming is a high-risk venture for farmers because of its price variability and the recurrence of shrimp diseases. In the Mekong delta of Vietnam and the Ganges delta in Bangladesh shrimp and rice are rotated in the same field, in the dry and rainy seasons respectively, although some farmers choose to farm shrimp continuously. Breaking shrimp culture with rice helps reduce shrimp diseases and also ensures food and livelihood security in the case of an outbreak. However, if water is not managed properly, remnants of salinity from shrimp culture can severely affect rice crops. Other methods of reducing risk and ensuring additional incomes is by farming shrimp in a 'multi-culture', along with other aquatic species such as crabs or fish, in the same pond or in several ponds. Maintaining some plots that are dedicated to crops and not rotated with shrimp in the two seasons each year also reduces risk and increases income for farmers.

In the south western area of the Ganges delta in Bangladesh, degrading resources contribute to conflict between shrimp farmers and rice growers over land and water allocation. A common outcome is for small rice growing landowners to sell their land to shrimp producers. The project is developing technologies that allow farmers to grow two crops a year, with yields of up to seven tons/ha. This means that farmers have an economic incentive to stick with rice and not to sell their land.

Sharing lessons: a focus on the water-policy interface

In the Mekong delta, the project has worked with stakeholders and the government to develop a zoning map for the

delta that identifies areas reserved for rice or shrimp farming. It has mapped out the extent of salt water intrusion in the area and has designed a decision support system and an institutional framework for the integrated, multipurpose management of a fresh and brackish water regime to address the needs of diverse water users while considering environmental needs in Vietnam. This knowledge is being used to guide development of rice and shrimp farming.

Drawing on the project's experience in Vietnam, the significance of policy was emphasized in Bangladesh. Insight included the importance of having a GIS-database of resource management domains as the basis for land use planning for rice and shrimp cultivation. Another area identified for policy improvement was water management, to address specific questions such as when to close flood gates to exclude saline water and when to keep them open. Socioeconomic data revealed that poor people could benefit from being included in shrimp cultivation. Here, too, inter-basin, inter-country transfers of experience from Vietnam to Bangladesh, is helping guide sustainable resource management through a rice-shrimp farming system. Efforts include using methodologies for double cropping (taking two rice crops a year), short duration rice varieties, varieties adapted to brackish water, and water management methods. Such policies could make a difference to livelihoods by creating opportunities for people to enter the production system.

These lessons helped develop a plan to set up a National Advisory Committee of Director Generals of research and development agencies, to interact with the project on issues of sustainable resource use. Important outcomes of the plan were decisions to improve drainage in the region, promote modern short duration rice varieties, and set up participatory management of sluices and flood gates to allow two crops of rice a year.



< Carrying out field research in Vietnam



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■ Project information

CPWF Project
Managing water and land resources for sustainable livelihoods at the interface between fresh and saline water environments in Vietnam and Bangladesh

■ Partner organizations

- International Rice Research Institute (IRRI), Philippines
- WorldFish Center, Malaysia
- International Water Management Institute (IWMI), Sri Lanka
- Bac Lieu People's Committee (BLPC, provincial government), Vietnam
- Can Tho University, Vietnam
- University of Agriculture and Forestry, Vietnam
- Sub-Institute of Water Resources Planning (SIWRP), Vietnam
- Research Institute for Aquaculture No. 2 (RIA2), Ministry of Fisheries, Vietnam
- Integrated Resource Mapping Center (IRMC), Vietnam
- Bangladesh Rice Research Institute (BRRI)
- Bangladesh Fisheries Research Institute (BFRI)
- Bangladesh Water Development Board (BWDB)
- Local Government Engineering Department (LGED), Bangladesh
- Health, Education & Economic Development (HEED), Bangladesh
- SocioConsult Ltd., Bangladesh