

Planning for change in Vietnam's rice bowl

The Mekong Delta is facing pressure from the combined impacts of upstream dams, which reduce water available for rice at critical times, salinity intrusion which also affects crops in the Delta and climate change. A recent project shows that planning agencies in the Delta need to take an integrated approach to manage and adapt to these combined impacts.

For many rice farmers in Vietnam's Mekong Delta the threat of rising salinity may also provide opportunities to improve farming practices and diversify from rice cropping to higher-value saline aquaculture or other crops. This is one finding from a study to investigate the impacts of sea level rise and upstream water use on future livelihoods in the Delta.

Upstream dams and climate change

The research also showed that building more dams in the Mekong system reduces flows to the Delta at critical times, and this, combined with drier years associated with climate variability, climate change and salinity intrusion, will have a significant impact on farmers' livelihoods.

The study showed that these problems are complex and that policy makers and water managers need to focus on the combined impacts of sea level rise and upstream water use.

"Planning in the region is very focused on how to respond to sea level rise, but to answer that question we need to consider the potential impact of upstream dams on the Mekong and its tributaries," says project leader, Dr Alex Smajgl.

Modelling of different scenarios of dams, sea level rise, climate change and development within the delta showed that building dikes to prevent sea water intrusion is an expensive option which delivers fewer benefits than previously anticipated.

An important aspect of the study was to introduce information about the

potential impacts of climate change into the planning mix. The worst case scenario for the delta is where upstream dams retain water at the beginning of the wet season during dry years. In this situation, the onset of flooding in the delta is delayed, resulting in a reduced water supply during the critical stage of irrigating transplanted rice. As a result, newly transplanted rice crops could perish – showing how a change to the system much further upstream can result in the loss of the whole crop.

Modelling shows worst-case scenario

The study modelled five scenarios, including a 'worst-case' of sea level rise of 30 cm by 2050, a full development of upstream hydropower dams and an increase in the number of dry years. Such



Project snapshot

Exploring Mekong Futures is a project funded by the AusAID-CSIRO Research for Development Alliance, to study water-food-energy decisions in the wider Mekong region, and trade-offs and issues between countries. The work is conducted in partnership with many government and research agencies in Cambodia, China, Lao PDR, Thailand and Vietnam. This study was conducted by CSIRO and Can Tho University.

A pineapple vendor at the Cai Rang Floating Market near Can Tho in the Mekong Delta region of Vietnam. Photo: Matthew Inman



ABOVE The Mekong River. Photo: Matthew Inman

a scenario could affect up to 282,000 farmers and lead to rice crop losses in the order of one million tonnes – worth about \$500 million.

Dr Smajgl says the project was able to show policy makers and water managers that they could potentially be facing this scenario every few years. “The cost of having upstream dams operating like this, with the added impacts of sea level rise and climate change, could be very high for Vietnam,” he says.

“Management of upstream dams could have more impact than expensive treatments in water infrastructure such as dikes to control salinity. Understanding these complex mechanisms can help key decision-makers to influence upstream reservoir managers to avoid these peaks,” says Dr Smajgl.

New information helps land use planning

Leader of the Can Tho University team Dr Dang Kieu Nhan says that now, as a result of the study, farmers and extension staff in low-lying areas of the Delta have new information about the possible impacts of upstream water use and sea level rise as well as possible land use options, which they can use to make future farming decisions.

The Department of Natural Resources and Environment (DoNRE) and the

Department of Agriculture and Rural Development (DARD) are adopting the study’s recommended diverse strategies to support national food security goals in land-use plans in three provinces. The other eight provinces that participated in the study have made similar commitments to change their development plans.

Alternative options for Delta rice farmers

Recommended strategies include assigning favourable areas in the mid and upper delta to rice production, replacing traditional rice varieties with salinity-tolerant and/or short-growing varieties, improving soil fertility, diversifying into other enterprises, such as saline aquaculture and high-value crops, such as sugarcane, cherry and soursop, improving rainwater use efficiency for agricultural production in the rainy season, and enhancing community-based irrigation management.

Under favourable conditions, changing from growing two or three crops of rice a year to rice-shrimp rotational farming could increase farm income. For areas with high salinity (18% of the Delta) planting salt-tolerant rice varieties and applying appropriate chemicals could help farmers maintain rice production and their farming income.

Having generated enthusiasm among stakeholders including the provincial arms of DARD and DoNRE, Dr Nhan and his team are seeking funding to follow up the study with field tests at community and interprovincial level. This will enable them to test, monitor and assess impacts of proposed actions on agricultural production, farmers’ livelihoods and local government planning in the study areas.

Results from these follow-up tests would contribute significantly to the robustness

of strategies and planning for climate change adaptation at a provincial level and throughout the Mekong Delta region.

Project impacts

- ◆ All 11 provinces involved in the study want to adopt the project recommendations in regards to land-use change (shifting from two crops of rice to rice and shrimp or rice and a high-value crop such as sugarcane).
- ◆ Key decision-makers in the Ministry of Agriculture and Rural Development want to use the work related to the combined impacts of upstream dams, climate change and salinity intrusion to help them integrate climate change adaptation and rural development policies.
- ◆ Farmers and extension staff in low lying areas of the Delta are better informed about the possible impacts of upstream water use and sea level rise as well as possible land use options, which they can use to make future farming decisions.



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