

Research helps shape investment decisions about energy, food and water

Major investments being planned and already happening in the Mekong region revolve around the food-water-energy nexus so it is vital that planning decisions consider trade-offs between these three sectors.

Analysing the development trade-off decisions in the Mekong region shows that contrary to widely held beliefs, large-scale irrigation schemes are not an effective way to alleviate poverty. This is one finding of a major project in the Mekong region to help agencies responsible for planning and investment, water use, power generation and food security understand how factors such as increasing regionalism, cross-border investment flows, urbanisation and changes in land use affect the food-water-energy nexus.

Making decisions about water use in Nam Ngum basin

In Lao PDR, the project is exploring the impacts of large-scale irrigation on poverty reduction and working with

local groups to investigate alternative development scenarios. The project's work has contributed to the basin development plan in the Nam Ngum River basin and helped in designing planning processes for the country's other river basin organisations.

The Nam Ngum river supports one of the country's largest food production areas and the largest irrigated area in Lao PDR. It contributes 14% to the Mekong's flow. Environmental flow from the Nam Ngum into the Mekong is critical for downstream users and ecosystems, particularly in the dry season. Cooperation among water users within the basin is particularly important as the Nam Ngum is used for a wide variety of purposes such as hydropower, irrigation, mining and ecotourism as well as providing a source

of fish for diet and income to its more than 500,000 inhabitants. Food demand is expected to increase and hydropower dams are being rapidly developed in the upper part of the basin, modifying seasonal distribution of river flow regimes.

With plans to increase the number of dams from four to 14 to produce urgently needed electricity and to provide irrigation water in an attempt to reduce poverty, the river basin organisation asked the project team to assess water availability.

Study explores impacts of hydropower and irrigation

Project partner IWMI carried out a study to assess the impact of hydropower dams on irrigated agriculture in the basin, which showed that even during very dry



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.

Mekong River. Photo: Matthew Inman



ABOVE Development pressures require sound planning decisions. Photo: John Ward

years, there is more than enough water to supply the agricultural sector, which is the largest water user (about 20,000 ha of irrigated rice and vegetables are grown in the basin). The study showed that under an extreme scenario of irrigation development (the area irrigated increases threefold) water demand could exceed supply.

The project modelling showed that despite expectations to the contrary, large-scale irrigation schemes are not likely to generate a positive impact on poverty in the basin.

The reason, explains project leader Dr Alex Smajgl, is that providing irrigation only helps people who own land.

“The more land they own, the more their productivity increases and the more their income increases. People who live below the poverty line don’t own land so irrigation doesn’t help them at all.”

The Nam Ngum River Basin Organization took this insight onboard and irrigation is now looked at on a more case-by-case basis, provided in districts where poverty is likely to be reduced. Elsewhere, alternative strategies will be implemented, in particular the creation of employment opportunities in manufacturing and food processing. The Lao National Assembly has also adopted this recommendation to revise its draft investment proposals – which are largely based on large-scale irrigation.

Following the project’s assessment of development in the Nam Ngum catchment, the leader of the Nam Ngum River Basin Committee, Mr Chanthanet – now Director General in the Ministry of Natural Resources and Environment – was impressed at how the project created an evidence based planning system and sought funding to train the Nam Ngum River Basin Committee in the CSIRO planning approach (known as the ChaRL protocol). Mr Chanthanet also invited the leaders of the country’s four new river basin organisations to the final project workshop. They were also extremely enthusiastic and now want to develop their basin development plans using the same evidence based process.

Busting myths about large-scale irrigation schemes

On the other side of the Mekong River, in north-east Thailand, large-scale irrigation has likewise been promoted as a path towards eradicating poverty in the region.

Using the results of a household survey of 1000 households, the researchers modelled the impacts of household intentions, given increased water availability, on agricultural production. Although average household income increases by about 30 per cent with such an increase in irrigation, there is no positive impact on poverty.

“That was a really big surprise, we had expected that providing water would reduce poverty,” Dr Smajgl says. “But, it’s only when we started questioning this proposal that the importance of land ownership became apparent.”

The Isan region covers 115,000 square km in north east Thailand with a population of more than 21 million. The study focused on the Huai Sai Bat sub-basin, which is about five per cent of the province and has about 100,000 inhabitants.

Working together, the local river basin committee, the National Economic

and Social Development Board, the Department for Irrigation and Department for Water Resources, identified a number of preferred strategies, such as small-scale local irrigation schemes, development of industry to increase employment and growing energy crops, such as cassava and sugarcane as part of a cropping rotation.

Dr Smajgl hopes that armed with this new understanding, the government will throw its support behind small-scale irrigation schemes that will have a positive impact on household livelihoods.

Project impacts

- ◆ Information showing that expensive large-scale irrigation schemes are not necessarily an effective strategy to alleviate poverty taken up and used for planning in Mekong countries.
- ◆ River basin organisations in Lao PDR adopt the project’s evidence-based planning process.
- ◆ Project’s analysis the first to conceptualise the complexity of food-water-energy trade-off decisions in the Mekong context.



Mekong River region

CONTACT US

t 1300 363 400
+61 3 9545 2176
e enquiries@csiro.au
w www.csiro.au

YOUR CSIRO

Australia is founding its future on science and innovation. Its national science agency, CSIRO, is a powerhouse of ideas, technologies and skills for building prosperity, growth, health and sustainability. It serves governments, industries, business and communities across the nation.

FOR FURTHER INFORMATION CSIRO

Dr Alex Smajgl
t +61 7 4753 8615
e Alex.Smajgl@csiro.au
w www.rfdalliance.com.au