

Can Tho's water managers consider all options

Water is everywhere in the Mekong Delta. It underpins the local economy – from agriculture and aquaculture to transport and tourism. Yet developing safe and secure water supplies is a major challenge for cities such as Can Tho, Vietnam.

Developed by the CSIRO, pilot rainwater harvesting systems and a city water atlas of GIS-based maps are two innovations from a recent project to help Can Tho city develop a sustainable water system and enhance its resilience to climate change.

The largest urban centre in the Vietnam Mekong Delta, Can Tho has a population of 1.2 million, 60% living in urban areas. The main issue facing the city's water managers is inadequate infrastructure, resulting in limited access to clean water and sanitation, frequent flash flooding and pollution. Water related health problems are widespread across many parts of the city, especially in semi-rural and rural areas. The Ministry of Natural Resources and Environment states that 80% of disease in Vietnam is caused by polluted water.

Household survey highlights water quality issues

The project's survey of 1200 households showed that households on the urban-rural fringe have the least access to an adequate water supply and sanitation. About 80% of urban people and only 40% of the rural population have access to safe drinking water.

Overwhelmingly, households considered that the most important local water-related issue over the next 10 years was pollution of surface water. Monitoring of surface water quality at 45 sites across Can Tho shows that parameters such as coliforms, suspended solids, phosphates and ammonia exceed permissible levels. For some parameters such as organic pollutants, concentrations in canals have doubled in the last 10 years. This

increase is a direct result of increased urbanisation and poor sanitation infrastructure.

Water needs index highlights problem areas

The project considered the impacts of climate change on the city's water needs. Poorer households are acutely vulnerable to climate change impacts predicted for Can Tho, such as increased flooding. A workshop attended by stakeholders from water supply companies and government agencies was able to pin-point several 'hot spots' for water management in the future.

Armed with the survey and workshop results, the project team created a water needs index, which identified the diverse needs to be addressed in improving water services across the city.



Project snapshot

The project was funded by the AusAID-CSIRO Research for Development Alliance and involved CSIRO, Can Tho University and the University of Technology Sydney as research partners together with a number of key stakeholders in Can Tho.

Can Tho, Vietnam Photo: Stephen Cook



ABOVE Head of the water treatment plant in Can Tho Water Supply and Sewerage Company.
Photo: Stephen Cook

The index highlighted the fragmented nature of the urban water sector – some areas have access to improved water services and sanitation while many outer areas lack access altogether.

The project team together with local stakeholders developed a set of options for sustainable development of the city's water system. These ranged from implementing household measures, such as the use of rainwater tanks and behavioural change, to large-scale infrastructure projects.

The project found that providing a combination of centralised and decentralised wastewater infrastructure is the most suitable and cost-effective approach for improving access to adequate sanitation.

Rainwater tanks help boost water supply

The project has established a rainwater harvesting pilot scale demonstration with two plants. Rainwater is treated with a low-cost device, developed by CSIRO and Can Tho University, which collects the first flow of dirty water at the beginning of every rain event and siphons it off to avoid tank contamination. One system at the Can Tho University campus is being used to study quality and treatment techniques, with rainwater used to flush toilets. This system is estimated to save about 100,000 litres of water per month for the building which is used by 500 students. Another system in a household on the urban fringe provides water for domestic use for about 20 people. The

water is treated with the first flush device and a filter system. Householders say the water supply is very convenient and water quality is much better than what they had previously.

In a spinoff from the project, Save the Children Vietnam and Can Tho University are collaborating to manufacture 200 first flush devices and test them in rural areas near Can Tho.

Local departments put water atlas to use

Developed by the CSIRO, the City Water Atlas is being used to assist in planning local departments – the Water Supply and Sanitation Company (WSSC), the Center for Rural Water Supply and Environmental Sanitation (CERWASS) and the Department of Natural Resources and Environment (DONRE). The atlas contains 25 GIS-based maps summarising some of the key issues for urban water management. For example, a map showing the percentage of households served by water supply stations, helps the city's water utility company identify and target the most vulnerable areas for action.

Director of Can Tho Climate Change Coordination Office Mr Ky Quang Vinh, welcomed the project's emphasis on bottom up information and knowledge.

"Many results from the project, such as the strategic options, GIS database and City Water Atlas, households survey and the demonstration of rainwater harvesting systems are precious science-based or evidenced-based references for developing an adaptation plan of the city," said Mr Ky.

"The project has also contributed significantly to climate change adaptation actions by increasing the adaptive capacity of local communities to drought, lack of clean water, flood, and pollution."

Inclusive collaboration in the project and four workshops have resulted in a strong partnership between the research partners and the key stakeholders in Can

Tho. The College of Environment and Natural Resources at Can Tho University is now using knowledge gained in the project to train local stakeholders and teach students.

The CSIRO team received the City Award 2012 in recognition of the project's contribution to the adaptation action planning of Can Tho city.

Project impacts

- ◆ The uptake of sustainable urban development principles is improving the planning of urban water services and helping Can Tho to adapt to climate change.
- ◆ A low-cost rainwater treatment device has potential to extend use of rainwater harvesting to provide water to poor rural households.
- ◆ A GIS-based water atlas helps local water managers identify critical urban water challenges and target sectors most vulnerable to climate change.



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