Integrated Urban Water Management in Asia

Cities now, and cities in the future need integrated solutions to complex challenges. Floods are the most frequent natural disaster globally, and cause more damage than any other weather or non-weather related event. Yet, flood-related damages are expected to grow, driven by urbanisation, land use changes and climate uncertainty.

Compared to conventional “grey” infrastructure by itself, nature-based solutions such as wetland parks, raingardens, bioswales, green roofs and walls, can involve less upfront investment, are more scalable and flexible and generate a range of environmental, economic and social co-benefits beyond flood management.

An urban wetland park for example—if integrated into broader city planning—can transform a local community. Interlinked lakes and ponds store water during periods of heavy rainfall, decreasing flooding and filtering pollutants. The lakes and ponds nourish the park’s vegetation and tree cover which decreases ambient air temperature, serves as a home for plant and animal species and a pleasant place for local communities to gather and small businesses to operate. Non-structural planning and community based solutions such as behavior change programs, land use planning and building requirements also play a key role in reducing flood risk and damage.

There are a range of innovative hybrid approaches to integrated urban water management already operational across the Asia-Pacific region. These include the development of Sponge Cities in China, Singapore’s Active, Beautiful, Clean (ABC) Waters Programme, Water Sensitive Urban Design in Australia, Sustainable Urban Drainage Systems in the Mekong Delta, Vietnam and various nature-based initiatives in Bangkok, Thailand, such as the Chulalongkorn University Centenary Park. The increasing recognition of hybrid approaches that integrate NbS reflects the changing nature of societies across Asia and the increasing aspirations for improved environmental quality, community health and economic prosperity

Project brief

Valuing the benefits of nature-based solutions to integrated urban flood management in the Mekong region

Nature-based Solutions (NbS) are defined by IUCN as “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits".

Chulalongkorn University Centenary Park, Bangkok - a multi-functional wetland (Landprocess and N7A Architects)

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CRC for Water Sensitive Cities

But how can decision-makers justify the use of NbS, or hybrid solutions compared to conventional measures?

Project details

The Cooperative Research Centre for Water Sensitive Cities (CRCWSC) and the International Centre for Environmental Management (ICEM) have been working in close cooperation with national government agencies in Thailand and Vietnam to do just this. Through identifying and evaluating the full range of market and non-market benefits of NbS, as well as considering appropriate financing and investment models, a clear pathway towards implementation at scale emerges.

The CRC for Water Sensitive Cities has developed and trialed the innovative Investment Framework For Economics of Water Sensitive cities (INFFEWS) extensively in Australia as well as in several cities in China. The current project applies these tools to the Mekong region, focusing on Thailand and Vietnam.

The project was launched in August 2020 and will conclude mid-2021.

The project links to other ongoing initiatives in the region, notably the Sustainable Urban Drainage Systems (SUDS) initative from GIZ/SECO in Rach Gia, Long Xuyen and Ca Mau, Vietnam, and the World Bank funded, ICEM implemented Integrated Water Resources Management Assessment Project in Phu Quoc, Vietnam (November 2020 - September 2021)

The outputs of the project will support wider, smarter application of NbS and improved flood management through detailed IUFM guides for both Thailand and Vietnam, a suite of case study briefs and supporting tools and resources.

Case studies

Four detailed case studies are demonstrating the IUFM process and supporting INFFEWS tools. These case studies will provide proof of concept for wider application across the Mekong.

The final product will be a persuasive suite of case study briefs developed in close coordination with national stakeholders which describe the context, strategic objectives, NbS options considered, IUFM solutions proposed, economic valuation approach, data inputs and financing and funding arrangements. Illustrative renderings of proposed NbS and a series of maps and technical diagrams will provide a clear outline for future plans integrating NbS and inspire national agencies to take these forwards.

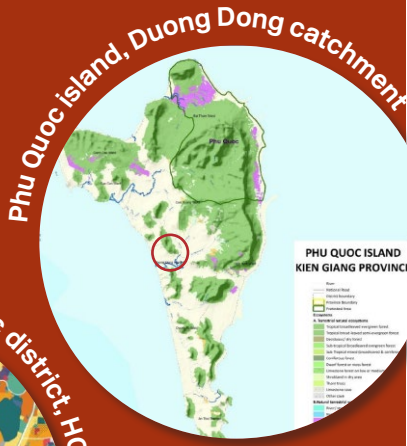
IUFM process

1. Define your urban system context
2. Undertake a flood risk assessment
3. Identify context-appropriate solutions
4. Value and choose solutions set
5. Identify appropriate financing and funding

Case study locations

After undertaking workshops, site visits and consultation with government stakeholders, four prioritized case study locations have been selected:

Vietnam



Thailand

Training Programme

A comprehensive, three-part training programme has been developed targeted at government policy makers, senior planners, strategy leaders and managers in Thailand and Vietnam. This programme provides a solid grounding in economic tools for NbS benefit valuation, identifying effective NbS for specific urban water management needs and developing and evaluating investment options. The case studies from Thailand and Vietnam are used as examples to apply the information from the training into a relevant context.

January 2021: Foundational training for national stakeholders (2 days)

This two-day training is tailored for Thailand and Vietnam, and will take place online and in-person with participants gathered in Bangkok and Hanoi, respectively (depending on restrictions). It will include presentations and Q&A sessions with international experts on foundational concepts and examples of NbS as multi-functional water infrastructure in Australia, China and beyond. It will also introduce the case studies and how the Benefit–Cost Analysis Tool is being applied. The sessions will be highly interactive and aim to foster a network and community of practice around using NbS for integrated urban flood management.

February 2021: Identifying Integrated Urban Flood Management and NbS interventions (1 day)

This virtual training will dive deeper into the case studies to explore how appropriate green and grey measures were selected and evaluated. Presentations will discuss issues and opportunities within the case studies sites and their catchments, together with potential hybrid, nature-based and non-structural solutions. The session will engage national stakeholders in identifying the benefits and costs of different options and refining the selected NbS to ensure measures are locally appropriate and effective.

March 2021: Valuation, financing and funding (1 day)

Building on the previous sessions, this virtual training will demonstrate how to quantify and compare the economic (dollar) benefits and costs of conventional and hybrid NbS solutions. It will also continue to build the pathway for implementation and upscaling of measures, exploring opportunities for financing and funding, as well as policy and planning barriers and opportunities.

The core outcome of this training programme will be a cohort of national champions who have the necessary tools and knowledge to identify, evaluate and quantify NbS within a robust economic framework.

Participants from the training programme will be ideally placed to advocate for broader implementation of NbS in Vietnam, Thailand and across the Mekong region.

The project was established by the World Bank and the Australian Government's Department of Foreign Affairs and Trade (DFAT), and is implemented by The Cooperative Research Centre for Water Sensitive Cities (CRCWSC) and the International Centre for Environmental Management (ICEM). It is supported by the Australian Water Partnership (AWP) as part of its Australia-Mekong Water Facility. For more information, please contact admin@icem.com.au.

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