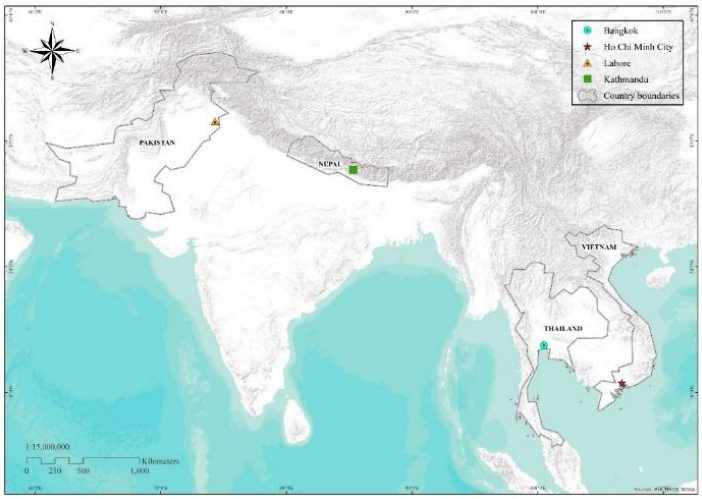
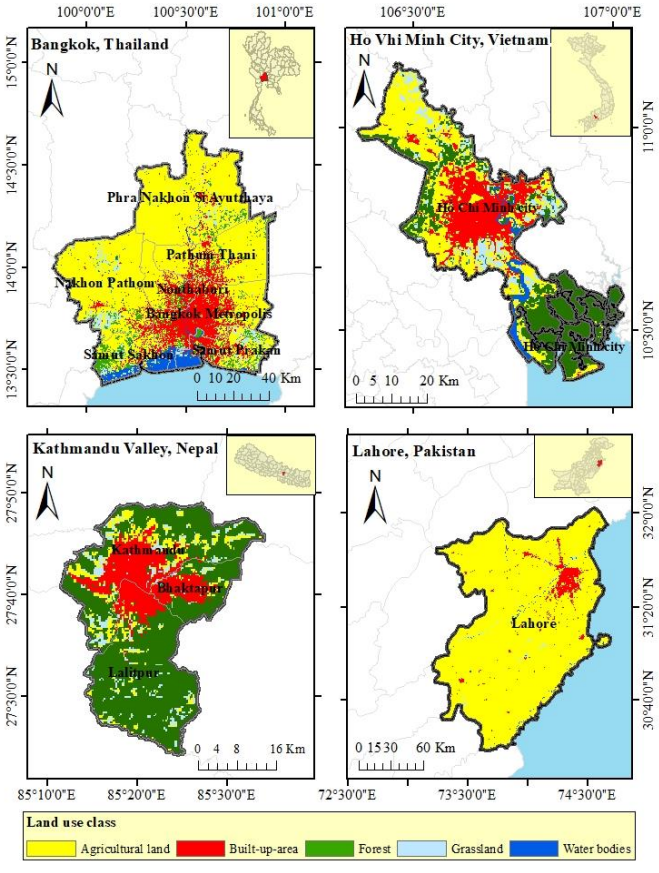
Mapping Groundwater Resilience to Climate Change and Human Development in Asian Cities

Project Title:	Mapping Groundwater Resilience to Climate Change and Human Development in Asian Cities
Project Cities:	Bangkok, Ho Chi Minh City, Kathmandu, Lahore
Project preriod:	1-Sep-2018 to 31-Aug-2021
Partners:	Asian Institute of Technology (AIT), Institute for Global Environmental Strategies (IGES), Japan, Department of Groundwater Resources (DGR), Thailand, Division of Water Resources Planning and Investigation for the South of Vietnam, Vietnam (DWRPIS), International Waterlogging and Salinity Research Institute, Pakistan (IWASRI) and Center of Research for Environment Energy and Water (CREEW), Nepal.
Funding:	Asia-Pacific Network for Global Change Research (APN)

Rationale





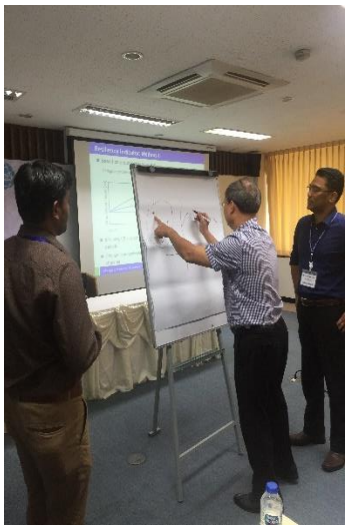
Groundwater plays an important role in the sustainable development of major cities in Asia. The strategic importance of groundwater for the city's water supply will probably intensify under climate change and human development (population growth, urbanization) in the future. Therefore, it is imperative to assess the resiliency of groundwater under climate change and human development for strategic planning and management of water resources in urban areas. The outputs of the project will enhance the understanding

of the impact of climate change and human development on groundwater system and will help to provide transparency in identifying the vulnerable or sensitive part of the system which will significantly enhance the chances of developing strategies for preparedness, response, and recovery against disruptive events.

Project Objectives

The aim of the project is to improve understanding of the impacts of climate change and human development on groundwater resources and local demand. The project will develop policy recommendations for sustainable groundwater development and management that will support adaptation and build resilience. There are four key objectives:

- To develop framework for the assessment of resiliency of groundwater to climate change and human development in urban environment.
- To assess the impact of climate change and human development on groundwater recharge and quality of four Asian cities.
- To map resiliency of groundwater of four Asian cities to climate change and human development.
- To develop evidence-based guidance on assessing how groundwater can support adaptation and build resilience to climate change.



Work Packages and Expected Outputs

Work Packages	Expected Outputs
WP1 Development of framework to access the resiliency of groundwater to climate change and human development	• A robust framework to assess the resiliency of groundwater to climate change and human development in urban environment
WP2 Climate change projection and projection of population and land use change	• Projected future climatic and human development (land use change & population growth) scenarios for four Asian cities
WP3 Assessment of climate change and human development impact on groundwater recharge and quality	• Projected future groundwater recharge and quality of four Asian cities under climate change and human development scenarios
WP4 Development of groundwater resiliency maps to climate change and human development	• An aquifer resilience map for four cities in Asia; based on existing geology and hydrogeological maps. • Prioritized adaptation strategies against climatic and human development impact and evaluation of highly prioritized strategies for the four Asian cities

Key Collaborations

The collaborators are: Institute for Global Environmental Strategies (IGES), Japan, Department of Groundwater Resources (DGR), Thailand, Division of Water Resources Planning and Investigation for the South of Vietnam, Vietnam (DWRPIS), International Waterlogging and Salinity Research Institute, Pakistan (IWASRI) and Center of Research for Environment Energy and Water (CREEW), Nepal.

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