



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

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*Asian Institute of Technology
Thailand*

1st Regional Workshop on “Groundwater Asia”

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About Project

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

Funding: Asia Pacific Network for Global Change Research (APN)

Duration: 3 years (September, 2018 – August, 2021)

Implementing Institutions: AIT

Budget: US\$ 92,980

Project Reference: <http://www.apn-gcr.org/resources/items/show/2087>

About Project

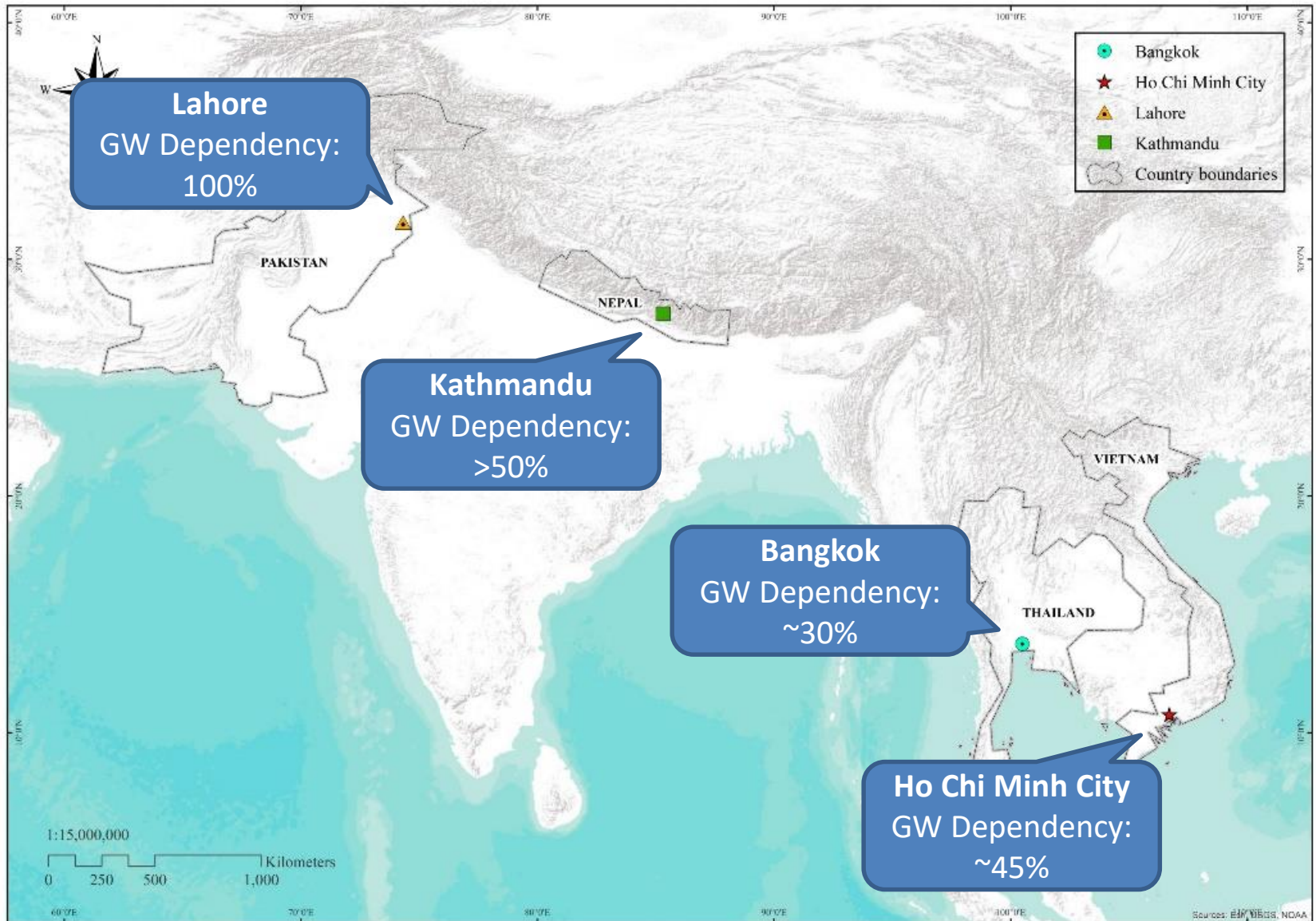
Project Leader:

- Dr. Sangam Shrestha (Asian Institute of Technology)

Project Collaborators:

- Dr. Mohana Sundaram (Asian Institute of Technology, Thailand)
- Dr. Binaya Shivakoti (Institute for Global Environmental Strategies, Japan)
- Dr. Oranuj Lorphensri (Department of Groundwater Resources, Thailand)
- Dr. Bui Tran Vuong, (Division of Water Resources Planning and Investigation for the South of Vietnam, Vietnam)
- Dr. Muhammad Basharat (International Waterlogging and Salinity Research Institute, Pakistan)
- Dr. Rabin Malla (Center of Research for Environment Energy and Water, Nepal)

Project Cities



Project Objectives

Overall Objective:

- to improve the understanding of the impacts of climate change and human development on groundwater resources of Asian cities

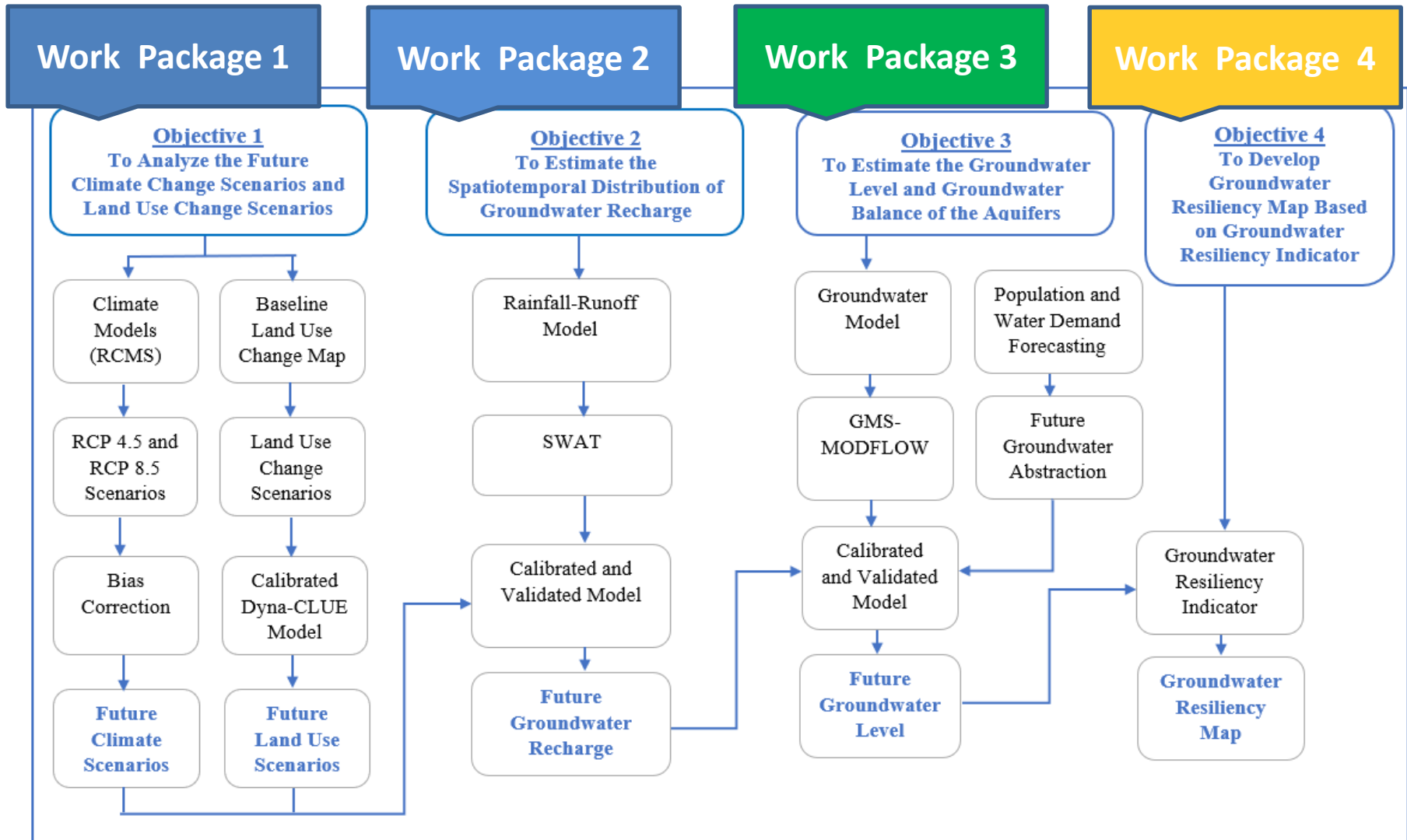


Project Objectives

Specific Objectives:

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

Project Methodology



Deliverables/Expected Outputs

1. A robust framework to assess the resiliency of groundwater to climate change and human development in urban environment.
2. Projected future climatic and human development (landuse change & population growth) scenarios for four Asian cities;
3. Projected future groundwater recharge and quality of four Asian cities under climate change and human development scenarios;
4. An aquifer resilience map for four cities in Asia; based on existing geology and hydrogeological maps.
5. Prioritized adaptation strategies against climatic and human development impact and evaluation of highly prioritized strategies for the four Asian cities.

Project Timeline

Activities	2018	2019				2020				2021		
	IVQ	IQ	IIQ	IIIQ	IVQ	IQ	IIQ	IIIQ	IVQ	IQ	IIQ	IIIQ
Web-site development and regular maintenance	X	X	X	X	X	X	X	X	X	X	X	X
Preparation of technical guidelines on groundwater resiliency framework	X	X	X									
E-discussion with country partners and experts			X		X	X						
Regional Workshop I			X									
Data collection for each cities				X	X							
Future climate change projection for four cities					X	X						
Future landuse change projection for four cities					X	X						
Future population projection for four cities						X						
Hydrological and groundwater model development for four cities					X	X	X	X				
Regional Workshop II									X			
Climate change impact assessment on groundwater recharge							X	X	X			
Population growth and landuse change impact on groundwater storage									X	X		
Population growth and landuse change impact on groundwater storage										X		
Preparation of groundwater resiliency maps											X	
Regional Workshop III (Final)											X	
Manuscript development for international journal						X		X			X	
Project report preparation, submission, and project closing												X

Workshops

Date (Venue)	Event	Participants
May, 2019 Regional Workshop I (Asian Institute of Technology, Thailand)	First Regional Workshop on Mapping groundwater resilience to climate change and human development in Asian cities	30
December, 2020 Regional Workshop II (Asian Institute of Technology, Thailand)	Second Regional Workshop on Mapping groundwater resilience to climate change and human development in Asian cities	20
August, 2021 Regional Workshop III (Asian Institute of Technology, Thailand)	Final Regional Workshop on Mapping groundwater resilience to climate change and human development in Asian cities	20

Budget (Year 1)

YEAR 1							
Budget Estimate: 2018/2019 (requested from APN)							
Title of the project: Mapping groundwater resilience to climate change and human development in Asian cities					Total US \$	APN	
A. Data Collection cost					Sub Total		
Data collection/purchase (4 cities * US\$ 1,500/city)					6,000		6,000
Domestic transportation for field activities or survey (@200/city*4 cities)					800		800
Other (e.g., developing technical guidelines for data collection, etc.)					800		-
					Total (A)	7,600	6,800
B. Part Time Fees					Sub total		
Part-time Research Assistant (@\$800/month for AIT and \$2,400 for collaborators)					17,400		12,000
					Total (B)	17,400	12,000
C. Estimated costs for Training Workshop (Name of the event).....							
C (I) TRAVEL							
Foregin Travel		Airfare	Participants	Sub Total			
Kathmandu-Bangkok-Kathmandu		1,100	1	1,100		1,100	
Ho Chi Minh - Bangkok -Ho Chi Minh		600	1	600		600	
Lahore - Bangkok - Lahore		900	1	900		900	
Tokyo-Bangkok-Tokyo		1,500	1	1,500		1,500	
Total Foreign Travel				4,100		4,100	
Airport transfer (to and from Airport: 2 ways*2 countries *8 person*US\$30/day)					1,920		1,920
				Total Travel	6,020	6,020	
C (II) Per Diem		Participants	Days	Rate	Sub Total		
Accommodation -Foreign Participant		4	4	90	1,440	1,440	
Daily Subsistence Allowance-Foreign Participant		4	4	35	560	560	
Daily Subsistence Allowance-Local Participant		4	4	35	560	560	
				Total Per diem	2,560	2,560	
C (III) Workshop facilities					Sub total		
Communication (Internet or Wi-Fi facility at venue)					400		-
Catering (Tea, coffee, reception/working lunch) (Lump Sum)					1,600		1,000
Copying/printing					1,500		1,000
Consumables (File, A4, Clips...etc)					1,000		1,000
Workshop venue					500		500
				Total cost for workshop facilities	5,000		3,500
					Total C (I)+C (II)+ C (III)	13,580	12,080
D. Publication cost / documentation cost							
Report preparation and editing					1,520		1,520
Developing background paper and workshop proceeding					940		940
Website development and regular maintenance					2,000		2,000
Computer service					500		-
Dissemination of report					500		-
					Total (D)	5,460	4,460
					ESTIMATED TOTAL COSTS FOR THE PROJECT [E] = (A)+(B)+(C)+(D)	44,040	35,340

Budget (Year 2)

YEAR 2							
Budget Estimate: 2019/2020 (requested from APN)							
Title of the project: Mapping groundwater resilience to climate change and human development in Asian cities					Total US \$	APN	
A. Data Collection cost					Sub Total		
Data collection/purchase (4 cities * US\$ 500/city)					2,000		2,000
Domestic transportation for field activities or survey (@200/city*4 cities)					800		800
Other (e.g., developing technical guidelines for data collection, etc.)					500		-
					Total (A)	3,300	2,800
B. Part Time Fees					Sub total		
Part-time Research Assistant (@\$800/month for AIT and \$2,400 for collaborators)					17,400		12,000
					Total (B)	17,400	12,000
C. Estimated costs for Training Workshop (Name of the event).....							
C (I) TRAVEL							
Foregin Travel		Airfare	Participants	Sub Total			
Kathmandu-Bangkok-Kathmandu		1,100	1	1,100		1,100	
Ho Chi Minh - Bangkok -Ho Chi Minh		600	1	600		600	
Lahore - Bangkok - Lahore		900	1	900		900	
Tokyo-Bangkok-Tokyo		1,500	1	1,500		1,500	
				Total Foreign Travel	4,100	4,100	
Airport transfer (to and from Airport: 2 ways*2 countries *8 person*US\$30/way)					1,920		1,920
				Total Travel	6,020	6,020	
C (II) Per Diem		Participants	Days	Rate	Sub Total		
Accommodation -Foreign Participant		4	4	90	1,440	1,440	
Daily Subsistence Allowance-Foreign Participant		4	4	35	560	560	
Daily Subsistence Allowance-Local Participant		4	4	35	560	560	
				Total Per diem	2,560	2,560	
C (III) Workshop facilities					Sub total		
Communication (Internet or Wi-Fi facility at venue)					400		-
Catering (Tea, coffee, reception/working lunch) (Lump Sum)					1,600		1,000
Copying/printing					1,500		1,000
Consumables (File, A4, Clips...etc)					1,000		1,000
Workshop venue					500		500
				Total cost for workshop facilities	5,000	3,500	
					Total C (I)+C (II)+ C (III)	13,580	12,080
D. Publication cost / documentation cost							
Report preparation and editing					1,000		500
Workshop proceeding					1,000		940
Website development and regular maintenance					500		500
Computer service					500		-
Dissemination of report					500		-
					Total (D)	3,500	1,940
					ESTIMATED TOTAL COSTS FOR THE PROJECT [E] = (A)+(B)+(C)+(D)	37,780	28,820

Budget (Year 3)

YEAR 3							
Budget Estimate: 2020/2021 (requested from APN)							
Title of the project: Mapping groundwater resilience to climate change and human development in Asian cities					Total US \$	APN	
A. Data Collection cost					Sub Total		
Data collection/purchase (4 cities * US\$ 500/city)					2,000		2,000
Domestic transportation for field activities or survey (@200/city*4 cities)					800		800
Other (e.g., developing technical guidelines for data collection, etc.)					500		-
					Total (A)	3,300	2,800
B. Part Time Fees					Sub total		
Part-time Research Assistant (@\$800/month for AIT and \$2,400 for collaborators)					17,400		12,000
					Total (B)	17,400	12,000
C. Estimated costs for Training Workshop (Name of the event).....							
C (I) TRAVEL							
Foreign Travel		Airfare	Participants	Sub Total			
Kathmandu-Bangkok-Kathmandu		1,100	1	1,100		1,100	
Ho Chi Minh - Bangkok -Ho Chi Minh		600	1	600		600	
Lahore - Bangkok - Lahore		900	1	900		900	
Tokyo-Bangkok-Tokyo		1,500	1	1,500		1,500	
		Total Foreign Travel		4,100		4,100	
Airport transfer (to and from Airport: 2 ways*2 countries *8 person*US\$30/way)					1,920		1,920
					Total Travel	6,020	6,020
C (II) Per Diem		Participants	Days	Rate	Sub Total		
Accommodation -Foreign Participant		4	4	90	1,440	1,440	
Daily Subsistence Allowance-Foreign Participant		4	4	35	560	560	
Daily Subsistence Allowance-Local Participant		4	4	35	560	560	
					Total Per diem	2,560	2,560
C (III) Workshop facilities					Sub total		
Communication (Internet or Wi-Fi facility at venue)					400		-
Catering (Tea, coffee, reception/working lunch) (Lump Sum)					1,600		1,000
Copying/printing					1,500		1,000
Consumables (File, A4, Clips...etc)					1,000		1,000
Workshop venue					500		500
					Total cost for workshop facilities	5,000	3,500
					Total C (I)+C (II)+ C (III)	13,580	12,080
D. Publication cost / documentation cost							
Report preparation and editing					1,000		500
Workshop proceeding					1,000		940
Website development and regular maintenance					500		500
Computer service					500		-
Dissemination of report					500		-
					Total (D)	3,500	1,940
ESTIMATED TOTAL COSTS FOR THE PROJECT [E] = (A)+(B)+(C)+(D)					37,780		28,820

Communications and Publications Plan

- Project website (project activities and data sharing)
- Background paper on climate change and groundwater resiliency in the participating cities
- Workshop Proceedings (Combined Proceedings of Workshop I, Workshop II and Workshop III)
- Two international peer-review journal publications: i) groundwater vulnerability of Asian cities to climatic and non-climatic changes; ii) Adaptation strategies for groundwater management of Asian cities under climate

Thank you very much!

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