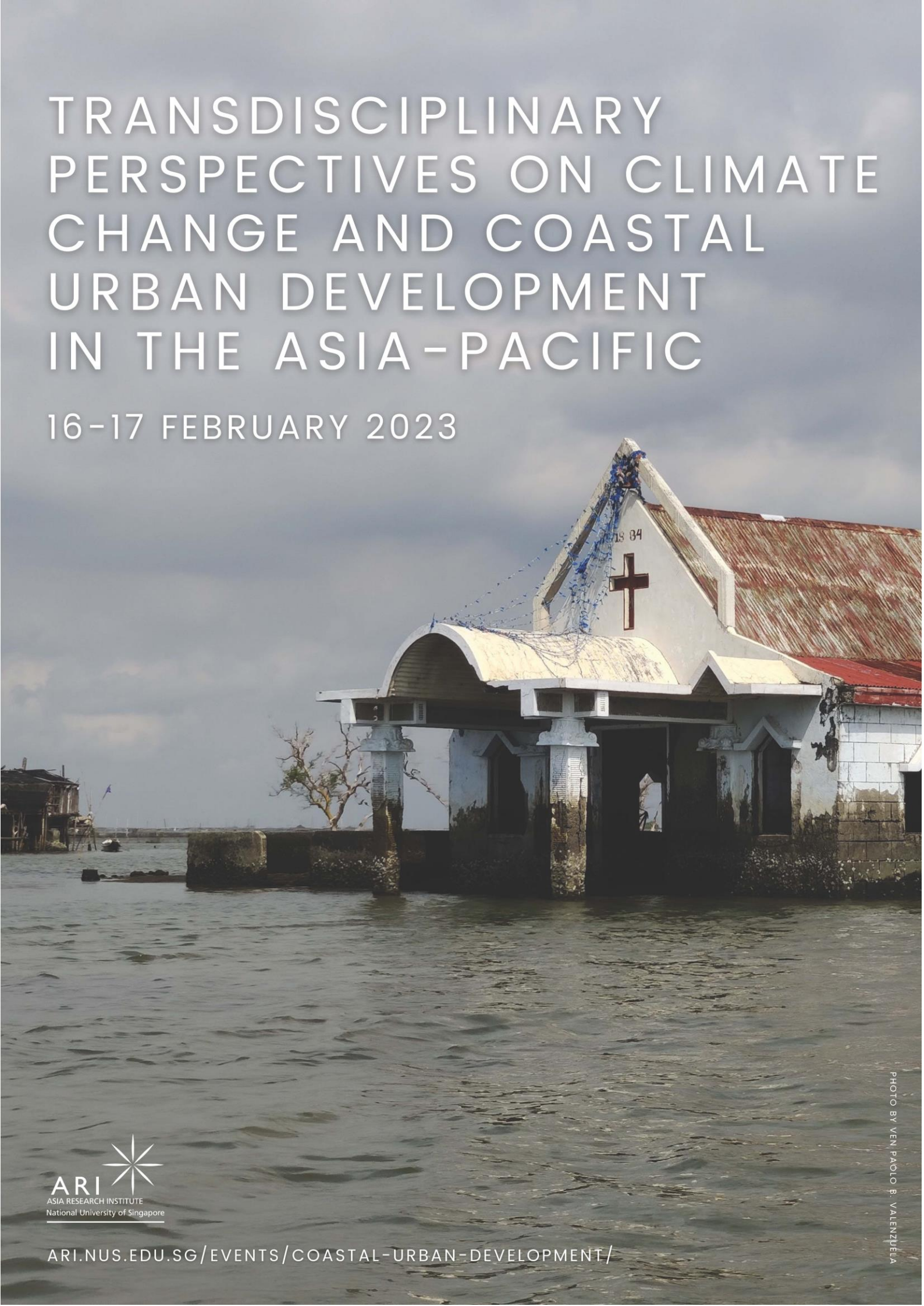
TRANSDISCIPLINARY PERSPECTIVES ON CLIMATE CHANGE AND COASTAL URBAN DEVELOPMENT IN THE ASIA-PACIFIC

16-17 FEBRUARY 2023



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64% of Asia's population will be urban by 2050, with most dwelling in coastal areas that are increasingly at risk to disasters and climate change[1]. Coasts provide economic opportunities but expose people to intensifying hazards, with Asian coastal cities already suffering increased economic losses due to flooding[2,3]. Coastal cities in the Asia-Pacific region are experiencing more frequent extreme weather events which have spurred calls to invest in defenses against climate change impacts[4,5]. Concurrent to this, the challenge of addressing rapid urbanization and demographic change also pressures cities to further develop their coastlines such as through land reclamation[6,7].

There are typically four identified categories of adaptation strategies for cities and settlements by the sea to consider: advance, protect, accommodate, and retreat[3]. However, no single strategy can address climate change impacts while enabling growth. Thus, the IPCC indicates that a portfolio of these four strategies is needed to have a suitable adaptation pathway that would address climate risk and sustainable development[3].

This workshop explores how cities in the Asia-Pacific are balancing the need to address climate change impacts and address urban development concerns. This includes comparative consideration of how different visions of the future attenuate or exacerbate existing vulnerability, especially with climate change. How do cities and its communities in Asia-Pacific address both climate change and urbanization? Who gains the most from these developments? Who are left behind? Do cities and urban communities in Asia-Pacific ensure just and equitable adaptation to climate change and disaster risks and how?

The workshop will bring together experts and emerging scholars from across disciplines to discuss the current state of adaptation strategies in coastal cities and settlements by the sea in the Asia-Pacific region. The workshop will be transdisciplinary in nature and will foster a discussion of science, scientific uncertainty, and the role of the Social Sciences to the understanding the social, political, and cultural dimensions of the current and prospective adaptation pathways that coastal cities are forging, negotiating, and navigating.

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CONVENORS

Dr Ven Paolo B. Valenzuela
Asia Research Institute, National University of Singapore

Prof Tim Bunnell
Asia Research Institute, and Department of Geography, National University of Singapore

SINGAPORE STANDARD TIME

THURSDAY, 16 FEBRUARY 2023

9:30 – 9:40	**WELCOME & INTRODUCTORY REMARKS** **TIM BUNNELL** | National University of Singapore **VEN PAOLO B. VALENZUELA** | National University of Singapore
9:40 – 10:40	**KEYNOTE ADDRESS** CHAIRPERSON **TIM BUNNELL** | National University of Singapore
9:40	Adaptation to Sea Level Rise in Urban Areas in East Asia: A Comparative Analysis between Cities **MIGUEL ESTEBAN** | Waseda University
10:10	QUESTIONS AND ANSWERS
10:40 – 11:00	BREAK
11:00 – 12:00	**SPECIAL PANEL: INTERACTIVE PRESENTATION** CHAIRPERSON **VEN PAOLO B. VALENZUELA** | National University of Singapore
11:00	Immersive 360VR Experiences to Understand Sea Level Rise in Small Islands **CHRISTOPHER CHADWICK** | John Moores University
11:10	Move Quietly and Tend Things: Tabletop Roleplaying Games as a Tool for Collaborative Speculation **KELLYNN WEE** | University College London
11:50	QUESTIONS AND ANSWERS
12:00 – 13:15	LUNCH
13:15 – 14:45	**PANEL 1: ADAPTATION PATHWAYS** CHAIRPERSON **MA. LAURICE JAMERO** | Manila Observatory
13:15	Uneven Adaptation Pathways Created by Climate Tourism in a Heavily-Subsiding Coastal Community in Peri-Urban Bangkok **DANNY MARKS** | Dublin City University
13:35	Identifying the Sensitivity and Local Adaptation to Climate Hazards among the Slum Dwellers in Khulna City, Bangladesh **MD. ABDUR RAKIB** | Begum Rokeya University, Rangpur
13:55	What Constitutes Public Support for Flooding Adaptation Policy? **ANH CAO** | The University of Tokyo
14:15	QUESTIONS AND ANSWERS
14:45 – 15:15	BREAK

SINGAPORE STANDARD TIME

THURSDAY, 16 FEBRUARY 2023

15:15 – 16:45	**PANEL 2: CLIMATE ADAPTATION AND POST DISASTER RECOVERY** CHAIRPERSON **VEN PAOLO B. VALENZUELA** | National University of Singapore
15:15	Addressing Loss and Damage in Small Islands in the Philippines **MA. LAURICE JAMERO** | Manila Observatory
15:35	Infrastructural Politics of Coastal Urban Development: Visions and Contestations Surrounding the Proposed Tacloban Causeway Project in Tacloban City, Philippines **DAKILA KIM P. YEE** | University of the Philippines Visayas Tacloban College
15:55	Conceptualising Pathways to Transformative Climate Justice: Examples from the Philippines **JUSTIN SEE** | University of Sydney
16:15	QUESTIONS AND ANSWERS
16:45 – 17:00	BREAK
17:00 – 18:30	**PANEL 3: DEFENSE AND ADVANCE STRATEGIES TO CLIMATE CHANGE** CHAIRPERSON **NURUL AZREEN** | National University of Singapore
17:00	Singapore's Future Waterfronts: Discussing the Effects of Climate Change through Scenario Building and Collective Narratives **ERICH WOLFF** | Nanyang Technological University
17:20	Floating Settlements as Part of Advance and Managed Retreat Strategies for Transformative Climate Adaptation: Past, Present, and Future **STEFAN HUEBNER** | National University of Singapore
17:40	Up and Down the Boulevard: Indonesia's First Coastal Reclamation Project for Urban Development **RYAN TANS** | Yale-NUS College
18:00	QUESTIONS AND ANSWERS
18:30	END OF DAY 1
19:00 – 20:00	WORKSHOP DINNER (FOR PRESENTERS, CHAIRPERSONS AND ORGANISERS ONLY)

SINGAPORE STANDARD TIME

FRIDAY, 17 FEBRUARY 2023

9:30 – 11:00	**PANEL 4: CLIMATE CHANGE AND URBAN PLANNING** CHAIRPERSON **YVONNE SU** | York University
9:30	Model City: Shifting Landscapes of Flood Risk Software and Infrastructure in Can Tho, Vietnam
VIA ZOOM	**LIZZIE YARINA** | Massachusetts Institute of Technology
9:50	Urban Resilience beyond the City: Flows of Water and Sand across Urban-Rural Divides in the Asia-Pacific
VIA ZOOM	**SOPHIE WEBBER** | The University of Sydney **WAHYU ASTUTI** | The University of Sydney
10:10	Coastal Planning: Dissonances among Scientists in the Making of an Island City
VIA ZOOM	**LAKSHMI PRADEEP** | National University of Singapore
10:30	QUESTIONS AND ANSWERS
11:00 – 11:15	BREAK
11:15 – 12:45	**PANEL 5: ECOSYSTEM-BASED ADAPTATION TO CLIMATE CHANGE** CHAIRPERSON **ANH CAO** | The University of Tokyo
11:15	Adaptive Deindustrialization: From Modernizing the Oceanfront to Ecological Restoration in Tangshan, China **COLLEEN CHIU-SHEE** | University of Hong Kong
11:35	Mangroves as Infrastructure in a Settler Colonial Town- West Papua **HATIB ABDUL KADIR** | Universitas Brawijaya
11:55	Nature – Human Wellbeing – Climate Resilience Nexus in Ecosystem-Based Adaptation for Coastal Defence: Lessons Learnt from Asian Coastal Cities **LAM THI MAI HUYNH** | The University of Tokyo
12:15	QUESTIONS AND ANSWERS
12:45 – 14:00	LUNCH

SINGAPORE STANDARD TIME

FRIDAY, 17 FEBRUARY 2023

14:00 – 15:30	**PANEL 6: INSTITUTIONAL, TECHNOLOGICAL, AND SECTORAL APPROACHES TO CLIMATE CHANGE** CHAIRPERSON **TIM BUNNELL** | National University of Singapore
14:00	What Does Climate Adaptation and Urban Development Mean for Asia's Colder Coastal Cities? Experiencing and Planning for a Changing Environment on the Southern Hokkaido Coast, Japan VIA ZOOM **LESLIE MABON** | The Open University
14:20	Visualizing Future Extreme Weather Events to Escape the Resilience Trap: Experimental Evidence from Hong Kong **TERRY VAN GEVELT** | Singapore Management University
14:40	Gaps and Opportunities for Urban Disaster Resiliency through International Standardization **DAVID N. NGUYEN** | Tohoku University **KENICHI ABE** | National Research Institute for Earth Science and Disaster Resilience **TAKAHIRO ONO** | Tokyo Marine Holdings and Asian Disaster Reduction Center
15:00	QUESTIONS AND ANSWERS
15:30 – 16:00	BREAK
16:00 – 17:00	ROUNDTABLE DISCUSSIONS
17:00 – 17:10	CLOSING REMARKS **VEN PAOLO B. VALENZUELA** | National University of Singapore **TIM BUNNELL** | National University of Singapore
17:10 – 17:30	PUBLICATION PLANS (FOR PRESENTERS, CHAIRPERSONS AND ORGANISERS ONLY)
17:30	END OF WORKSHOP

KEYNOTE ADDRESS

Adaptation to Sea Level Rise in Urban Areas in East Asia: A Comparative Analysis between Cities

Miguel Esteban[1]*, Ezekiel Grant[2], Anh Cao[2], Ven Paolo B. Valenzuela[3], Richard Crichton[2], Christopher Chadwick[4], Hiroshi Takagi[5], Ma Laurice Jamero[6], Nguyen Danh Thao[7], John Erick Avelino[8] & Motoharu Onuki[2]

[1] Faculty of Civil and Environmental Engineering, Waseda University
[2] Graduate School of Frontier Sciences, The University of Tokyo
[3] Asia Research Institute, National University of Singapore
[4] Faculty of Arts Professional and Social Studies, John Moores University
[5] School of Environment and Society, Tokyo Institute of Technology
[6] Resilience Collaboratory, Manila Observatory
[7] Department of Civil Engineering, Ho Chi Minh City University of Technology
[8] Department of Environment and National Resources

*esteban.fagan@gmail.com

There is a widespread narrative that many coastal communities will be forced to relocate in the face of future sea level rise (SLR). However, there is little evidence of any relocation taking place among densely populated coastal areas, despite several past examples of relative SLR. To better understand future adaptation pathways, this presentation will analyse a number of case studies of densely populated coastal regions around the planet, identifying and comparing the adaptation strategies employed at each location. In all cases residents of densely populated coastal areas have chosen in-situ adaptation strategies that have allowed them to remain in place. Nevertheless, adaptation processes appear to be sequential, retroactive, and typically lack long-term planning. While it is certain that future SLR will represent a significant financial strain on such communities, present day evidence provides no indication that any major coastal settlements will retreat in the later half of the 21st century, given the range of adaptation options available. Rather, evidence indicates that instead of retreating, densely populated communities will advance on the sea, in turn further complicating adaptation pathways.

Miguel Esteban is currently a Professor at the Research Institute of Sustainable Future Society, Faculty of Civil and Environmental Engineering of Waseda University, in Tokyo, Japan. He received his PhD in Coastal Engineering from Yokohama National University in Japan in 2007, and then he continued his work with Post-Doctoral Fellowships and the United Nations University Institute of Advanced Studies (UNU-IAS) and at Kyoto University. Subsequently, he also worked as an Associate Professor at Waseda University and The University of Tokyo. He has authored over 135 journal papers on a variety of subjects.

Immersive 360VR Experiences to Understand Sea Level Rise in Small Islands

Christopher Chadwick[1]*, Ma Laurice Jamero[2] & Miguel Esteban[3]

[1] Faculty of Arts Professional and Social Studies, John Moores University

[2] Resilience Collaboratory, Manila Observatory

[3] Faculty of Civil and Environmental Engineering, Waseda University

*c.j.chadwick@ljmu.ac.uk

According to the Intergovernmental Panel on Climate Special Report on the Ocean and Cryosphere in a Changing Climate, Chapter 4 (2019), sea level is likely to rise by 0.29m -1.10m. However, the way in which the effects of sea-level rise are communicated to coastal residents indicates that in many cases people still believe that the threat does not really apply to them. As a result, the authors set out to create a set of documentaries that highlight the problems being experienced by communities currently affected by coastal flooding caused by land subsidence as a proxy to understand future sea-level rise. The authors looked at the case of four island communities in Tubigon, Bohol, Philippines, which were severely affected by the 7.2-magnitude earthquake that struck central Bohol in October 15, 2013, inducing land subsidence that caused them to start experiencing complete inundation during high tides.

The research team documented the islanders in-situ community adaptation methods through film and photography (http://racingthekingtide.com/portfolio/). In 2019 the authors produced a 360 documentary on the islands to illustrate the islanders' experiences and communicate their stories to the local Philippine government using VR headsets (2020). This immersive experience placed the viewer in the submerged flooding environment of the King Tides and showed the community adaptation and flooding mitigation techniques. This experiential immersive documentary gave the islanders a voice and helped inform the municipal government of their own plans for adaptation rather than migrate to the mainland, creating further emotional empathy for their predicament.

Christopher Chadwick is a filmmaker/director who specialises in immersive documentary storytelling using 360VR alongside traditional linear film narratives. He is a Senior Lecturer at the United Kingdom's Liverpool John Moores University at the Liverpool Screen School. He is also the director of Hatch, a Liverpool based Creative Ltd Company that specialise in digital storytelling. Christopher is a fellow of the HEA Academy and works as an academic transferring knowledge from his professional practice to the teaching and learning environment at Liverpool John Moores University. His research interests are in interactive documentary, immersive and innovative documentary storytelling, new media convergent platforms and cinematography.

Ma. Laurice Jamero is the Resilience Coordinator of the Manila Observatory, where she works closely with local governments and civil society organizations across the Philippines to support their climate and disaster risk management, and adaptation planning efforts. At the regional and international level, she also volunteers her time at the Intergovernmental Panel on Climate Change – Working Group I (6th Assessment Report contributing author), World Climate Research Programme (consultant for climate education), Future Earth Coasts (Fellow), and Southeast Asia Science Advisory Network (working group member). Lau is passionate about engaging vulnerable communities in understanding climate risks and designing possible solutions, building on existing adaptive capacities and creating hope for the future through collaborative climate action. Lau earned her PhD degree in Sustainability Science at the University of Tokyo, where she studied climate change adaptation in small island communities.

Miguel Esteban is currently a Professor at the Research Institute of Sustainable Future Society, Faculty of Civil and Environmental Engineering of Waseda University, in Tokyo, Japan. He received his PhD in Coastal Engineering from Yokohama National University in Japan in 2007, and then he continued his work with Post-Doctoral Fellowships and the United Nations University Institute of Advanced Studies (UNU-IAS) and at Kyoto University. Subsequently, he also worked as an Associate Professor at Waseda University and The University of Tokyo. He has authored over 135 journal papers on a variety of subjects.

Move Quietly and Tend Things:
Tabletop Roleplaying Games as a Tool for Collaborative Speculation

Kellynn Wee
Department of Anthropology, University College London
kellynn.wee.20@ucl.ac.uk

How can tabletop roleplaying games be used to elicit collaborative speculations about a hopeful climate future? Modes of knowledge production and circulation have primarily splintered groups of people into authors and audiences, but games hold players laterally in a shared world of mutual conjecture, where "encounters in which the unexpected, the unforeseen, and the otherwise may be coproduced" (Dattatreyan and Marrero-Guillamón 2019). Tabletop roleplaying games are, as designer Tan Shao Han puts it, "long and unusual conversations" structured by specific talking rules that invite elements of contingency, collaboration, and conflict in pursuit of a shared narrative, allowing players to simultaneously make and explore the world. As part of my research about play, speculation, and collaborative storytelling in Singapore, I am designing a solarpunk-inspired TTRPG set in Southeast Asia. This game invites its players to co-create a hopeful climate future which centers the possibility of more-than-human relations as well as a politics of tending and reciprocal care. What is the role of games, both serious and unserious, in inspiring reflections and practices around environmental issues? In what assemblages of emotions, materials, and spaces can and do players dwell? If games are, as philosopher C. Thi Nguyen writes, a crystallisation of agency, then how can they create a space of dwelling for players to "do" a climate future? This paper reflects on the possibilities and constraints of multimodal ethnography in playing with speculative futures alongside everyday communities.

Kellynn Wee is a PhD candidate at the Department of Anthropology, University College London. Her research focuses on play, speculation, and contingency in the emergent worlds of tabletop roleplaying games in Singapore. She is a recipient of NUS's Overseas Graduate Scholarship and serves as a Senior Tutor at the Department of Sociology and Anthropology, National University of Singapore (NUS). She also worked at the Asia Research Institute's Migration Cluster as a Research Associate for several years, working and publishing in the fields of low-waged labour migration, the migration industry for domestic workers, and migration policy in Singapore.

Uneven Adaptation Pathways Created by Climate Tourism in a Heavily-Subsiding Coastal Community in Peri-Urban Bangkok

Danny Marks
School of Law and Government, Dublin City University
danny.marks@dcu.ie

Over 500 million people live in deltas worldwide. In particular, sea-level rise is increasingly becoming a threat to these people since it brings not only flooding but also higher and stronger storm surges which can cause land subsidence. This paper uses Khun Samut Chin, a peri-urban coastal community on the outskirts of Bangkok, Thailand as a case study to understand adaptation pathways in response to sea-level rise within deltas. The community has experienced heavy coastal erosion and has had to move three times. In response, they have built new mangrove forests and also built bamboo and stone dykes along the coast. To pay for their adaptation costs and supplement their incomes, they have built a number of homestays and created activities which tourists can do and sell items which tourists can purchase. They have successfully utilised the media to raise awareness of their situation as being at the forefront of climate change. In particular, the community has publicised its temple which is the only remaining building in the area where they had previously lived. The land around the temple has now subsided into the sea. Community leaders have been able to use this publicity as well as social media to attract local tourists who come from Bangkok and surrounding areas to stay for the weekend. While this community is an example of one which has successfully developed “climate tourism" as an adaptation pathway, it has also created different pathways since some have benefited more from tourism development than others. The paper discusses these inequities and argues that pathways within communities can differ as a result of household differences and power dynamics.

Danny Marks is an Assistant Professor of Environmental Politics and Policy in the School of Law and Government of Dublin City University. He has worked for a number of organizations in the region, including the World Bank’s East Asia and Pacific Governance Hub, the Rockefeller Foundation, ActionAid and the NGO Forum on Cambodia. Dr Marks completed his PhD dissertation, An Urban Political Ecology of the 2011 Bangkok Floods, at the University of Sydney. He received his MA in International Affairs from the Johns Hopkins School of Advanced International Studies. His research interests are political ecology, environmental justice, climate governance, disaster risk reduction, with a focus on Southeast Asia.

Identifying the Sensitivity and Local Adaptation to Climatic Hazards among the Slum Dwellers in Khulna City, Bangladesh

Md. Abdur Rakib
Department of Disaster Management, Begum Rokeya University, Rangpur
md.rakib@brur.ac.bd; rakibmamun_ju@yahoo.com

Md. Asif Newaz
Remote Sensing Division, Center for Environmental and Geographic Information Services (CEGIS)
asifku24@gmail.com

Md. Atiur Rahman
Department of Geography and Environmental Science, Begum Rokeya University, Rangpur
atiur.brur10@gmail.com

Climate change and its associated complex hazards increase the risk in coastal cities, including coastal and deltaic countries. Recent studies have highlighted the vulnerabilities of communities in coastal areas. It is critical to determine how vulnerable poor people are to coastal risks. This study intends to investigate the vulnerability of slum dwellers who reside in relatively low-lying areas of the coastal city of Khulna, Bangladesh, taking climatic hazards, sensitivity, and adaptive capacity into account. Data was collected using mixed approaches and analyzed using multivariate and multiple linear regression techniques. According to this study, 34% of individuals live below the poverty level, and around 60% are climate migrants. Principal component analysis (PCA) revealed that the current study area was found to be highly exposed with mainly flooding problems and salinity intrusions risks. Multiple regression study results demonstrated that flooding problems frequently increased sensitivity to inundation, waterlogging, salinity intrusions, drinking water crisis, property damage, and economic crisis. Waterlogging makes salinity intrusions more likely. Household adaptation efforts were significantly negatively correlated with household economy, raised floor foundation, evacuation & safety knowledge, embankment height and construction materials, cyclone shelter, and fresh drinking water availability, excluding building structure, and drainage improvement and maintenance. The analyses of climatic hazards, sensitivity, and adaptive capacity revealed that the slum people were highly vulnerable to potential hazards, which might lead to increased property loss and death in the near future. This research finding could be helpful for sustainable city planning, the reduction of losses and damages, and climate-induced risk management in coastal areas.

Md. Abdur Rakib is currently an Associate Professor of the Department of Disaster Management at Begum Rokeya University, Rangpur, Bangladesh. He has graduated from Jahangirnagar University, Savar, Dhaka, Bangladesh, with a Bachelor of Science (BSc) and a Master of Science (MSc) in Environmental Sciences. He then earned a Master's degree and a Doctor of Philosophy (PhD) in Sustainability Science from the University of Tokyo in Japan. He is passionate about doing research in the fields of climate change, coastal hazards, salinity intrusions, disaster risk reduction, adaptation, human migration, drinking water security, community resilience, and sustainability. He has published a good number of academic articles in Q1 journals and received many citations. He is also volunteering to review manuscripts for a number of scholarly journals.

Md. Asif Newaz is currently working as a Research Consultant at the Remote Sensing Division of Center for Environmental and Geographic Information Services (CEGIS), Dhaka, Bangladesh. He has completed a Bachelor of Science (BSc) and a Master of Science (MSc) in Environmental Science Discipline, Life Science School, Khulna University, Khulna, Bangladesh. He has expertise in GIS, remote sensing, NCL, Python programming, monitoring, evaluation, and documentation. His research interests include climate change, coastal hazards, salinity intrusions, local adaptations, social resilience, water quality, and water resource management. He has published several articles in reputed academic journals.

Md. Atiur Rahman is an Associate Professor, Department of Geography & Environmental Science, Begum Rokeya University, Rangpur, Bangladesh. He has completed his BSc (Honours) and MSc degrees in Geography and Environment from Jahangirnagar University, Savar, Dhaka, Bangladesh. He provides world-class teaching to the students and conducts innovative research on both the BSc (Honours) and MSc level. He is interested in research on physical geography, climate change and adaptation, biodiversity, floods, waste management, social security, and different environmental issues. He has also participated in different national and international workshops, seminars, conferences, and trainings. He has a number of publications in different reputed national and international academic journals.

What Constitutes Public Support for Flooding Adaptation Policy?

Anh Cao[1]*, Miguel Esteban[2] & Motoharu Onuki[3]

[1] Institute of Industrial Science, The University of Tokyo

[2] Faculty of Civil and Environmental Engineering, Waseda University

[3] Graduate School of Frontier Sciences, The University of Tokyo

*caovuquynhanh@gmail.com

Sea level rise induced flooding is projected to cause significant loss and damage to the low-lying coastal areas of many countries around the planet. Many vulnerable areas have already started to adapt to flooding at the household level, though some empirical studies indicate that informal adaptation is reaching its limit and that more formal countermeasures by governments are necessary to cope with the increased flood risks. In such cases, public support for flooding adaptation policy is crucial to ensure a successful and timely adaptation, as these strategies directly affect coastal residents. However, there is limited understanding on the mechanisms of factors that determine public support for flooding adaptation policy. Thus, this study proposed a causal model – Foundation of Adaptation Policy Support (FAPS) model integrated from the protection motivation theory and the risk information seeking and processing model. FAPS was tested using structural equation modeling with latent variables and data was collected from household questionnaire survey conducted in the Tokyo lowland areas (n = 388) with the super levee as the representative adaptation policy. The proposed FAPS model showed a good fit on the collected data, indicating that the strongest predictors of policy support include perceived policy effectiveness and the importance of flooding issue to individuals. Other importance predictors of policy support include knowledge about flooding, opinions of the surrounding people, and systematic processing of information related to floods by respondents. FAPS model set the foundation for understanding the mechanism of public support for adaptation policy and provided new insights in designing and planning such policy in practice.

Anh Cao obtained her PhD from the Graduate Program in Sustainability Science – Global Leadership Initiative, Graduate School of Frontier Sciences, The University of Tokyo. She has been working on adaptation trends in practices in Asian deltaic coastal cities, aiming to identify adaptation measures that are implemented to cope with flooding induced by sea level rise. She conducted various fieldworks in Tokyo and Ho Chi Minh City, interviews with city governments and household questionnaire surveys with residents. Her work also explores the social conflicts between stakeholders and limits to adaptation in these cities. Currently, Dr Anh Cao is working as a project researcher at the Institute of Industrial Science, The University of Tokyo, focusing on the advanced practice of watershed flood management using surface hydrological prediction system. Her work enhances the application of soft measures such as early warning system in flood risk reduction across Japan and other cities across the globe.

Miguel Esteban is currently a Professor at the Research Institute of Sustainable Future Society, Faculty of Civil and Environmental Engineering of Waseda University, in Tokyo, Japan. He received his PhD in Coastal Engineering from Yokohama National University in Japan in 2007, and then he continued his work with Post-Doctoral Fellowships and the United Nations University Institute of Advanced Studies (UNU-IAS) and at Kyoto University. Subsequently, he also worked as an Associate Professor at Waseda University and The University of Tokyo. He has authored over 135 journal papers on a variety of subjects.

Addressing Loss and Damage in Small Islands in the Philippines

Ma. Laurice Jamero & Ervin Brian Sumalinog
Manila Observatory
ljamero@observatory.ph

Securing financing for Loss and Damage resulting from climate extreme and slow-onset events is one of the key political agenda of developing countries at the latest UN Climate Change Conference. While scientifically the concept of loss and damage is often associated with residual risks and adaptation limits, the reality is that losses and damages can still happen – and are already happening – even with effective adaptation and before reaching hard and soft limits (IPCC AR6 – WGII, 2022). In order to move the discussion on financing forward and to achieve a decision on the mechanism by 2024, there is a need to clarify *exactly what losses and damages developing countries need developed countries to pay for*, and *how*.

To address this knowledge gap, this research examines the case of small island communities in Bohol, Philippines who have suffered from both climate extreme and slow-onset events, and explores their experiences especially of Non-Economic Loss and Damage (NELD). Suffering from chronic tidal flooding since 2013 and directly hit by Supertyphoon Rai in December 2021, the *quality of life* on the islands has been greatly reduced, with school children continuing to attend classes even during flooded days, families losing sleep during nighttime flooding and solid waste floating with the flood waters; especially the youth are experiencing *trauma* from strong winds and heavy rains and are suffering emotionally from losing their homes, fisherfolks too have *lost their means of livelihood* (e.g. damaged boats and fishing grounds) and yet relocation still remains the least preferred adaptation option.

While putting a dollar value on NELDs can be difficult, it is important to elucidate them and where possible identify the priorities of vulnerable communities in order to effectively restore their lives and livelihoods in the name of climate justice.

Ma. Laurice Jamero is the Resilience Coordinator of the Manila Observatory, where she works closely with local governments and civil society organizations across the Philippines to support their climate and disaster risk management, and adaptation planning efforts. At the regional and international level, she also volunteers her time at the Intergovernmental Panel on Climate Change – Working Group I (6th Assessment Report contributing author), World Climate Research Programme (consultant for climate education), Future Earth Coasts (Fellow), and Southeast Asia Science Advisory Network (working group member). Lau is passionate about engaging vulnerable communities in understanding climate risks and designing possible solutions, building on existing adaptive capacities and creating hope for the future through collaborative climate action. Lau earned her PhD degree in Sustainability Science at the University of Tokyo, where she studied climate change adaptation in small island communities.

Infrastructural Politics of Coastal Urban Development: Visions and Contestations Surrounding the Proposed Tacloban Causeway Project in Tacloban City, Philippines

Dakila Kim P. Yee
University of the Philippines Visayas Tacloban College
dpyee@up.edu.ph

The Philippines is one of the top countries that is most vulnerable to the risks posed by climate change and this is compounded by rising urbanization in the country where the urban population is expected to grow to 100 million by 2050. However, even as cities in the Philippines are defined by vulnerability and risks, its aspirations are still encoded with visions of growth and modernization as seen by the number of infrastructural projects that signal 'business as usual' in the country. Thus, a central question in Philippine cities is how do cities frame coastal urban development in the face of heightened vulnerability to climate risks? This paper explores this tension in the vision of coastal urban development in the aftermath of disasters through the urban political ecology in Tacloban City, Philippines, the ground zero of Typhoon Haiyan in 2013. Analyzing the post-disaster infrastructural aspirations of the city and contemporary iterations of these plans such as the Cancabato Bay Causeway project, I argue that coastal urban development in the Philippines in the context of climate induced risks is rooted in developmental ideology of large infrastructure as aspirations of progress and modernity. I also explore the strategies of civil society opposition to this project that draws from frames centered on environmental conservation This paper concludes by exploring the tension between the project and civil society opposition in the wider context of infrastructural politics in the Philippines.

Dakila Kim P. Yee is Assistant Professor of Sociology at the University of the Philippines Visayas Tacloban College. His research interest is on the urban political ecology of disaster reconstruction in the Philippines after typhoon Haiyan, post-disaster resettlement assessment, conservation and society studies and state-civil society relationship on environmental issues in the Philippines. His research appears in the following journals: *Critical Asian Studies, Peace Review and the Journal of Sociology* as well as book chapters in different edited volumes centred on these topics.

Conceptualising Pathways to Transformative Climate Justice: Examples from the Philippines

Justin See[1*], Emma Porio[2], Anne Shangrila Fuentes[3] & Brooke Wilmsen[4]

[1] Sydney Environment Institute, University of Sydney

[2] Department of Sociology and Anthropology, Ateneo de Manila University

[3] Centre for Sustainable Communities, University of Canberra

[4] Department of Social Inquiry, La Trobe University

[*]justin.g.see@gmail.com

There are recent calls to adopt a transformative approach to climate justice, as recent scholarship on climate change adaptation has increasingly moved from incremental responses towards transformative approaches that deliberately change systems to achieve just and equitable outcomes. However, a transformative understanding of climate justice is relatively new and evidence of how this could be achieved is still being explored in practice. In this paper, we conceptualise transformative climate justice as comprised of three subcomponents: (1) inclusive justice (seeking to ensure that no one, especially the most vulnerable, is left behind), (2) epistemological justice (drawing upon diverse knowledges and worldviews), and (3) restorative climate justice (healing and restoration of communities and the environment). We then present examples of how different local communities in the Philippines are experimenting with climate adaptation strategies that embody these three components of transformative climate justice. More specifically, we highlight case studies from communities in the Philippines, namely Barangay Itbayat (Batanes), Barangay Tambaliza (Iloilo), and Barangay Assumption (Koronadal City) and demonstrate how their adaptive strategies are helping to build community and ecological resilience. We find that a deliberate and purposive redistribution and sharing of power is necessary to enable transformative futures to emerge. We conclude by arguing that inter- and trans-disciplinary collaboration, recognition of diverse ways of knowing and doing, and a preferential option for the most vulnerable can help expand possibilities for transformation and climate justice.

Justin See is a postdoctoral research associate at the Sydney Environment Institute at the University of Sydney. He has more than 10 years of research experience in the field of climate change adaptation, vulnerability, and climate justice. His research explores the complex social, political, and economic inequalities brought about by mainstream development responses to climate change and highlights diverse pathways to adaptation that draw upon local assets, strengths, and innovations. He has published his work in climate change journals such as Global Environmental Change, Climatic Change, Climate and Development, and Journal of Flood Risk Management. Dr See obtained his PhD in Community Planning and Development at La Trobe University and was awarded as the 2020 International Student of the Year at the Victorian International Education Awards.

Emma Porio is Professor, Department of Sociology and Anthropology, School of Social Sciences Ateneo de Manila University and Science Research Fellow, Manila Observatory. She is currently the President of the International Sociological Association (ISA), Clinical/Sociology Division (2019-2023) and of the Asia Pacific Sociological Association (2020-2023).

Anne Shangrila (Shang) Fuentes recently commenced her PhD studies as a John Allwright Fellow in the Centre for Sustainable Communities and Faculty of Education at the University of Canberra. Her background includes almost 10 years spent working in agricultural extension projects funded by Australian Centre for International Agricultural Research (ACIAR) and the Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD), and at the same time, a university-based teaching and research career over the past 15 years. Her research interests include gender, sexuality, social capital, and agricultural extension in conflict-vulnerable areas of Mindanao, the Philippines.

Brooke Wilmsen is a Senior Lecturer in Development Studies in the School of Humanities and Social Sciences at La Trobe University, Australia. Her research interests include forced displacement, resettlement, climate adaptation, social protection and agrarian change. Brooke is the author of many works critically examining resettlement that have been published, for example, in Global Environmental Change, World Development, Development and Change, Geoforum, Progress in Human Geography and Asia Pacific Viewpoint.

Singapore's Future Waterfronts: Discussing the Effects of Climate Change through Scenario Building and Collective Narratives

Erich Wolff, Gabriel Kaprielian & Perrine Hamel
Asian School of the Environment, Nanyang Technological University
erich.mw@ntu.edu.sg

Acknowledging the changing nature of urban waterfronts in the age of climate change, this article discusses the untapped power of virtual platforms in creating collective narratives that can make scientific knowledge more accessible. We draw on the experiences of the project "Postcards from the Future" to interrogate how hypothetical stories about the future of waterfronts can support resilience building. The project consists of an exhibition, a virtual reality tour and a subsequent hackathon, which will provide opportunities for collective discussions on resilience to climate change. Exploring multiple types of knowledge, such as historic archives and scientific predictions about sea-level rise, the project constructs new narratives about the political, social and biophysical aspects of changing waterfronts. We discuss how this type of approach can (i) invite participants to share memories and imagine possible futures, (ii) bridge historic barriers between disciplines and (iii) reshape the relationship between researchers and society. We show that the project serves as an example of how collective narratives can be created through approaches such as scenario building and storytelling, which have the potential to reshape how we conceptualise, analyse, and design future landscapes. Building on these experiences, we highlight gaps and important questions for future projects based on collective platforms for scientific communication and education on the effects of climate change. We propose future lines of investigation on how similar projects can offer opportunities for diverse audiences to connect with the science of climate change, ensuring that the future of urban waterways is envisioned and decided collectively.

Erich Wolff is a civil engineer and interdisciplinary research fellow at the Nanyang Technological University (NTU, Singapore). His work delves into citizen science, climate change adaptation and flood risk management. His most recent publications examine citizen science and other participatory methods for addressing disasters and interrogate how communities can contribute to more nuanced and democratic decision-making in the realm of flood risk management.

Gabriel Kaprielian is an Assistant Professor of Architecture at Temple University and Director of the Design and Innovation for Sustainable Cities program at UC Berkeley. His research explores the interconnected relationship of the built and natural environment to inform more resilient and livable cities. The focus of his current work is on climate change adaptation and mitigation. He is the recipient of a 2021-22 Fulbright U.S. Scholar award, where he worked in collaboration with scientists at the Earth Observatory of Singapore on the topic of sea-level rise adaptation that leverages augmented reality technology. He has previously served as Lead Artist to Peru in 2020 for the American Arts Incubator, Fellow at the Exploratorium: Museum of Science, Art and Humanities, and as an Artist-in-Residence at Autodesk.

Perrine Hamel is an Assistant Professor at NTU's Asian School of the Environment. Her research group examines how green infrastructure can contribute to creating resilient and inclusive cities in Southeast Asia. Prior to joining NTU, Perrine was a senior scientist at Stanford University with the Natural Capital Project, a global partnership aiming to integrate the benefits provided by nature into major societal decisions. There, she led the Livable Cities program, an initiative aiming to understand and elevate the role of nature in urban environments.

Floating Settlements as Part of Advance and Managed Retreat Strategies for Transformative Climate Adaptation: Past, Present, and Future

Stefan Huebner
Asia Research Institute, National University of Singapore
arihust@nus.edu.sg

The Intergovernmental Panel on Climate Change (IPCC) recently evaluated large floating structures as an experimental but noteworthy advance strategy for urban climate adaptation (Glavovic et al. 2022). In 2021, the Global Center on Adaptation, located in Rotterdam, Netherlands, moved to its floating office, representing floating adaptation. Currently, UN-Habitat, the metropolitan government of Busan, South Korea, and ocean technology company Oceanix are working on a large floating settlement that will adapt to sea level rise and increase the city's flood resilience. Taking a historical perspective, this paper investigates how floating settlements can serve as part of advance and managed retreat strategies for transformative climate adaptation. Floating or elevated (stilted), low-tech accommodations have a millennia-old history in Asia as tools for adaptation to changing water levels during monsoon-caused river and coastal floods. Moreover, the first boom in floating settlement designs during the 1950s and 1960s was centered on Tokyo Bay, Japan, and shared multiple ecological design considerations with current projects, including disaster resilience and urban footprint reduction. Based on examples from the 1960s-1970s and from the 2010s-2020s, this paper argues that floating settlements can serve as advance strategies in places where local conditions enable both their installation and a managed retreat of traditional forms of terra-centric urbanization and industrial development. Marine spatial planners and urban planners nevertheless need to evaluate the impacts of multiple ecological impacts, such as noise and light pollution, water temperature changes, underwater shading, and translocation of invasive species, and address a mentality change that includes aesthetic questions, the role of technology, and disagreement about the use of urban waterfronts.

Stefan Huebner is a historian interested in environmental and oceanic topics and Senior Research Fellow at the Asia Research Institute, National University of Singapore. He was U.S. SSRC Transregional Research Junior Scholar Fellow at Harvard University, Fulbright Scholar also at Harvard, History and Public Policy Fellow at the Wilson Center, and Postdoctoral and Doctoral Fellow at the German Historical Institute Washington and the German Institute for Japanese Studies Tokyo. Currently, he is Co-Principal Investigator of the Singapore SSRC project on "Linking the Digital Humanities to Biodiversity History in Singapore and Southeast Asia". He is working on his second book, a history of the industrialization and urbanization of the ocean.

Up and Down the Boulevard: Indonesia's First Coastal Reclamation Project for Urban Development

Ryan Tans
Philosophy, Politics and Economics, Yale-NUS College
rtans@yale-nus.edu.sg

Nono Sumampouw
Independent researcher

In recent years, numerous coastal reclamation projects, which create new land by infilling coastal waters and wetlands, have been undertaken across Indonesia. In cities and regions vulnerable to sea level rise, these projects offer the promise of advancing the coastline while also creating new economic opportunities and tax revenue streams. As a result, coastal reclamation has gained the attention of scholars who hope that such projects can offer a means of coastal adaptation that is cost-effective even for cash-strapped city governments in middle- and low-income countries. However, a closer look at the history of coastal reclamation in Indonesia casts doubt on such rosy assessments. Specifically, Manado's Boulevard project, Indonesia's first reclamation project undertaken specifically for urban development, predates fears of sea level rise, yet it provided the model for the wave of projects that swept across Sulawesi Island in the 2000s and 2010s. As a result, Indonesia's current generation of reclamation projects seem to be designed primarily for the purposes of bourgeois urban development, and to offer only limited potential to build climate resilience. To support our argument, we trace the evolution of coastal reclamation over three decades in Sulawesi. We begin with a detailed history of the planning and construction of Manado's Boulevard project. We then trace the echoes of the Boulevard project across subsequent reclamation in Bau Bau, Makassar, Palu, Kendari, Mamuju, Bitung, and Manado. Based on these comparisons, we find that climate resilience is at best an afterthought in the planning of coastal reclamation in Sulawesi. Rather, reclamation is designed to benefit property developers, provincial governments, and wealthy consumers at the expense of the coastal communities most vulnerable to climate change.

Ryan Tans is a Lecturer in Philosophy, Politics and Economics at Yale-NUS College. He studies business politics, urban governance, and climate change adaptation in Southeast Asia. His work has appeared in publications such as *Journal of East Asian Studies*, *Asian Politics and Policy*, and the East-West Center Policy Studies series.

Nono Sumampouw is the author of *Menjadi Manado: Torang Samua Basudara, Sabla Aer, dan Pembentukan Identitas Sosial*, published by Gadjah Mada University Press. He frequently writes on topics related to culture and politics in North Sulawesi. He holds an MA in anthropology from Gadjah Mada University.

Model City: Shifting Landscapes of Flood Risk Software and Infrastructure in Can Tho, Vietnam

Lizzie Yarina
MIT Department of Urban Studies and Planning
lizziey@mit.edu

Technical representations of the world have the power to shape what is seen and what is valued. In the realm of water management and climate change adaptation, hydrological models inform both the understanding of water problems and design of solutions. Models serve as engines, reshaping social and hydrological conditions, though not necessarily in their image.

This article interrogates the relationship between representation and reality in an ongoing project to create a 'smart' flood management system for the city of Can Tho, Vietnam's fourth largest city located in the heart of the low-lying Mekong Delta. The project includes the creation of a perimeter levee system, and the design of a model which will operate sluice gates that control tidal and pluvial flooding based on hydrological data of the city and the surrounding region. At the same time the model attempts to create a city-wide picture of flood risks, local-scale adaptations shift sites and intensities of urban flooding at a rate far quicker than modelers can keep pace. Based on spatial ethnographic fieldwork in Can Tho and interviews with modeling consultants in Hanoi, Ho Chi Minh City, and the Netherlands, I ask how the ways in which environmental problems are represented transform the worlds created by their solutions; and who may be left out of these envisioned interventions. As modeling technologies become more advanced, and adaptations more urgent in light of the climate crisis, I reflect on material and socio-political implications of the models we use to adapt to changing environmental risks.

Lizzie Yarina is a doctoral candidate in the MIT Department of Urban Studies and Planning and a researcher in the MIT Leventhal Center for Advanced Urbanism. Her current research investigates the spatial politics of climate change adaptation in delta regions. Supported by a Fulbright-Hays Dissertation Research Award under the title "Modeling the Mekong: Climate Adaptation Imaginaries in Vietnam's Mekong Delta" her fieldwork includes research in Vietnam, the Netherlands, Thailand and Cambodia. Yarina is presently co-editing a volume on the relationship between climate models and the built environment with a multi-disciplinary team of editors and contributors. Previously she was a Research Scientist at the MIT Urban Risk Lab, and has worked as an architectural designer and disaster risk management consultant. Yarina holds a joint Masters in Architecture and Masters of City Planning from MIT, and a BS in Architecture from the University of Michigan.

Urban Resilience beyond the City: Flows of Water and Sand across Urban-Rural Divides in the Asia-Pacific

Sophie Webber & Wahyu Astuti
School of Geosciences, The University of Sydney
Sophie.webber@sydney.edu.au

Adapting to climate change in the context of rapid urbanisation in cities in Indonesia and Fiji requires governing flows of water and sand. For instance, capital cities Jakarta and Suva suffer from chronic flooding and coastal inundation, at the same time as inadequate access to clean water. Thus, climate change adaptation means carrying more water through pipes and controlling the flows of water through the city and along their coastal edges. On the other hand, these efforts to manage water flows require infrastructures that mobilise sand and other aggregate, including excavating sand for engineering projects such as reclamation and river embankment and for alleviating blocked drainage and waterways. In this paper, we analyse how this movement of water and sand mediates urban-rural linkages under climate change in the greater Jakarta and greater Suva areas. Our examination troubles narratives of urban exploitation and domination of rural hinterlands in pursuit of climate protection, instead showing how various actors speculate on these flows of resources. As such, we characterize urban climate futures as constituted by dynamic flows beyond city limits.

Sophie Webber is Senior Lecturer and ARC DECRA Research Fellow in the School of Geosciences at the University of Sydney. Sophie is an economic and environmental geographer, who studies the political economies of climate change adaptation and urban resilience in Southeast Asia and the Pacific. She is currently working on two research projects: the first concerns flows of water and sand to build protective infrastructure in the face of climate change and rapid urbanisation; and the second focuses on the role of climate finance in climate-changing capitalism.

Coastal Planning: Dissonances among Scientists in the Making of an Island City

Lakshmi Pradeep
South Asian Studies Programme, National University of Singapore
lakshmirpradeep@u.nus.edu

This paper discusses making a 'climate resilient' city (Kavaratti) in an archipelago in the Indian Ocean (Lakshadweep Islands). Since Kavaratti is a coral atoll belonging to the Arabian Sea coast of India, corals and climate change take the centre stage in coastal planning. This paper examines the policies of coral conservation and island protection that guides the creation of this 'smart island city'. It mainly aims at understanding the nature of scientific planning which gets materializes as technoscientific interventions, infrastructural development, and promotion of ecotourism. They stand as the promises of island's future (Anand, Gupta & Appel, 2018). There are several varying and competing viewpoints on the question of planning among the scientists that this paper engages. For example, while one group of scientists emphasise on economic development, another aim at 'ridge to reef' development. These dissonances among the scientists will be analysed through the coastal zone regulation and environmental impact assessment reports and contestations against them. Interestingly, the varying group of scientists use the same language of 'fragility' and 'vulnerability' of the island to produce contrary viewpoints. Based on ethnography, the paper brings out such dissonances and entanglements of science and politics in the development of an island region, which is already witnessing protests from its inhabitants against land grabs.

Lakshmi Pradeep is a PhD candidate at the South Asian Studies Programme, National University of Singapore. Her research interests include Anthropology, Political Ecology, Science and Technology Studies and Island Studies. Her doctoral research is an ethnography on coral conservation, climate change and island protection of the Lakshadweep Islands in the Indian Ocean. She holds an MPhil degree in Sociology from Jawaharlal Nehru University and Integrated Masters in Sociology from University of Hyderabad, India. She is a recipient of the IJURR Foundation Write-Up Grant (2022).

Adaptive Deindustrialization: From Modernizing the Oceanfront to Ecological Restoration in Tangshan, China

Colleen Chiu-Shee
Department of Urban Planning and Design, University of Hong Kong
ccs32@hku.hk

In modern history, coastal cities benefitted from their geographic locations and flourished with industrialization. They are among the first to confront compounding problems of urbanization and environmental degradation. Amid deindustrialization, many coastal cities have explored adaptive and environmentally conscious strategies to sustain development. Tangshan—a major city in China's Bohai Bay Rim—exemplifies coastal cities that are searching for greener post-industrial futures. Since the early 2000s, Tangshan has first built Caofeidian Eco-City on China's largest reclaimed land and then Nanhu Eco-City at its historical urban core. The former is China's first "techno-scientific eco-city" constructed during a period of "new city fever" by "taking land from the ocean." The latter, dubbed the "green lung," restored Tangshan's earthquake-struck, post-mining brownfields into a central park for the city or even the region. This paper investigates Tangshan's transitions in search of contextualized and transferable lessons for what I call "adaptive deindustrialization" elsewhere. Drawing insights from literature review, stakeholder interviews, and extensive fieldwork, I compare practices at Caofeidian and Nanhu, which represent oceanfront eco-modernization and ecological restoration, respectively. Tangshan's trial and error suggest learning by local decision-makers and their shifting approaches from growth to restoration and from technocratic determinism to the principle of "ecology first." As the world experiences economic shocks and heightened climate risks, more cities are at a fork in the road, facing the paradox of economic development and environmental protection. This paper provides a comparative and relational portrayal of such dilemmas to inform future practitioners and policymakers about priorities in adaptive deindustrialization.

Colleen Chiu-Shee is Assistant Professor in the Department of Urban Planning and Design at the University of Hong Kong. She is also an associate at National University of Singapore's Asia Research Institute (Urbanisms Cluster). Colleen practiced architecture and urban design in China and the U.S. and holds a PhD in Urban and Environmental Planning and Design from Massachusetts Institute of Technology. She is interested in innovative spatial and sociopolitical interventions that seek to transcend preexisting paradigms to promote environmental sustainability and social justice. Her dissertation, titled *Ecological City Design and Planning: How China Expands Urban Ecology, Institutional Learning, and Cultural Shifts through the Evolving Eco-Developments*, examines how developing countries forge adaptive capacity under the pressure of environmental degradation and urbanization through the lens of eco-developments in China.

Mangroves as Infrastructure in a Settler Colonial Town- West Papua

Hatib Abdul Kadir
Department of Anthropology, Universitas Brawijaya
hatibabdulkadir@ub.ac.id

This research study delves into the role of mangroves as organic infrastructure to support people's livelihoods as well as combat climate change. I examine the challenges of restoring mangrove forests in the face of urbanization and housing development that encroach on coastal mangrove areas. From my research, I found that government offices are benefiting from the climate change discourse as a new awareness, and they utilize mangrove forestry to address the climate crisis. While the one who responsible for managing mangrove planting projects are Papuan disadvantaged communities who still left behind from urban development. This research has been conducted since December 2021 in Sorong City, West Papua.

Hatib A. Kadir is a cultural anthropologist and assistant professor in the Department of Anthropology at Universitas Brawijaya, Indonesia. He finished his doctorate from University of California, Santa Cruz. Hatib is currently involved in a research project with SEACOAST (Southeast Asian Coastal Society) University of California, Santa Cruz on the history of the urban infrastructure of Sorong city, West Papua. His research interest is in studies of urban society, race and ethnic politics, frontier studies, capitalism and development in the periphery, and environmental humanities. One of his current publication is "Women's Grievances on Land Dispossession in Papuan Independent Films" on *eTropic Journal*. Special Edition, Tropical Landscapes: Nature-Culture Entanglements. Vol 21, no 1. https://journals.jcu.edu.au/etropic/article/view/3843

Nature – Human Wellbeing – Climate Resilience Nexus in Ecosystem-Based Adaptation for Coastal Defence: Lessons Learnt from Asian Coastal Cities

Lam Thi Mai Huynh[1]*, Jie Su [2] & Alexandros Gasparatos [2,3]

[1] Graduate Programme in Sustainability Science - Global Leadership Initiative, The University of Tokyo

[2] Institute for Future Initiatives, The University of Tokyo

[3] Institute for the Advanced Study of Sustainability, United Nations University

*lam.huynh@s.k.u-tokyo.ac.jp

Climate change-induced disasters such as sea-level rise, increased climate variability, and more frequent droughts, floods, and typhoons have been posing significant threats to coastal cities across the world. Traditional coastal defences against contemporary hazards such as hard engineering infrastructures are becoming unsustainable to keep pace with climate change. In recent years, ecosystem-based adaptation (EbA) has received growing attention as a more sustainable and cost-effective approach to coastal defence. As EbAs concept is rooted in Euro-American settings, research is lacking in understanding the current status of implementing EbAs and how 'ecosystem-based' or 'nature' manifests themselves in coastal defence in Asian cities. There is a need for broader recognition of nature, human well-being, and climate resilience in the discussion related to EbAs. Using multiple case studies in Singapore, China, and Vietnam, we develop the framework of 'Nature – human wellbeing – climate resilience nexus' and assess the current implementation stage of EbAs, the distinct local human-nature relationship, as well as the synergies and trade-offs that arise from the case studies. Our research opens up new horizons in climate change adaptation research by shifting the focus of coastal adaptations beyond the prevailing narrow ecological and economic perspective, to one that incorporates complex causal relationships between nature, human well-being, and climate resilience. The findings from multiple case studies in Asia can have broader applicability to similar coastal areas globally and yield societal values for decision-makers and stakeholders in the climate change community.

Lam Huynh is currently a PhD candidate in Sustainability Science and Global Leadership Initiative at the University of Tokyo. She obtained an MSc in Sustainability Science from the University of Tokyo and a BSc in Sustainability and Environmental Management from the University of Leeds, the UK. She previously served as a public officer in Vietnam from 2016 to 2019, specialising in urban planning and natural resources management. She is currently receiving the Japan Society for the Promotion of Science (JSPS) Fellowship for Young Scientists for her PhD research. She was also a member of the *Global Adaptation Mapping Initiative*, which is a collective global project with a network of 126 climate change scientists globally to synthesise global data on climate change adaptation to inform IPCC Assessment Report VI. She is interested in the evaluation of ecosystem services, human wellbeing assessment, urban planning and sustainability, and adaptation and vulnerability assessment to climate change. Her current PhD research focuses on mapping the current evidence of ecosystem-based adaptation effectiveness globally and systematically conducting an effectiveness comparison between the coastal ecosystem-based adaptations and traditional engineering solutions at different contexts.

What Does Climate Adaptation and Urban Development Mean for Asia's Colder Coastal Cities? Experiencing and Planning for a Changing Environment on the Southern Hokkaido Coast, Japan

Leslie Mabon
School of Engineering and Innovation, The Open University
leslie.mabon@open.ac.uk

The social dimensions of climate adaptation for colder coastal cities in Asia are relatively under-studied compared to the tropics. Asia's colder coastal cities face multiple adaptation challenges such as sea level rise, loss of sea ice, changes in marine ecosystems and more frequent storms. Likewise, Asia's colder coastal cities face distinct urban development pressures due to population change and decline, changes in shipping routes, or emissions reduction imperatives. As sites for carbon-intensive infrastructure such as power stations, refineries and steelworks, cold-climate coastal cities are themselves contributors to climate change.

This paper therefore evaluates the views of citizens and stakeholders towards climate adaptation in cities on the south coast of Hokkaido, northern Japan. Based on interviews and ethnographic field observation in Tomakomai, as well as the nearby cities of Muroran and Yubari, I argue that the reliance of the region on petrochemicals, steelworks and thermal power means urban development and resilience-building must support a just transition for the region's workers and economy. Nonetheless, citizens and stakeholders from industry and government in Tomakomai use everyday encounters with snow, ice and low temperatures to articulate attitudes towards climate change, and also acknowledge the combination of cold seas, cold winds from the Pacific Ocean and winter snowfall is critical to local identity by enabling the playing of ice hockey and the landing of large Sakhalin surf clams. I therefore argue the centrality of cold weather on the seas and coasts to sustaining culturally-meaningfully practices gives a pathway to communicating the need for resilience planning and just development of low-carbon infrastructure in colder Asian coastal cities, where climate risks may otherwise be less obvious or immediate.

Leslie Mabon is a Lecturer in Environmental Systems at the Open University in the UK. His research focuses on the social and cultural dimensions of environmental change in coastal zone cities, with a particular interest in resource-intensive regions where local society and culture may be closely linked to high-emitting industries. As well as working in his native Scotland, Leslie has conducted research on the southern coast of Hokkaido, Japan, for a number of years, studying communities' responses to transitions away from high-emitting industries. Leslie's work on the Hokkaido coast has been funded by the Japan Foundation, Economic and Social Research Council, and Regional Studies Association among others. Leslie is a Future Earth Coasts Fellow, and has a PhD in Geography. You can read more about his work at resilientcoastal.zone or on Twitter @ljmabon.

Visualizing Future Extreme Weather Events to Escape the Resilience Trap: Experimental Evidence from Hong Kong

Terry van Gevelt
College of Integrative Studies, Singapore Management University
tvangevelt@smu.edu.sg

Fiona Williamson
Singapore Management University

Hong Kong is a hyper-dense coastal city that has learned to live with a potentially disastrous extreme weather event: tropical cyclones. While memories of devastating tropical cyclones remain strong in the collective memory of the city, Hong Kong's present-day resilience has arguably led to complacency, especially among the general public. We suggest that Hong Kong may be caught in a resilience trap, where previous success may inadvertently be hindering the city's ability to build resilience to future extreme weather events. This is particularly important as we expect the impacts of future tropical cyclones to be amplified by climate change. Using primary data collected from a broadly representative sample (n = 1506) of the general population, we find that risk perceptions of future tropical cyclones are systematically associated with first-hand experience of injury or asset loss. Hong Kong's present-day resilience to tropical cyclones, however, means that only a very small number of individuals are likely to experience injury or asset loss. This lack of first-hand experience means that it is unlikely that the general public will have sufficiently high risk perceptions of future tropical cyclones to escape the resilience trap. We examine whether visualizing the future impacts of tropical cyclones can play a similar role as first-hand experience and allow individuals to experientially process the risks of future extreme weather events that are likely to be more severe due to climate change. We do this by modelling and visualizing the storm-surge impacts of a future tropical cyclone that makes landfall near Hong Kong. Using an experimental framework, we find some evidence suggesting that our future simulation of tropical cyclones functioned as a partial substitute to first-hand experience and increased risk perceptions. Remaining cognizant of the limitations of our experimental study, we suggest that simulations of future extreme weather events can prove a useful tool to help coastal cities in Asia escape the resilience-trap.

Terry van Gevelt is Assistant Professor of Urban Sustainability at the College of Integrative Studies, Singapore Management University and an Associate of the Asian Urbanisms cluster at the Asia Research Institute, National University of Singapore. His research focuses primarily on how individuals and institutions perceive and respond to the impacts of climate change. Previously, Terry held research and teaching positions at the University of Cambridge and the University of Hong Kong. He holds MPhil and PhD degrees from the University of Cambridge.

Fiona Williamson is Associate Professor of Environmental History at the College of Integrative Studies, Singapore Management University and an Associate of the Science, Technology and Society cluster at the Asia Research Institute, National University of Singapore. Her research focuses on the history of science, especially weather and climate science, and the environment, climate and extreme weather of colonial Hong Kong, Malaysia and Singapore.

Gaps and Opportunities for Urban Disaster Resiliency through International Standardization

David N. Nguyen
International Research Institute of Disaster Science, Tohoku University
nguyen.david.ngoc.a6@tohoku.ac.jp

Kenichi Abe
National Research Institute for Earth Science and Disaster Resilience
ken-ichi.abe@bosai.go.jp

Yuichiro Usuda
National Research Institute for Earth Science and Disaster Resilience
usuyu@bosai.go.jp

Takahiro Ono
Tokyo Marine Holdings, and Asian Disaster Reduction Center

Climate change is expected to exacerbate existing geophysical and hydrometeorological hazard risks by increasing frequency and intensity. This may cause more communities to be exposed to natural hazards, leading to greater vulnerabilities and potential damages. At the same time, much of the global population continues to migrate to urban areas, which may lead to both further exposure to natural hazards as many cities are located in vulnerable areas, as well as placing greater demand on urban services and governance.

In order to protect communities against natural hazard risks, International Standards developed by ISO, can provide community stakeholders guidelines on how to protect its critical infrastructure (such as ICT, transportation, waste and water, energy) in which the local communities rely on. This paper examines the state of standardization activities across produced by various ISO Technical Committees, in regards to the guidelines communities could use to strengthen infrastructure resiliency. A special emphasis is being placed on smart community infrastructure, which can provide interfaces between smart community infrastructure and community stakeholders (local governments, local businesses, residents, etc) in a way that provides information that could be more easily understood and accessible and could facilitate responsive decision making. Through our research, we provide examples being utilized in the Pacific Rim, a region highly vulnerable to natural hazards, which can be adopted by other communities. This includes technologies such as digital twins, stakeholder management systems, among others.

David N. Nguyen is currently a Specially Appointed Associate Professor at Tohoku University's International Research Institute of Disaster Science. Dr Nguyen also contributed and serves as a member of ISO Technical Committees, TC 268, TC 292, and TC 262.

Kenichi Abe is Senior Adviser for SIP program management office of the National Research Institute for Earth Science and Disaster Resilience in Japan. Dr Abe is one of the chief architects for the development and operation of the world's largest earthquake simulation facility, E-Defense.

Yuichiro Usuda is Researcher for the National Research Institute for Earth Science and Disaster Resilience in Japan. Dr Usuda is one of the chief architects for Japan's disaster information sharing system, SIP4D.

Takahiro Ono is a Manager at Tokyo Marine Holdings and Visiting Researcher of Asian Disaster Reduction Center. Dr Ono is currently serving as a member of ISO Technical Committee TC 268 and TC 292.

ABOUT THE CHAIRPERSONS & ORGANISERS

Anh Cao obtained her PhD from the Graduate Program in Sustainability Science – Global Leadership Initiative, Graduate School of Frontier Sciences, The University of Tokyo. She has been working on adaptation trends in practices in Asian deltaic coastal cities, aiming to identify adaptation measures that are implemented to cope with flooding induced by sea level rise. She conducted various fieldworks in Tokyo and Ho Chi Minh City, interviews with city governments and household questionnaire surveys with residents. Her work also explores the social conflicts between stakeholders and limits to adaptation in these cities. Currently, Dr Anh Cao is working as a project researcher at the Institute of Industrial Science, The University of Tokyo, focusing on the advanced practice of watershed flood management using surface hydrological prediction system. Her work enhances the application of soft measures such as early warning system in flood risk reduction across Japan and other cities across the globe.

Ma. Laurice Jamero is the Resilience Coordinator of the Manila Observatory, where she works closely with local governments and civil society organizations across the Philippines to support their climate and disaster risk management, and adaptation planning efforts. At the regional and international level, she also volunteers her time at the Intergovernmental Panel on Climate Change – Working Group I (6th Assessment Report contributing author), World Climate Research Programme (consultant for climate education), Future Earth Coasts (Fellow), and Southeast Asia Science Advisory Network (working group member). Lau is passionate about engaging vulnerable communities in understanding climate risks and designing possible solutions, building on existing adaptive capacities and creating hope for the future through collaborative climate action. Lau earned her PhD degree in Sustainability Science at the University of Tokyo, where she studied climate change adaptation in small island communities.

Nurul Azreen Azlan completed her PhD at the Technology University of Delft, Netherlands, where she investigated the spaces of protest in post-colonial Kuala Lumpur, Malaysia. She is interested in spatial justice, from the politics around the production of space to the availability of space for people to access public life. She is currently on sabbatical leave from Universiti Teknologi Malaysia.

Tim Bunnell is Professor in the Department of Geography and Director of the Asia Research Institute (ARI), where he is also leader of the Asian Urbanisms cluster. The primary focus of his research is urbanisation in Southeast Asia, examining both the transformation of cities in that region and urban connections with other parts of the world. Tim's books include From World City to the World in One City: Liverpool through Malay Lives (Wiley, 2016) and Urban Asias: Essays on Futurity Past and Present (Jovis, 2018; co-edited with Daniel P.S. Goh), and he has also published in a wide range of journals in Geography and urban studies. He is currently working with Jess Clendenning and a team of other colleagues comparing Nusantara with other ex novo administrative capital cities in Southeast Asia.

Ven Paolo B. Valenzuela is a Research Fellow (Asian Urbanisms Cluster) at the Asia Research Institute of the National University of Singapore. He has been deeply involved in studies on climate change and disasters over the past decade and employs transdisciplinary methods to holistically understand contemporary global challenges. He was involved in global policymaking on climate change and disasters and his works has been cited by key scientific reports such as the IPCC 6th Assessment Report. Dr Valenzuela's research approach transdisciplinary methods to holistically understand contemporary disaster risk reduction, climate change, and sustainable development issues and concerns. His current research interest focuses on the social dimensions of advance-type adaptation to climate change and disasters (e.g. ports, seawalls, land reclamation, floating settlements).

Yvonne Su is an Assistant Professor in the Department of Equity Studies in the Faculty of Liberal Arts and Professional Studies at the York University. She is a member of the Centre for Refugee Studies, the Centre for Research on Latin America and the Caribbean, and the York Centre for Asian Research. Yvonne is a specialist on forced migration, queer migration, diaspora studies and post-disaster recovery. She holds a PhD in Political Science and International Development from the University of Guelph and a MSc in Refugee and Forced Migration Studies from the University of Oxford. Broadly, her research interests focus on migration and development, refugee protection and disaster risk reduction.