

MEASURING URBAN RESILIENCE

Transitioning from multidisciplinary to
a transdisciplinary approach



SMUS

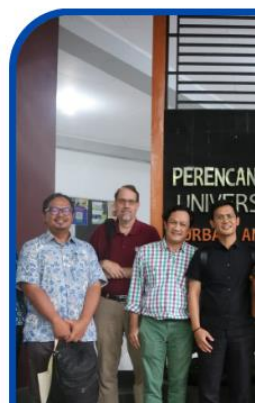


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Editors:
Wiwandari Handayani,
Jenia Mukherjee, Retno Sari Dewi

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1. ABOUT THE WORKSHOP

A. Introduction

Within the context of the Urbanocene or the Urban Anthropocene, scholarship on 'urban resilience' has proliferated. Delta and coastal cities in the global South face 'multiple disruptive risks', making urban livelihoods vulnerable. In many Asian cities, urbanization predominantly occurs in coastal areas, posing distinctive challenges for urban resilience and requiring navigating issues such as rising sea levels, coastal erosion, and the delicate balance between economic development and environmental preservation.

While a multidisciplinary approach can address some challenges and disturbances, its scope is limited in engaging with the 'wicked problems' shaping recent urban geographies. Multidisciplinarity may prove inflexible in dealing with new disorders emerging from the risk basket, demonstrating the need for a more comprehensive roadmap and action plans. It is at this juncture that a transdisciplinary approach becomes imperative, harnessing urban resilience through cross-disciplinary and trans-sectoral exchanges for solution-oriented research and actions. This is vital for addressing the Sustainable Development Goals (SDGs), especially SDG 11 and SDG 13, and their intersections.

Transdisciplinary explorations and exchanges in coastal cities open doors to innovative and sustainable solutions, ensuring the resilience of these urban centers in the face of ever-increasing stressors and shocks. Coastal city resilience is not only vital for their well-being but also for the broader environmental health of our planet. The transition from multidisciplinarity to transdisciplinarity is a transformative step forward, ensuring the long-term sustainability of our urban areas, with a specific focus on coastal cities.

Given this context, a mini-workshop was conducted to exchange research and project insights on measuring urban resilience. We explored ways to assess resilience, ranging from mere survival to transformation, encompassing socio-ecological perspectives and various methodologies, including quantitative and qualitative methods or a combination of both. The diversity of each participant's background,

skills, and experiences contributed to the depth and breadth of the discussion, fostering a transdisciplinary perspective.

B. Workshop Objectives

The objectives of the mini-workshop are to achieve comprehensive exchange and encourage active participation in the topic of measuring urban resilience across multiple geographical representations.

2. KEY LINES OF INQUIRIES*

A. Ontologies of Urban Resilience

Urban Resilience, in the context of climate change and sustainable development, is a comprehensive and adaptive capacity that empowers individuals, communities, and systems to endure, recover from, and thrive in the face of environmental, social, and economic challenges. A resilient community or system not only withstands shocks and stresses but also learns and adapts, fostering sustainability and the well-being of its inhabitants. This resilience is built on a combination of factors, each contributing to a holistic approach.



"Urban resilience is rooted in a content-based, grassroots methodology that takes into account cultural perceptions and everyday realities."

Dr. Jakkrit Sangkhamanee

"Urban resilience can be imagined as a process; temporality as an adaptive cycle (panarchy)."

Prof. Dr.-Ing. Wiwandari Handayani



* This chapter summarizes discussions from a mini-workshop where participants were split into three teams for two sessions. In the first session, teams covered imperative, complementarity, and methods, while the second session focused on research questions, methods, and challenges related to urban resilience.



"Urban resilience is a complex and a lengthy process, shaped by changes and shifts."

Intan Hapsari Surya Putri, PhD (Candidate)

"The relationship between human dimension of wellbeing and socio-ecological resilience should form the core of the discussion on urban resilience."

Dr. Jenia Mukherjee



"The idea of resilience itself is how we understand and measure its complexity – the question of scale."

Rukuh Setiadi, PhD

"Urban sustainability relies on the participation of individuals and organizations, constituting a necessary mechanism for fostering resilience. This process involves a trial-and-error approach to ensure the system's ability to adapt and respond to challenges."

Dr. Khairul Hisyam bin Kamarudin



"The role of civil society in increasing urban resilience has to be acknowledged."

Ahmad Khairudin, MSi

"Disrupting familiarities; intangible components."

Dr. Eric Thompson



"Purpose of life; gentrified spaces."

Prof. Dr. Felicitas Hilmann

"Sense of belonging; in the context of disaster management: pre-disaster resilience measurement, post-disaster resilience assessment."

Ankita Sood, Ph.D



Hence, **the concept of urban resilience involves disrupting familiarities and intangible components, exploring the purpose of life within gentrified spaces, and understanding the sense of belonging.** In the context of disaster management, it encompasses both pre-disaster resilience measurement and post-disaster resilience assessment.

Urban resilience, closely related to urban deltas or coastal cities, embodies a comprehensive framework that navigates through various dimensions of preparedness, risk assessment, and risk-informed disaster and disaster management strategies (see Fig. 1). The role of local communities becomes paramount, contributing valuable insights and adaptive capacities. The integration of interdisciplinary methods and active engagement of trans-sectoral ensures a holistic understanding of the intricate challenges.

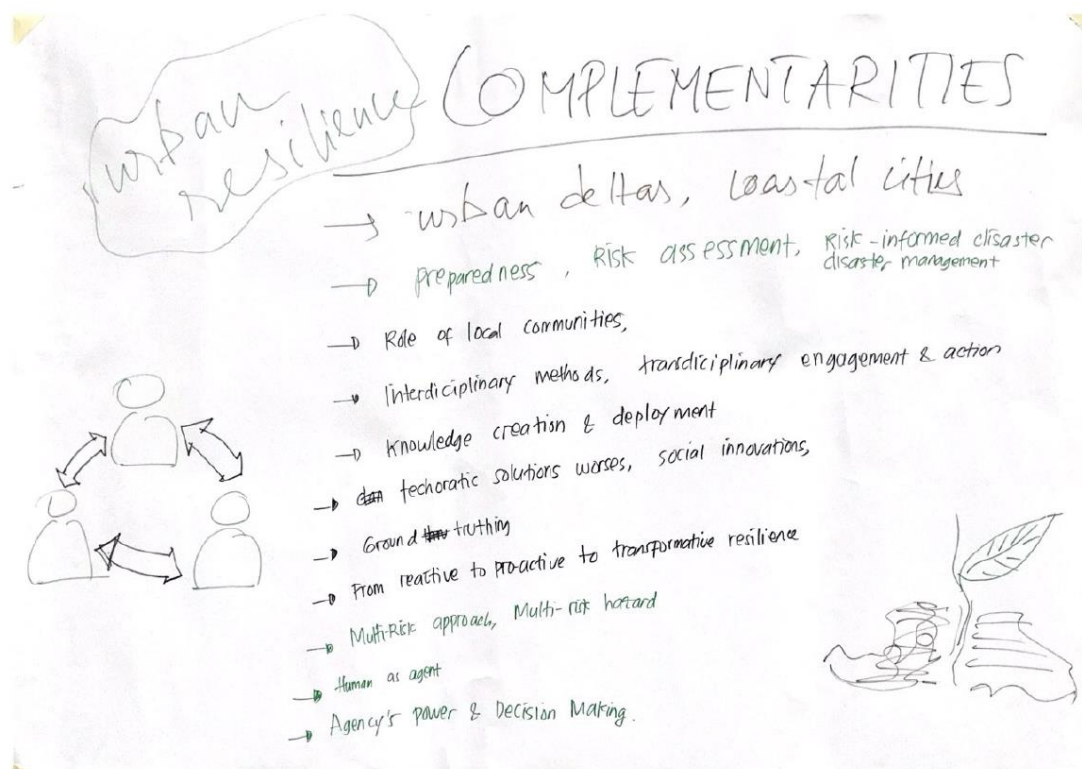


Fig. 1 Complementarities of Urban Resilience

Knowledge creation and deployment become key instruments, with a shift away from technocratic solutions towards embracing social innovation and ground truthing. This transition signifies a move from reactive approaches to proactive and transformative resilience strategies (see Fig. 2). Recognizing the complexity of urban environments, adopting a multi-risk approach and considering various hazards become integral aspects. In this paradigm, humans emerge as active agents, acknowledging the power of their agency and decision-making roles in shaping resilient urban futures.

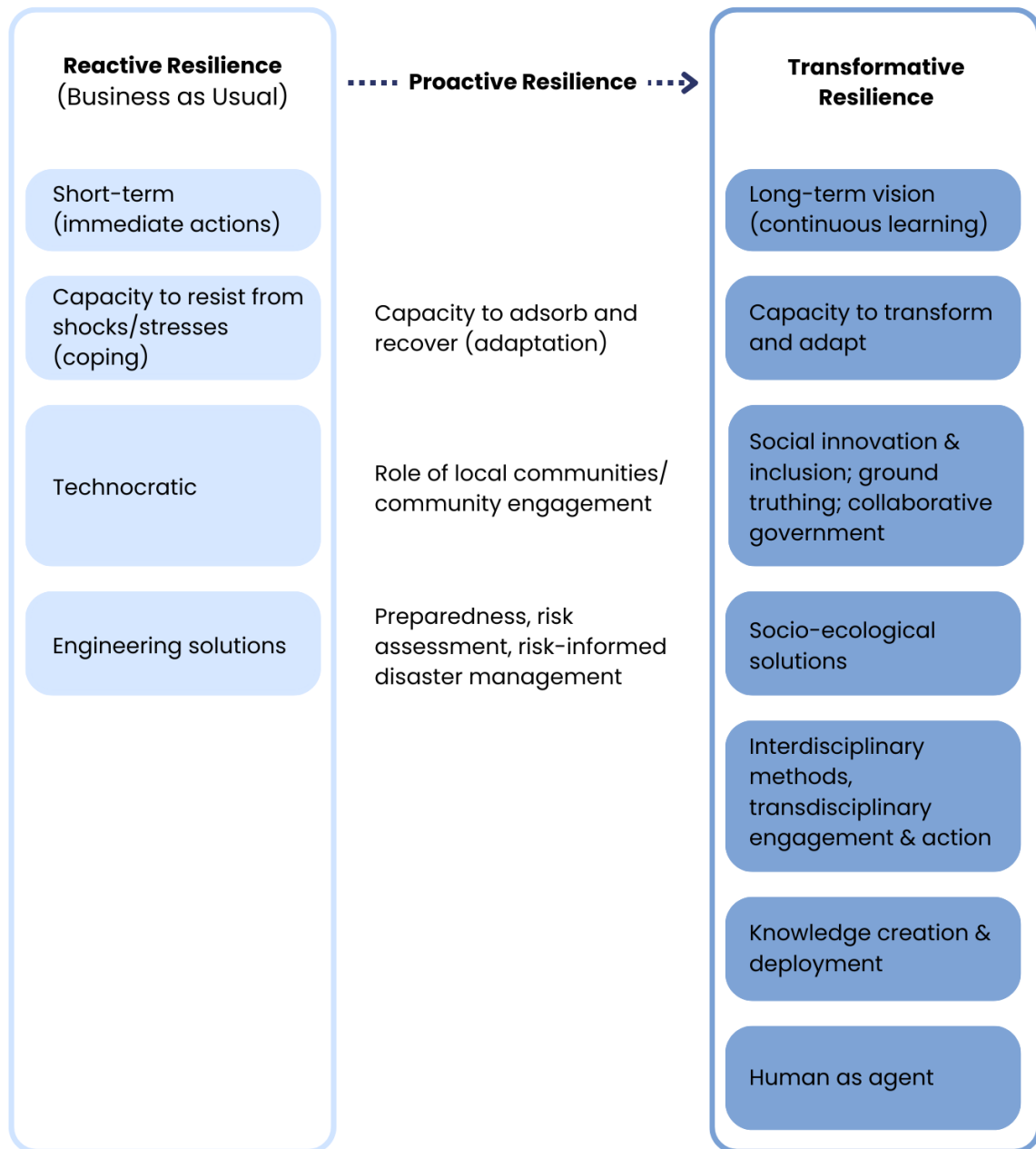


Fig. 2 Transition from Reactive to Transformative Resilience

The imperative of urban resilience involves three interconnected aspects: communities, science, and administration (see Fig. 3). These elements are interdependent, emphasizing the critical role of communication in shaping urban resilience. The synergy between communities, scientific advancements, and effective administrative practices underscores the need for seamless communication channels. As communities engage with scientific insights and local administrations implement responsive policies, the exchange of information becomes a linchpin in fostering resilience. This dynamic interaction reflects the interconnected nature of urban

resilience, where effective communication serves as a catalyst for collective understanding, collaboration, and ultimately, the development of resilient urban systems.

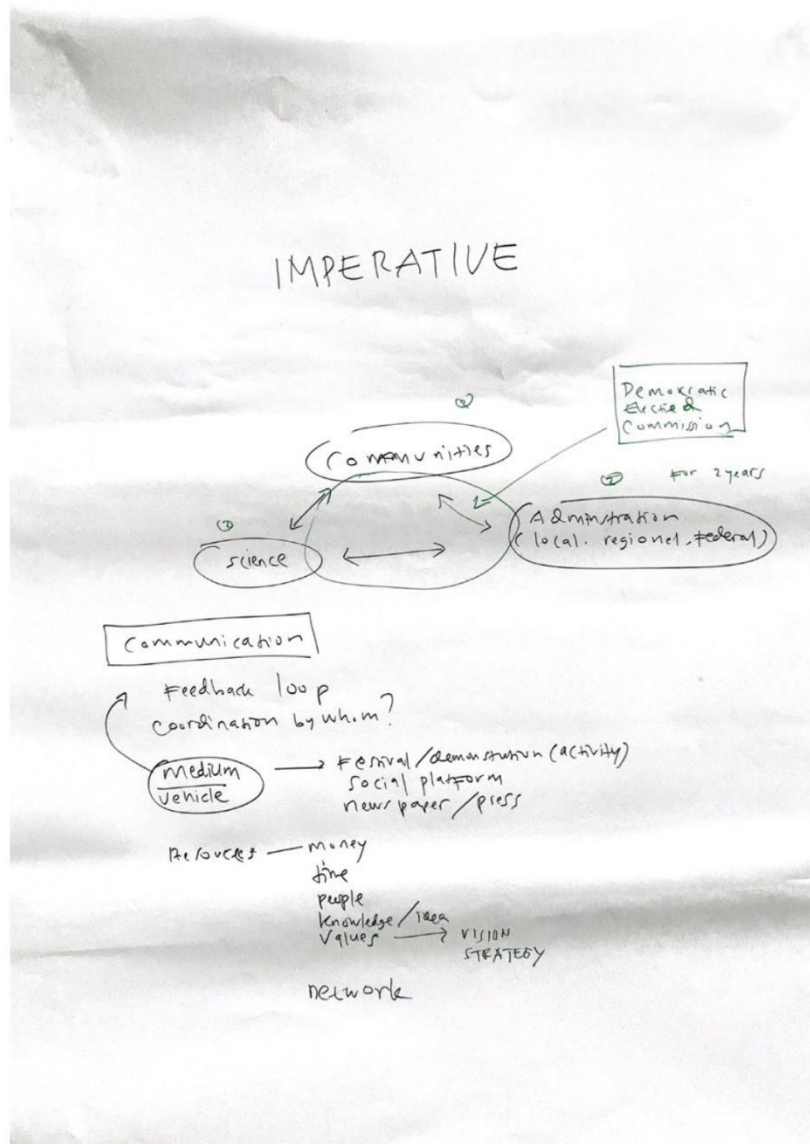


Fig. 3 Imperative of Urban Resilience

In our approach to urban resilience, we've categorized all elements along four quadrants: global, individual, data, and solutions (see Fig. 4). On the data axis, the regional level involves social media and GIS/Mapping, the national level centers on assessment/evaluation, city-level strategies utilize surveys, and community-level insights are derived through interviews and ethnography. In terms of solutions, regional considerations include policy analysis, the national level incorporates scenario planning, city-level initiatives integrate art expression, and community-level

approaches engage in gaming. This structured framework facilitates a comprehensive understanding and application of urban resilience strategies across various scales and dimensions.

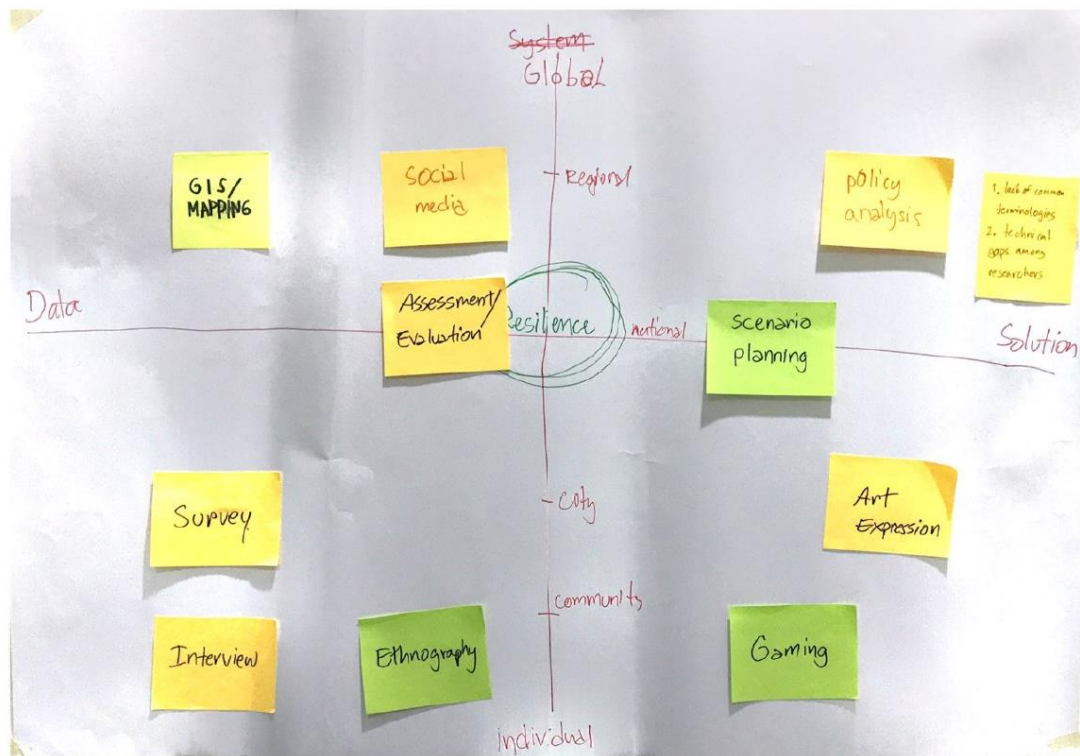


Fig. 4 Elements of Urban Resilience

B. Measuring Urban Resilience

Measuring urban resilience necessitates a balanced integration of qualitative and quantitative methods within a transdisciplinary framework. While qualitative methods capture the intricacies of community experiences, quantitative methods provide structured analyses of urban systems. Within the context of resilience, there is the conceptual framework known as the 7 C's of resilience, encompassing competence, confidence, connection, character, contribution, coping, and control (Fig. 5). These components are crucial for individuals to effectively navigate and overcome challenging situations.

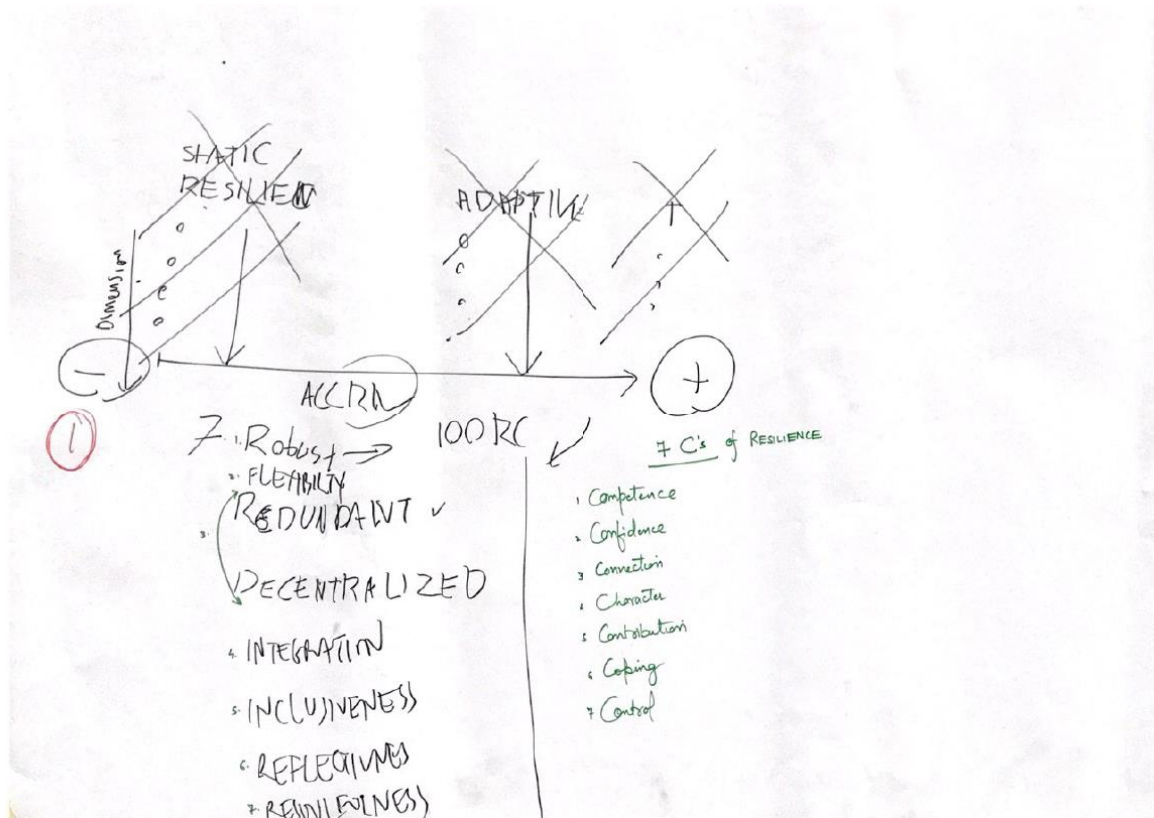


Fig. 5 7 Cs of Resilience

The actors responsible for implementing these components are scientists, government, community organizations, and the private sector (Fig. 5). A transdisciplinary approach ensures a more holistic and contextually relevant understanding of urban resilience, fostering collaboration between these actors. Recognizing the limitations and challenges of transdisciplinarity is also crucial – though it still serves as an indispensable strategy to juxtapose urban resilience against multi-dimensional and multi-pronged urban risks, crafting a roadmap and template for sustainable, adaptable, and 'just' cities of the future. A transdisciplinary approach to resilience can be defined in at least three ways (Fig. 6):

1. Process/methodological approach to promote resilience
2. Mutual learning from both scientists and society to co-produce a new insight/holistical understanding/knowledge toward shared resilient goals
3. Identification of the required methodological approach

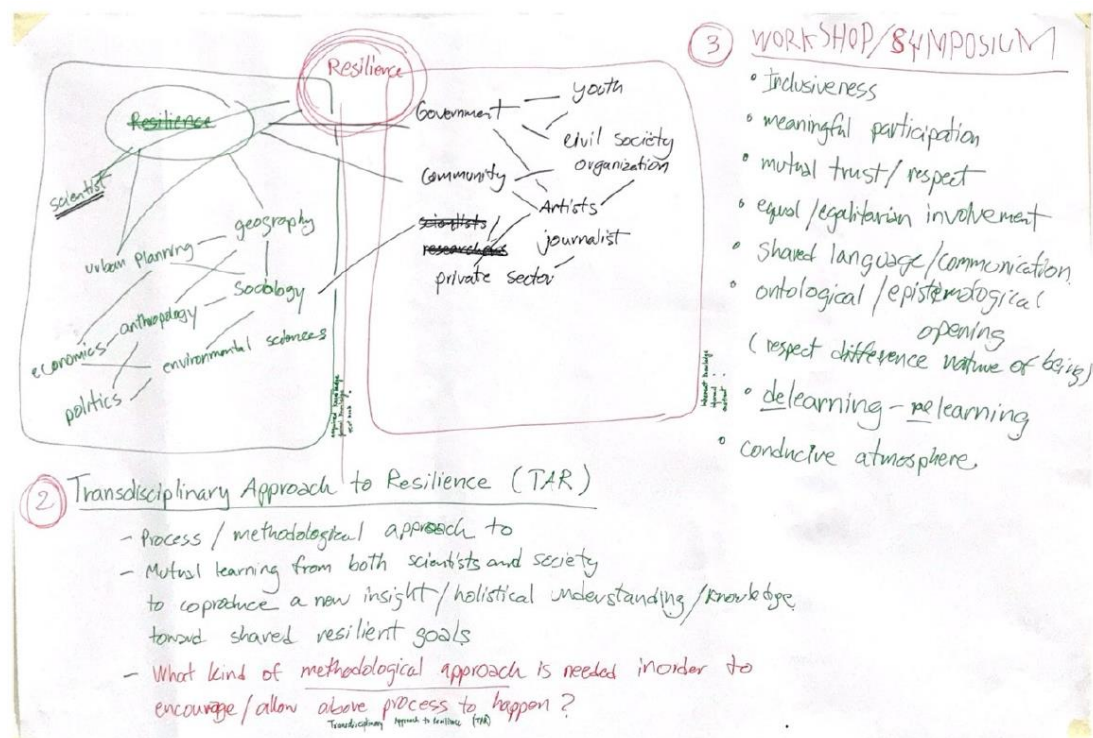


Fig. 6 The Actors of Resilience and Transdisciplinary Approach to Resilience

C. Transdisciplinary Approach: Challenges & Opportunities

Measuring urban resilience through a transdisciplinary approach poses challenges encapsulated in three fundamental inquiries: 'what,' 'why,' and 'for whom' (Fig. 7). The 'what' pertains to the agenda, team composition, and the tool (identifying who will develop and deploy it). The 'why' addresses the methods, ensuring inclusiveness, contextual relevance, and real-life applicability. The 'for whom' centers on the group of users. All three questions converge in the overarching 'for what' query, which pertains to achieving transformative resilience.

Measuring urban resilience through transdisciplinary approach:

- What** : agenda, team composition, and the tool (identifying who will develop and deploy it).
- Why** : inclusiveness, contextual relevance, and real-life applicability.
- For whom** : the group of users.
- For what** : transformative resilience.

The process of intersecting disciplines or knowledge exchange and co-creation can also present challenges. Various types of data and indicators are employed, and attaining common goals becomes a hurdle in itself.

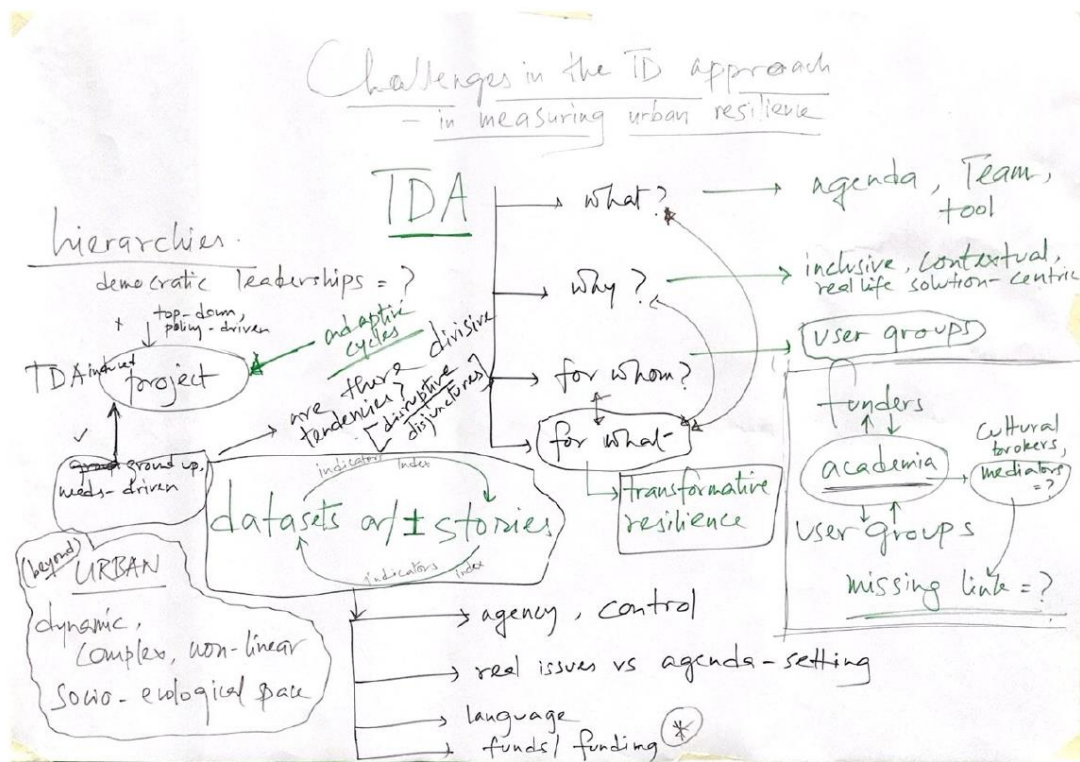


Fig. 7s Challenges in Transdisciplinary Approach in Measuring Urban Resilience

3. HIGHLIGHTS OF THE WORKSHOP & ROADMAP

A. Highlights of the Workshop

The major (working) conclusions from the mini-workshop are as follows:

1. There is a need to investigate and remain open to many definitions and meanings of resilience, as they emanate from place-based and historically contingent specificities.
2. Measurements have to rely on both numbers and narratives, combining policy-driven technocratic frameworks along with needs-driven aspirations and agencies.
3. Innovative-integrated methodologies, drawing from transdisciplinary knowledge exchange and mobilization, can address and shape urban resilience as a comprehensive yet context-specific conceptual-analytical traction.

B. Roadmap

Outputs

- a. White paper
- b. Sound clips

Outcomes

- a. Continue collaboration on joint research, publication, and field work
- b. Consolidation of the network in SMUS 2024, with two key events: Global Centres Conference 2024 in Berlin (10-12 September 2024) and 4th International and

Interdisciplinary Conference on Spatial Methods for Urban Sustainability ("SMUS Conference") in Bangkok (23-29 July 2024)

- c. Propose a session at the DAAD Conference Global Centres for Climate and Environment, with the title "Reifying Resilience: Translocal Learnings from Coastal/Delta Cities of South and Southeast Asia" (10-12 September 2024).

Impacts

- a. Collaborative research network
- b. Identifying avenues to scale up and out resilience research on Asian coastal cities, making connections between Asia and the world.

4. GALLERY*

Group Work and Presentation



* All photo credits go to Department of Urban and Regional Planning, Faculty of Engineering, Diponegoro University

Field Visit to Sayung, Demak



Field Visit to Tambaklorok, Semarang



Closing Event



5. PARTICIPANTS



Prof. Dr.-Ing. Wiwandari Handayani

Prof. Dr.-Ing. Wiwandari Handayani is head of the Department of Urban and Regional Planning, Faculty of Engineering – Diponegoro University. She actively involved in works related to urban sustainability and resilience since 2011. As of now, she has been engaging in several networks including GCSMUS and NUPS supported by the German government.



Dr. Jenia Mukherjee

Dr. Jenia Mukherjee is an Associate Professor at the Department of Humanities and Social Sciences, Indian Institute of Technology Kharagpur. Her interest spans across urban environmental history, urban political ecology, and community resilience in volatile urban deltas. Currently she is an active member of GCSMUS, leading different projects under SMUS Experience, Exchange, and Engage.



Dr. Jakkrit Sangkhamanee

Dr. Jakkrit Sangkhamanee is a Thai anthropologist specializing in science, technology, and society (STS). His prior research centered on the hydro-ontology of irrigation projects, hydrologists and engineers, as well as their complex ties with (a)modern bureaucracy and state-building in Thailand. His recent works focus on environmental infrastructures and how they manifest in the current climate and water politics in Thailand.



Ankita Sood, Ph.D

Ankita Sood, Ph.D. focuses on urban flood mitigation through nature-based solutions. She is now a climate and disaster resilient planning consultant and currently works as a Risk Data Fellow at the Global Facility for Disaster Reduction and Recovery (GFDRR) under the World Bank's umbrella, where she actively contributes to the development of risk-informed, climate-resilient plans for several Indian cities.



Prof. Dr. Felicitas Hillmann

Prof. Dr. Felicitas Hillmann is currently head of the project "Paradigm Shift - New Outlooks", hosted by TU Berlin, Institute of Urban and Regional planning. This fall, she joins Universitas Diponegoro as an adjunct professor focusing on international nurse migration. She has published widely and internationally on migration and mobility, especially on environmental change and migration.



Dr. Khairul Hisyam bin Kamarudin

Khairul Hisyam Kamarudin is a senior lecturer at the Urban and Regional Planning Program in UTM. His research interests include regional and rural planning, resilience, and local community development. He is involved in various research and consultation projects and served as a research fellow at the Disaster Preparedness and Prevention Centre (DPPC), Malaysia-Japan International Institute of Technology in UTM Kuala Lumpur.



Dr. Eric Thompson

Dr. Eric C. Thompson is an Associate Professor in the Department of Sociology at the National University of Singapore. His research spans field sites across Southeast Asia, particularly Indonesia, Malaysia, Singapore, and Thailand. His research interests include transnational networking, gender and power dynamics, rural development, urbanism, agrarian transitions, and ASEAN regionalism.



Rukuh Setiadi, PhD

Rukuh Setiadi is an Associate Professor in the Department of Urban and Regional Planning, Diponegoro University, Indonesia, and a researcher at the SDGs Centre of the university. He is interested in the intellectual space between urbanization and climate change, with particular interest in the transformative adaptation and future-oriented urban responses to climate change. He also serves as an executive director of the Initiative for Urban Climate Change and Environment (IKUPI).



Intan Hapsari Surya Putri, PhD Candidate

Intan Hapsari Surya Putri is currently working as a research assistant at the Center for Urban and Regional Resilience Research (CURE), Department of Urban and Regional Planning, Diponegoro University. She is currently continuing her study at the Doctoral Program in Architecture and Urbanism at Diponegoro University. Her research interest and focus are related to urban resilience and vulnerability to climate change.



Ahmad Khairudin, MSi

Adin is the co-founder of *Kolektif Hysteria*, a group that focuses on art, creativity, youth, community, and city issues. As a curator and community activist, he has participated in residency programs in several countries. His activism in urban areas led to his appointment as a member of the steering committee for the 100 Resilience City program in Semarang (2015-2017). In recognition of his dedication to activism, Adin was named a monthly inspirational character in the Kompas Daily Figure rubric in 2017.