Report
SMUS Action 2 Joint Teaching Research Course

BEYOND RESILIENCE:
translocal planning pedagogies from coastal/delta cities of Asia

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Beyond Resilience:

translocal planning pedagogies from coastal/delta cities of Asia

2024

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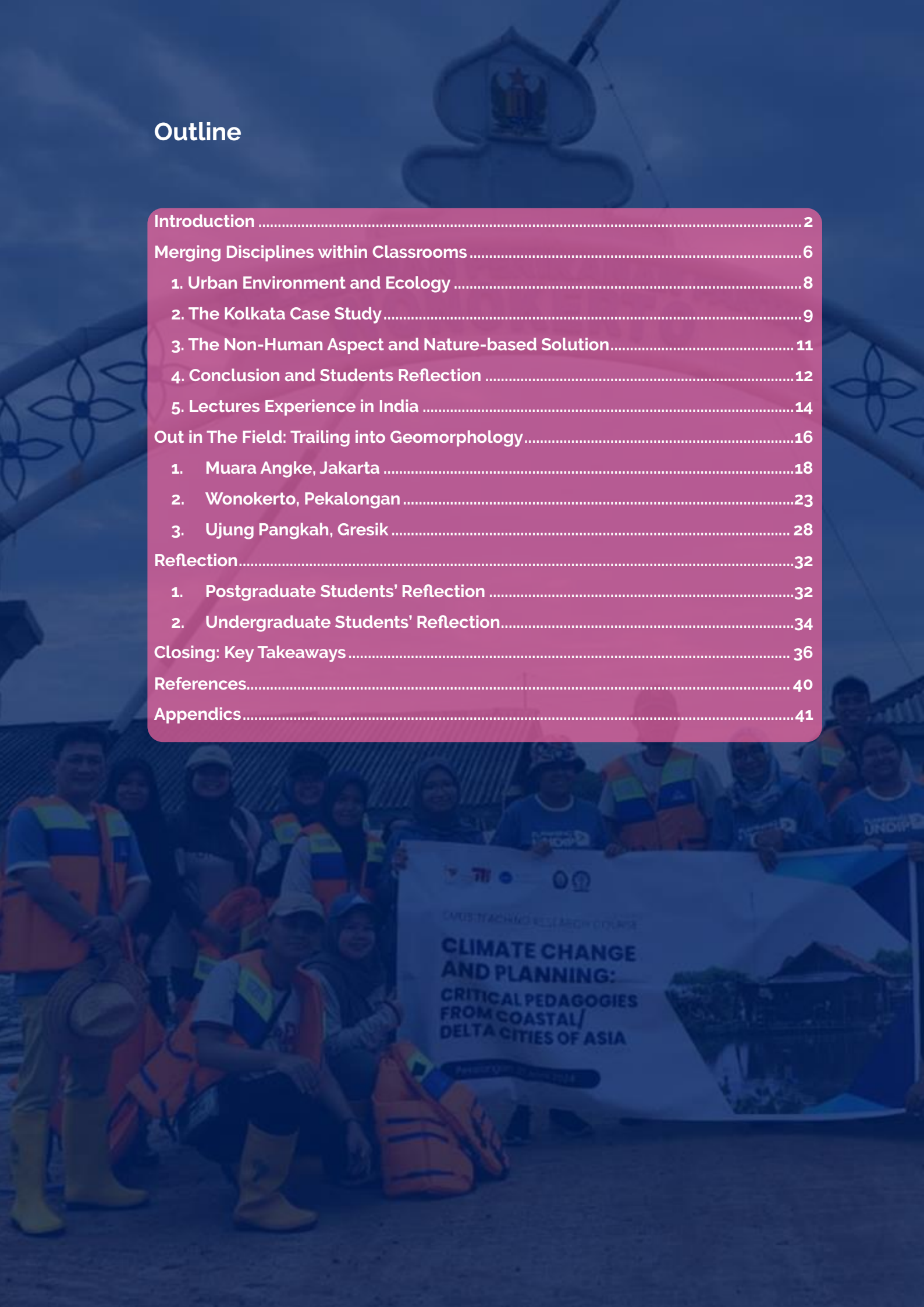
The Global Center of Spatial Methods for Urban Sustainability is funded by the German Academic Exchange Service – DAAD with funds from the German Federal Ministry for Economic Cooperation (BMZ).

Outline



Introduction

SMUS Action 2 Joint Teaching Research Courses 2023/2024

SMUS Joint Teaching Research Course is part of SMUS Action 2: Experience, aimed at addressing the challenges related to research methodologies, which are often complex and abstract. This issue is particularly prevalent in fields such as sociology, geography, urban planning, and architecture, where applying methods practically is essential. To bridge this gap, SMUS Action 2 offers combined teaching-research courses that integrate theory with practical application. These courses provide comprehensive training in specific research methods, data analysis, and academic writing, equipping students and researchers in the social sciences with essential skills for effective and applied scholarship.

The objective of this report

To provide a factual report of the activities conducted within the SMUS Joint Teaching-Research Course project in Indonesia and India. This report documents the processes, methodologies, and outcomes of the project, offering a detailed overview of each phase of the initiative. By presenting an accurate record of the activities undertaken, this report serves as a resource for assessing the project's effectiveness, sharing best practices, and informing future collaborative teaching-research efforts within the SMUS network.

Effectiveness

Sharing Best Practices

Collaborative teaching-research

Climate Change and Planning: Critical Pedagogies from Coastal/Delta Cities of Asia

The SMUS Teaching Research Course 2023/2024 on Climate Change and Planning: Critical Pedagogies from Coastal/Delta Cities of Asia involves collaboration between Diponegoro University (Indonesia) and IIT Kharagpur (India). The coastal/delta cities of the global South are dotted with additional environmental risks against the fastest spread of urbanization and the steepest rise in urban vulnerabilities, with informal peri-urban spaces mushrooming as "urbanization without infrastructures" (Allen et al. 2016). Yet these exciting urbanscapes also expose us to some of the finest examples of place-based, needs-driven, bottom-up (and frugal) experiments, innovations, and

(more-than-human) entanglements, enactments, and practices (re)shaping urban nature – that await recognition, documentation and incorporation within discourses on and pedagogies of urban planning and development (Allen et al. 2016).

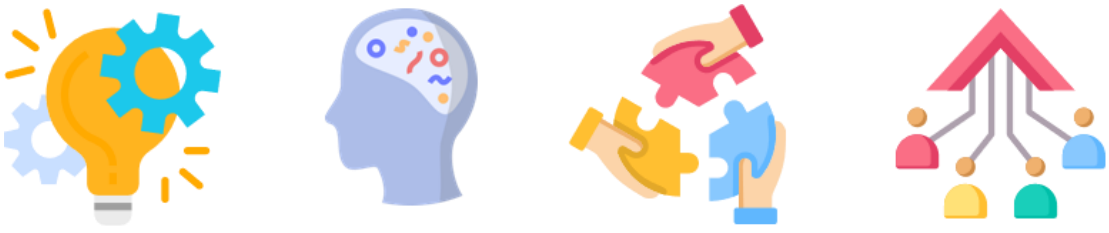
Using two coastal/delta cities from India (Kolkata) and Indonesia (Semarang) as empirical contexts of application, this research project critically engages with mainstream 'urban resilience' and disaster mitigation plans reliant upon (tech)smart, 'green' solutions, and lays out why envisioning cities as 'living systems infrastructure' (Mukherjee 2022) is necessary. Benefitting from interdisciplinary exchanges (E1) and translocal exposures (E2), this teaching-research project demonstrates the relevance of applying the 'comparative urbanism' methodology in decolonizing urban planning pedagogy and practice (Figure 1). The course in interactive, interdisciplinary and immersive – incorporating both classroom teaching-learning activities and field visits to peri/urban pockets impacted by climate change, finally allowing participants to witness firsthand the effects of co-knowledge production on community resilience.

Methods skills to be acquired

Optimizing on the novelty of the **TANDEM technique** (Figure 2) across:

- **disciplinary dimensions** – planning/architecture and social sciences
- **pedagogical approaches** – class room teachings and outreach activities, and
- **spatial scales** – Kolkata and Semarang

and through the use of wide range of spatial methods (quantitative, qualitative and critical mapping), this **experience** will enhance skills, knowledge, and expertise of students and project collaborators, fostering interdisciplinary interactions at different levels.



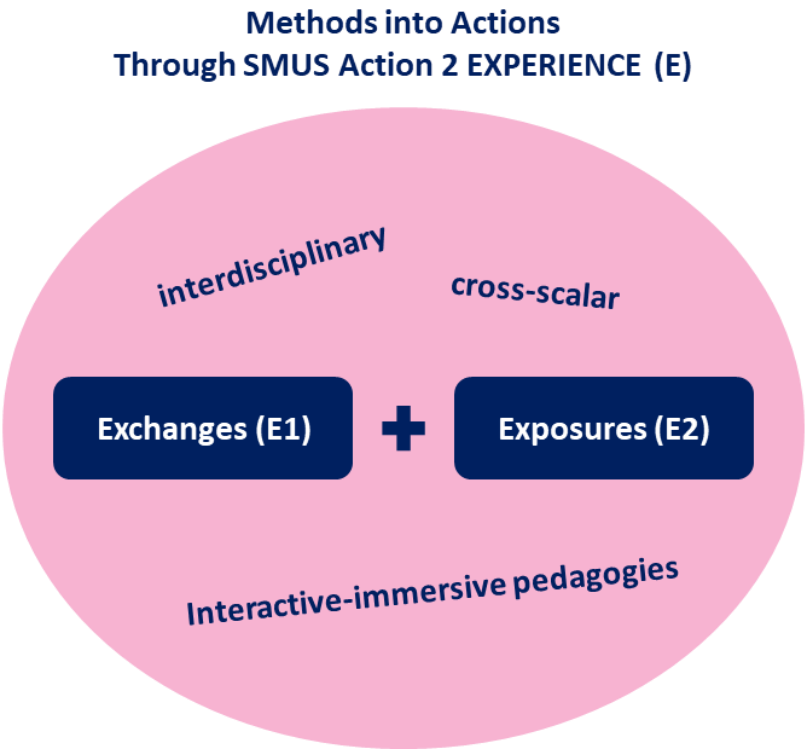


Figure 1 Exchanges and Exposures fostering Experience

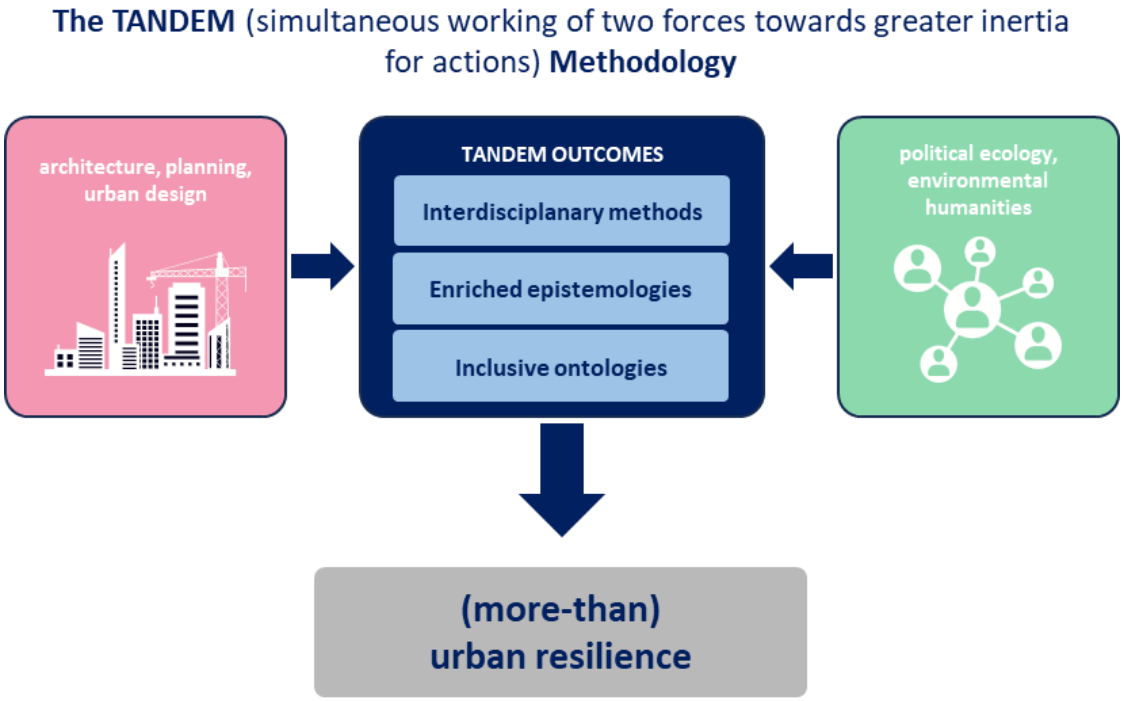


Figure 2 The TANDEM Methodology

Relationship of the research topic to SDG #11

The research project addresses intersecting **SDG 11** targets, directly (11.3 – Inclusive Urbanization and Participatory, Integrated Planning; 11.5 – Resilience to Disasters; 11.6 – Reduced Environmental Impact of Cities) and indirectly (11.4 – Cultural and Natural Heritage; 11.A – Rural Urban Linkages; 11.B – Comprehensive Disaster Risk Managements). It offers situated understandings of urban metabolism and coastal resilience against climate risks encountered by developing cities during the Anthropocene as well.

Objectives and innovative aspects of the research project

The project will expand the pedagogic frontiers of urban planning and disaster management and mitigation, against the contemporary climate crises for coastal/delta cities of the global South.

It perspectivizes cities as complex adaptive systems evolved along dynamic interactions and intra-actions between technological apparatuses and social arrangements spanning across different historical and political epochs.

It validates why transplanting 'urban resilience' (imitating models from the global North) is faulty, and lays out an interdisciplinary-interactive-immersive teaching-research design, forging viable transitions to resilient urban ecological trajectories – accommodating agencies of plural actors and actuating multi-species justice.

Merging Disciplines within Classrooms

The lectures in Indonesia encompassed both undergraduate and postgraduate programmes. For the undergraduate level, this project is incorporated into the course on community-based urban and rural resilience. This course explores the concept of resilience, specifically in relation to regional characteristics and the types of disturbances encountered. At the postgraduate level, the project is integrated into the course on climate change and planning, which explores how the phenomena of climate change and planning present challenges that necessitate consideration across all aspects of planning. However, the implementation of this project primarily focuses on undergraduate students.

The students were introduced to the intricate connection between urban ecosystems and resilience from the perspective of humanities and social sciences. These lectures emphasized the importance of balancing nature with urbanization, a theme particularly relevant to Indonesia's northern coastal areas, including cities like Semarang and Pekalongan.

Community-based Urban and Rural Resilience

The course outline covers a range of topics, including the impacts of urbanization, concepts and definitions of urban and rural resilience, and case studies illustrating resilience in both urban and rural contexts. Key themes include the concept and operationalization of resilient *kampong*, the use of ethnographic approaches to build resilience, and spatial instruments for resilience building, such as land use change and urban carbon emissions analysis. The course also addresses Urban Heat Island (UHI) analysis, community-based disaster risk management (CBDRM), and community-based urban resilience practices, such as the Flood Early Warning System in the Bringin Watershed, Semarang, and waste management practices in the Waste Bank of Semarang City. For rural resilience, students explore case studies on adaptive sanitation solutions and ecosystem restoration in the coastal areas of Pekalongan. At the end of the course, students present final project reports based on field visits and in-class analyses.

Assoc. Prof. Dr. Jenia Mukherjee and Dr. Shreyashi Bhattacharya delivered a lecture on the topic *Case Study: Urban and Rural Resilience Practices and Ethnography Approach to Build Urban/Rural Resilience in Coastal Cities.*

Climate Change and Planning

The course outline is structured into three main topics: key concepts in climate change studies, climate change impacts and planning issues, and climate change governance and international perspectives. This progression moves from foundational theories to practical implications, culminating in governance strategies.

The first section introduces essential concepts such as climate change trends, mechanisms, mitigation, adaptation, and resilience-building. It also covers policies, stakeholder involvement, and core concepts like risk, hazard, and vulnerability, alongside methods for vulnerability assessment and the intersection of urbanization, spatial planning, and climate change. These foundational ideas set the stage for understanding climate impacts. Building on this, the second section examines specific climate change impacts, including sea level rise, coastal ecosystems, water and sanitation issues, disaster risk reduction, food security, livelihoods, and urban health. These topics link back to the key concepts and emphasize the need for targeted adaptation and planning. The final section broadens to international governance, covering global adaptation strategies and the integration of climate change into urban development, reinforcing the relevance of policy and governance frameworks at multiple levels.

Assoc. Prof. Dr. Jenia Mukherjee and Dr. Shreyashi Bhattacharya contributed to discussions on climate change policy and stakeholder involvement; sea level rise, coastal ecosystems, and climate change; water and sanitation; food security and livelihoods; and urban health issues. Their expertise provided practical insights that connected theoretical frameworks with real-world applications, enhancing the course's multidisciplinary approach to climate change.

1. Urban Environment and Ecology

The first lecture began with a discussion on urban ecology. Assoc. Prof. Dr. Jenia Mukherjee introduced the concept of Urban Environmental History, which illustrates the ongoing relationship between city development and the surrounding natural environment. In this explanation, she referenced Melosi (1993), who emphasized that urban growth cannot be separated from its environmental history.

Many students often view cities as solely the result of human action—skyscrapers, roads, and other infrastructures—without recognizing the dynamic interaction with nature behind it all. Cities are built on land that was once natural ecosystems, such as wetlands, forests, or river basins. In Indonesia, coastal cities like Semarang and Pekalongan have also grown rapidly on land that once played an essential role in maintaining ecological balance. Wetlands that used to protect these cities from flooding have now been replaced by residential areas, industrial zones, or other infrastructures.

Figure 3 Assoc. Prof. Dr. Jenia Mukherjee delivered a lecture at UNDIP Semarang

- **The East Kolkata Wetlands: The Role of Ecosystems in Urbanization**

The East Kolkata Wetlands (EKW) is a prime example of how natural ecosystems can sustain urban life. This wetland system was described as the "kidneys of the city," an analogy that perfectly captures how the EKW processes over 810 million liters of waste daily, which in turn supports fisheries, irrigated paddy farming, and vegetable cultivation.

The students learned how this wetland naturally manages waste while simultaneously providing economic benefits to more than 150,000 local residents who depend on it for their livelihoods. This demonstrates that well-maintained ecosystems can support urban growth without damaging the environment. However, in Kolkata, wetlands have shrunk by 77% over the past 14 years, illustrating how unplanned urbanization can devastate essential ecosystems. A similar situation exists in Indonesia: in Pekalongan, for instance, wetlands that once served as flood buffers and fish farms are increasingly threatened by land conversion for residential and

industrial use. In Semarang, many natural wetlands have also been converted, resulting in more frequent floods and rob (tidal flooding).

- **Urbanization Challenges in Kolkata and Northern Coastal Java**

Urbanization in Kolkata has posed significant challenges to the sustainability of the EKW. The development of areas such as Salt Lake City (1960s) and New Town Rajarhat (1990s) has reduced the wetland area, causing the natural waste management system to no longer function as effectively. Students were able to compare this situation with that of northern coastal Java.

In Semarang, rapid urban growth has transformed land use and exacerbated flooding problems, especially in areas that were once wetlands or swamps. This urbanization not only worsens tidal flooding, but also threatens the livelihoods of communities that depend on fish farming or other coastal activities. These examples helped students understand the critical role of sustainable urban planning in preventing further environmental degradation.

- **Urban Political Ecology: The Social and Political Dimensions of Environmental Management**

One of the most intriguing parts of the lecture was the discussion about urban political ecology. Assoc. Prof. Dr. Jenia Mukherjee explained that environmental issues in large cities are often closely related to political power, policies, and economic interests. In Kolkata, for example, policies made by the British colonial government in the past shaped the water management infrastructure that exists today. However, these policies often overlooked the long-term ecological impacts, which now manifest in problems like wetland shrinkage and water pollution.

Urban political ecology is also highly relevant to Indonesia. Reclamation projects along northern Java's coast, for example, are often driven more by economic and political interests than environmental considerations. These reclamation efforts shrink coastal lands and wetlands that could otherwise act as natural flood buffers. On the other hand, coastal communities are often excluded from the decision-making process, making them the most affected by these developments.

2. The Kolkata Case Study

The second lecture, focusing on the Kolkata case study, began with a reflective question: Is Kolkata an ecologically vulnerable or subsidized city? This question highlighted the dynamic relationship between urban development and the supporting ecosystems. Assoc. Prof. Dr. Jenia Mukherjee explained that while Kolkata is often seen as a city threatened by urbanization and pollution, it also benefits greatly from its natural environment, particularly through the East Kolkata Wetlands (EKW).

This question also encouraged students to consider: Are cities in Indonesia ecologically vulnerable, or are they actually receiving "subsidies" from natural ecosystems like wetlands, fishponds, and mangrove forests? While these coastal ecosystems continue to provide vital benefits, they are increasingly threatened by

unchecked development. Without timely action, we risk losing these valuable "subsidies."

Figure 4 Assoc. Prof. Dr. Jenia Mukherjee and Dr. Rukuh at UNDIP Semarang

- **Colonial Hydrology: Long-Term Impacts**

Assoc. Prof. Dr. Jenia Mukherjee then guided the students through the colonial hydrology of Kolkata, showing how the construction of canals like the Circular Canal and Beleghata Canal by the British colonial government in the early 19th century played a crucial role in the city's development. Although these canals were initially built to support trade and water management, they also caused long-term impacts that are now felt in Kolkata, such as wetland shrinkage and water pollution.

In many Indonesian cities, we have also inherited environmental problems from the past. The major rivers in Semarang, which were constructed and regulated during the colonial era, now face enormous pressure from sedimentation and urbanization. Through this lecture, the students learned that understanding environmental history is essential to grasping the current environmental challenges we face. This insight offered a new perspective on planning more sustainable urban futures.

- **The Impact of Urbanization in Kolkata and Indonesia**

This lecture also highlighted how urbanization has changed the landscape and ecosystems in Kolkata. The data showing that since the 1960s, Kolkata's urban development has caused significant wetland shrinkage. The development of areas such as Salt Lake City and New Town Rajarhat has affected natural water flows and reduced the EKW's capacity to manage the city's waste.

The coastal development has exacerbated flooding and deteriorated water quality. In Semarang, large projects like the development of ports and coastal reclamation have reduced land that once functioned as water absorption areas, thus worsening the impact of tidal flooding in low-lying residential areas. This highlights the need to rethink coastal city planning in Indonesia, especially with regard to the long-term impacts on existing ecosystems.

- **Environmental Protection Movements in Kolkata: Inspiration for Indonesia**

One of the most inspiring aspects of this lecture for the students was learning how community movements in Kolkata have actively worked to protect the East Kolkata Wetlands (EKW) through legal actions and social campaigns. The "Green Bench" at the Kolkata High Court, which handles environmental cases, as well as social media campaigns like #SaveAndSustain and #HandsOffEKW, which mobilized the public to protect these vital wetlands.

This example could inspire students to adapt these ideas and explore how similar approaches might be implemented in Indonesia, where strong social movements are also essential to protecting coastal ecosystems. For instance, in Pekalongan, communities threatened by rob could use social media to gather support for safeguarding the remaining fishponds and wetlands. By building awareness and mobilizing local communities, they may help prevent further environmental degradation in the future.

3. The Non-Human Aspect and Nature-based Solution

The lectures also highlighted the importance of non-human aspects in urban planning, emphasizing that ecosystems themselves are active participants in supporting sustainable development and resilience. Nature-based solutions play crucial roles in mitigating environmental challenges like flooding, water pollution, and coastal erosion. The natural ecosystems act as buffers, absorbing excess water and filtering pollutants while simultaneously supporting biodiversity. By integrating these non-human elements into urban planning, cities can achieve a more harmonious balance between development and nature, reducing the need for costly artificial infrastructure. This perspective encouraged students to see ecosystems not merely as passive landscapes but as essential components of urban resilience that, if preserved, can lead to more sustainable and adaptable cities.

The students were impressed by the varied lecture formats, such as reading dialogues on the role of non-human aspects and their connections to urban ecosystems. Additionally, a video was shown on how nature-based solutions (NBS) intersect with gender, highlighting the need for a deeper understanding of gender and social inclusion challenges within NBS contexts. Addressing these challenges is essential to achieving effective, sustainable development outcomes.

Figure 5 Dr. Shreyashi delivering a lecture at UNDIP Semarang

4. Conclusion and Students Reflection

After attending these lecture sessions, the students have become more aware that balancing urban development with natural ecosystems is crucial for long-term sustainability. Kolkata offers highly relevant lessons about how rapid and unplanned urbanization can destroy vital ecosystems like the East Kolkata Wetlands (EKW). On the other hand, the city also shows that with strong community movements and proper policies, there is still hope to protect urban environments from further degradation.

To view the students' output, you can scan the QR code (final report and video).

SCAN ME

FINAL REPORT

SCAN ME

OUTPUT VIDEO

"From the perspective of the humanities and social sciences, the lectures by Dr. Jenia Mukherjee and Dr. Shreyashi Bhattacharya deepened our understanding of resilience and heightened our awareness of often-overlooked aspects, such as non-human elements. These sessions encouraged us to approach resilience as a phenomenon rather than through the procedural lens typical of urban and regional planning."

- Prof. Dr.-Ing. Wiwandari Handayani

Meeting with colleagues at Diponegoro University

The meeting with colleagues at Diponegoro University serves as an opportunity for collaboration and exchange of ideas on urban planning and environmental management, particularly focusing on the challenges and solutions for coastal areas. This gathering aims to foster deeper insights and strengthen partnerships for future research and community development initiatives.

Figure 6 Meeting with faculty member Department of Urban and Regional Planning, UNDIP

Figure 7 Strengthening collaboration with the Faculty of Engineering at UNDIP

5. Lectures Experience in India

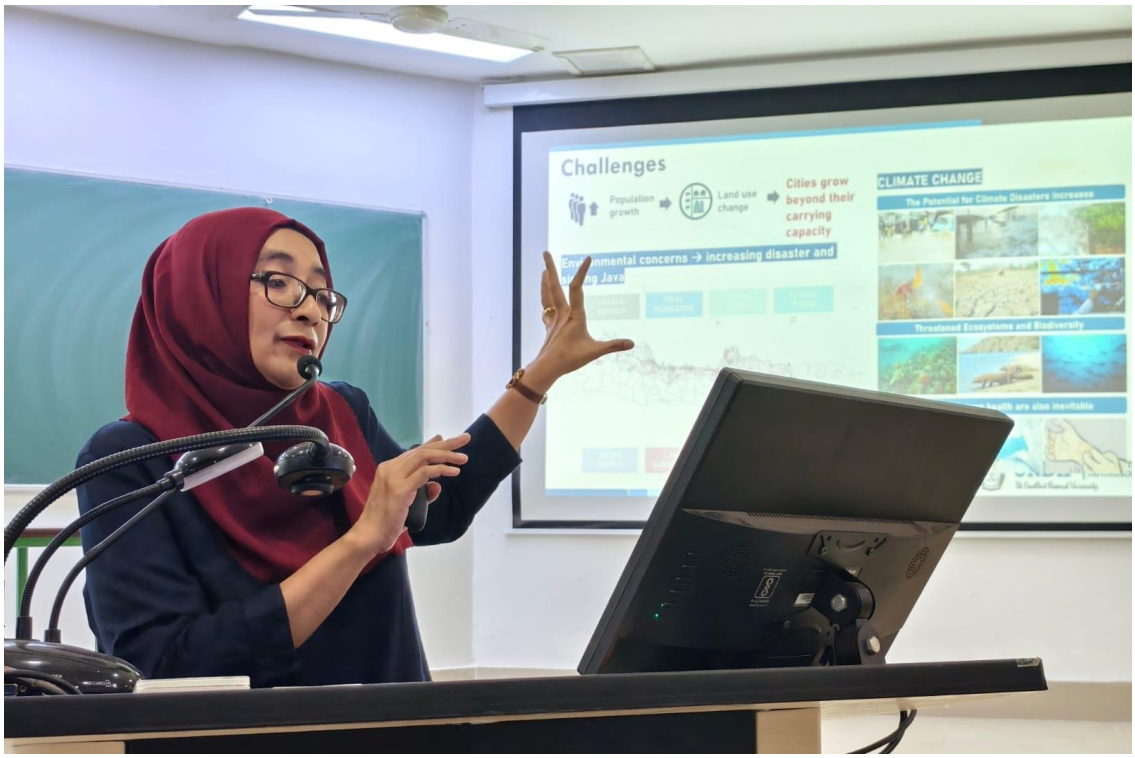


Figure 8 Prof. Wiwandari delivering a lecture at IIT Kharagpur, India

In turn, Prof. Wiwandari and Dr. Rukuh delivered lectures in India for the courses *Environmental Humanities* and *Science and Humanism*. They presented the topics "Resilience from Below: Building Inclusive Cities" and "The Role of Planning Nature-Based Solutions to Address Climate Change Challenges in Coastal Cities." In these lectures, Prof. Wiwandari and Dr. Rukuh highlighted resilience practices and nature-based solutions in Indonesia from the perspective of urban planning. One example discussed was the utilization of local wisdom as an approach to engage communities and ensure sustainability.

In another class, Prof. Wiwandari and Dr. Rukuh provided a more detailed explanation of these concepts, particularly focusing on practices of local wisdom, such as the *subak* system in Bali.

Figure 9 Dr. Rukuh delivering a lecture at IIT Kharagpur, India

These discussions deepened the understanding that knowledge is not only theoretical but also embedded in the cultural values upheld by local communities. This knowledge serves as a potential solution to the challenges faced by society and is particularly valuable for promoting sustainable outcomes, as it is directly derived from the community.

"Local wisdom in Indonesia is an example of a sustainable solution to addressing challenges, derived from indigenous knowledge."

- Assoc. Prof. Dr. Jenia Mukherjee

Out in The Field: Trailing into Geomorphology

Java Island, as the most densely populated island in Indonesia, possesses unique characteristics, particularly along its northern coast, which faces pressure from massive urbanization. Exploring the geomorphology of the northern coast of Java provides an interactive-immersive pedagogical experience for students and the team. Here, the team selected three focal study locations: Jakarta (Muara Angke), Pekalongan (Wonokerto), and Gresik (Ujung Pangkah) (see Fig 10). The diverse exposure from each location enriches the understanding of urban planning and humanities, as well as their interaction with the environment, offering a firsthand perspective of concepts previously learned in class.

In general, the characteristics of the northern coast of Java can be classified into four types: sandy coast, muddy coast, gravelly coast, and coastal protection and infrastructure (Solihuddin et al., 2021). Sandy and muddy coasts are the most commonly found along the North Coast of Java, while gravelly coast is only found in several areas, such as Jepara and Rembang.

Sandy coasts are widespread along the northern coast of Java Island, such as in Karawang, Tegal, Pekalongan, Batang, Rembang, and Gresik. The sandy coast type is often developed for fish ponds, agriculture, and industrial zones due to its relatively flat contours. However, the river systems that flow into this type of coast have low energy, allowing seawater to enter river channels far inland during high tide. Consequently, coastal areas of this type often face flooding.

Figure 10 Location Studies

Meanwhile, muddy coasts are often characterized by mangrove forests and active river systems, which are prevalent along the northern coast of Java, such as in Serang, Cirebon, Brebes, Semarang, Demak, and Pati. This type of coast consists of unconsolidated sediments that have accumulated over the last 5,000 years, forming birdsfoot-type deltas like those of the Comal River and the Bengawan Solo River. Muddy coasts are also vulnerable to river flooding and marine inundation, which must be considered in coastal area planning and management.

The coastal protection and infrastructure type is shaped by the massive urban development along the northern coast of Java Island, dominated by grey infrastructure (piers, sea walls, seawater dikes, revetments, groins, and seaports). This infrastructure plays a role in protecting cities from environmental hazards. This type is commonly found in North Jakarta, Cirebon, Tegal, Pekalongan, Semarang, Jepara, Rembang, and Surabaya. Groins, sea walls, and revetments are common protection methods applied along the North Coast of Java. These structures are mostly designed vertically and are primarily constructed to prevent the collapse of houses or buildings located along the shore.

The geomorphological differences of each coastal area along the North Coast of Java present a unique landscape and various challenges. Additionally, massive urbanization exerts pressure on urban development in coastal areas. This is evident in cities and metropolitan areas such as Jakarta, Semarang, and Surabaya, which form a megaregion along the North Coast of Java (Hudalah et al., 2024). At the same time, these coastal areas are also vulnerable to environmental hazards due to extensive development, exacerbated by unpredictable climate change (Solihuddin et al., 2021).

Muara Angke in Jakarta, Wonokerto in Pekalongan, and Ujung Pangkah in Gresik, each with its own unique context, scale, and characteristics. Muara Angke, as part of the Jakarta metropolitan coast, faces significant challenges related to urbanization, including informal settlements and formal housing that can create social segregation. Wonokerto in Pekalongan, a small city near Semarang, faces major issues of land subsidence that threaten ecosystems, activities, and settlements. Meanwhile, Ujung Pangkah in Gresik, a rural area, boasts a large mangrove ecosystem and has been designated as an Essential Ecosystem Zone (EEZ) (Muryani & Ni'matussyahara, 2024).

The main activities conducted in this research project include field observations and interview with the people, aimed at gaining a comprehensive understanding of the physical and social environments. In the context of coastal areas, understanding geomorphology is crucial for comprehending the interaction between the environment and human activities, which can accelerate or alter natural processes that will impact future development planning.

In more detail, the following are the activities carried out by students and both institutions in the field to enrich the critical pedagogies from coastal/delta cities of Asia with three case studies in Indonesia:

1. Muara Angke, Jakarta

One of the coastal resilient *kampung* amid Jakarta's rapid development is Muara Angke. This area is located in Pluit Sub district, Penjaringan District, North Jakarta. The survey was conducted on April 23. Geographically, this area directly borders Jakarta Bay, making it one of the key areas in Jakarta's coastal ecosystem. Although it is known as a fishing village, fish auction site, fishing port, and culinary destination, the area also includes the Muara Angke Wildlife Reserve, which is the last remaining mangrove forest in Jakarta.

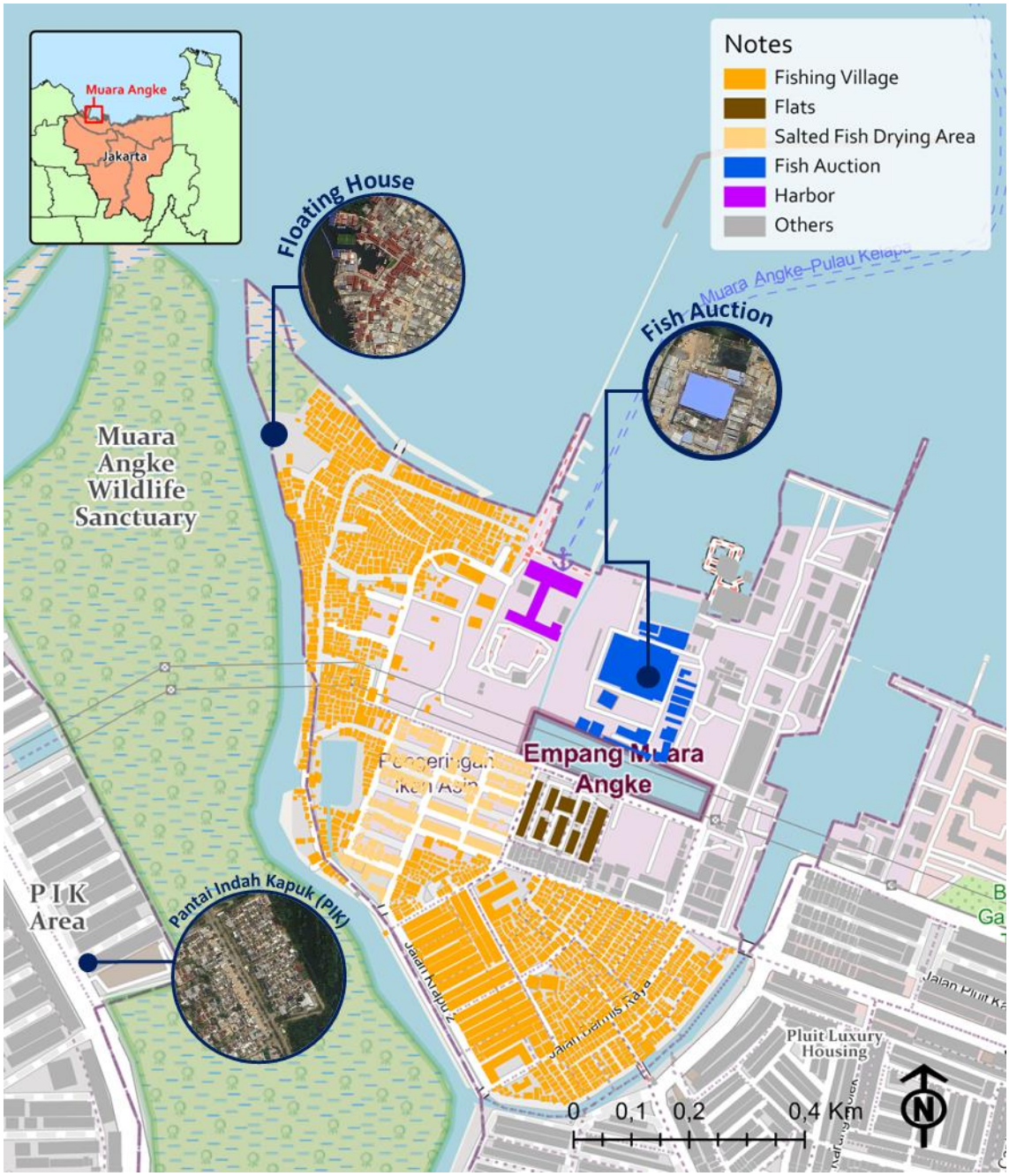


Figure 11 Existing Condition in Muara Angke

- **Field Observation**

Figure 12 The Fishing Village in Muara Angke

The highlighted objects in Muara Angke include its informal settlements, such as the fishing village, TPI Muara Angke (the fish auction), and the Floating House. The fishing settlements in this area reflect the dense coastal community life with its infrastructure and environmental challenges, while TPI Muara Angke serves as an economic hub where marine catches are traded.

Meanwhile, Muara Angke also features floating houses as a solution to the limited availability of decent housing and the issue of tidal flooding. The construction of these floating houses was initiated by the Ministry of Defense in collaboration with the Defense University (Universitas Pertahanan), resulting in a total of 16 floating houses and 200 stilt houses. The floating houses are equipped with various facilities, such as solar panels, bio septic tanks, clean water, and a futsal field. The presence of these floating houses has attracted public interest and has proven to be a viable solution amidst the limited basic services in the informal fishing settlements.

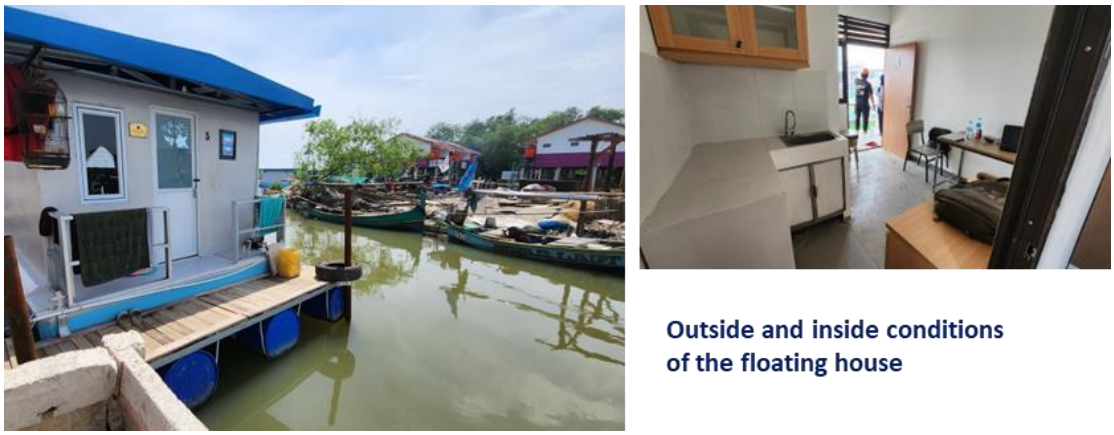


Figure 13 Floating house initiated by Indonesian Ministry of Defense

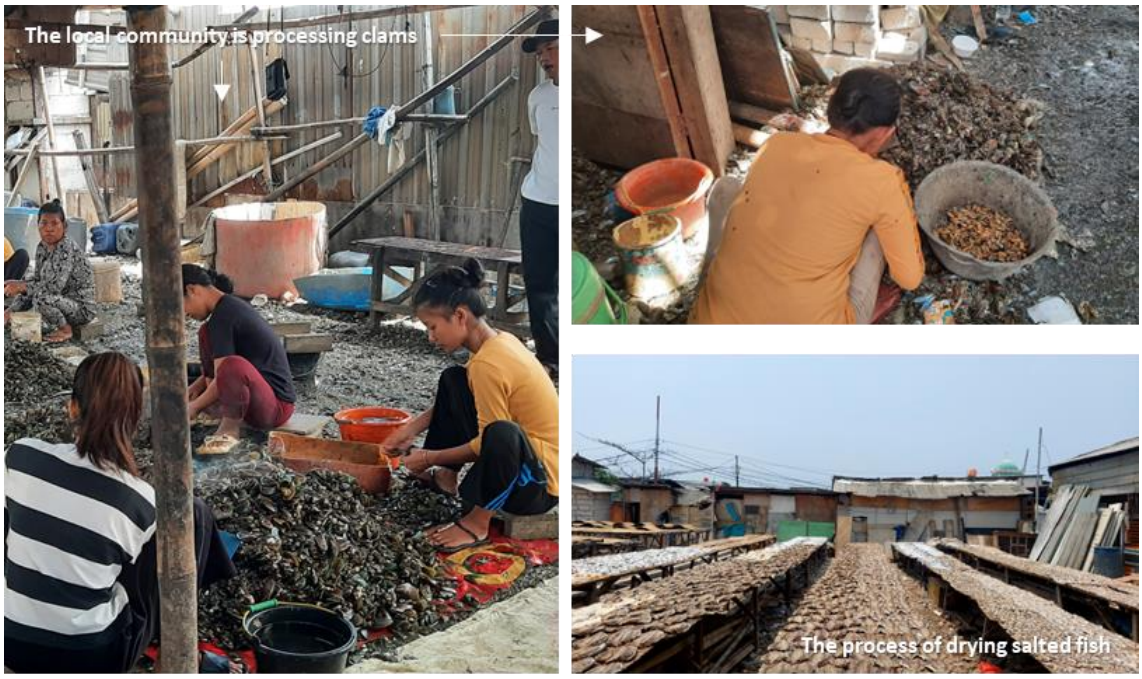


Figure 14 The Daily Activities of the Community in Muara Angke

Additionally, the survey was also conducted in Pantai Indah Kapuk (PIK), a planned and upscale area near Muara Angke. The relationship between Muara Angke and PIK highlights a stark contrast between the densely populated fishing settlements with socio-economic and environmental challenges, and the more modern, well-organized PIK area, featuring luxurious infrastructure and comprehensive facilities. PIK as a coastal development area, also influences the social and economic dynamics in Muara Angke, creating an interaction between modernity and tradition as well as challenges in sustainable environmental management along Jakarta's coast.

Figure 15 The well-developed PIK area is situated just beside Muara Angke

- **Meet the People**

As part of the field survey in Muara Angke, interviews were conducted with two key informants: the neighborhood head (RW leader) and a representative from the Ministry of Defense (Kemenhan). The interview with the RW leader focused on the living conditions within the fishing settlement in Muara Angke, covering aspects such as the physical environment, basic service infrastructure, including issues related to sanitation and access to clean water. Environmental challenges, such as the frequent tidal flooding that affects the area and its impact on residents' daily lives, were also key topics, followed by discussions on community responses and local adaptations to address these issues.

The community, predominantly composed of migrants, adds dynamics to social cohesion and characteristics. Most of the migrants come from Cirebon, Tegal, and Indramayu, collectively referred to as RCTI (Rombongan Cirebon, Tegal, and Indramayu). The high number of newcomers creates significant heterogeneity, which affects the openness of the community during visits by the team.

Figure 16 Interview with the local community

The interview with the representative from the Ministry of Defense highlighted the floating house program implemented in the coastal area of Muara Angke as a solution to tidal flooding and rising sea levels. The explanation covered the program's objectives and background, technical and logistical support provided by the Ministry, and challenges faced during its implementation. The representative also provided insights into the community's reaction and participation in the floating house program, exploring whether they view it as an effective long-term solution or just a temporary measure. The impact of the program on residents' daily lives, including comfort and facilities, was also discussed in this interview. These two interviews provided a comprehensive overview of the community's adaptation to coastal challenges in Muara Angke and the government's efforts to offer innovative solutions to improve the quality of life for coastal residents.

Figure 17 Observing progress towards better conditions

2. Wonokerto, Pekalongan

Pekalongan is one of the cities affected by tidal flooding and rapid land subsidence along the North Coast of Java, and Wonokerto is one of the coastal areas impacted (see Fig 18). The survey was conducted on April 27. Wonokerto is located in Pekalongan Regency and is a sub-district situated at the northern part, directly bordering the Java Sea. The team, along with undergraduate and postgraduate students from UNDIP, observed the impacts of land subsidence and erosion in Wonokerto, as well as the adaptations made by the local community.

Figure 18 Existing Condition in Wonokerto

- **Field Observation**

The students and team explored homes affected by tidal flooding, many of which were severely impacted. Numerous houses had already sunk, and even facilities such as the fish auction site (TPI) and mosques were affected. The severe impacts of erosion and tidal flooding have raised community awareness, prompting them to seek sustainable solutions, one of which is PEGAR. PEGAR is a simple wave breaker technology designed to reduce the energy of sea waves and allow suspended sediment and sand sedimentation to pass through.

Figure 19 Severe flood in Wonokerto.

In addition, the team explored other initiatives to address erosion and tidal flooding, such as long storage and mangrove planting. These two different approaches play crucial roles in coastal management in Wonokerto. Long storage is a structural solution designed to capture water and reduce flooding in areas prone to tidal flooding. Thus, long storage helps control water distribution, preventing it from directly inundating residential areas. Meanwhile, mangrove planting is an effective Nature-based Solution (NbS) practice for mitigating abrasion and enhancing soil stability in coastal areas. Mangroves not only act as natural protectors from waves and strong winds but also enrich local biodiversity and create habitats for various marine species.

This field observation provided valuable insights for the students and team in understanding the complexity of coastal challenges in Wonokerto, as well as the importance of integrating both structural and nature-based approaches to achieve sustainable coastal resilience.

Figure 20 Exploring the coastline of Wonokerto.

- **Meet the People**

In Wonokerto, interviews were conducted by the students and team, involving a wider range of stakeholders compared to the other two locations. Interviews were held with village officials, the Tourism Awareness Group (Pokdarwis), pond farmers, fishermen, and Bintari (an NGO). The variety of perspectives provided comprehensive knowledge for understanding the complexities of community-environment interactions.

The majority of the people encountered work as fish pond farmers and fishermen. This group is highly vulnerable to the impacts of disasters and climate change, as their livelihoods are directly dependent on the coastal environment's conditions. The social characteristics in Wonokerto, which are more homogeneous and dominated by the Javanese ethnic group, create a close-knit community with a strong sense of

mutual cooperation. Unlike the atmosphere in metropolitan like Jakarta (Muara Angke) and Semarang, the people in Wonokerto tend to be more open and welcoming the team and students. This made the interview process smoother and facilitated in-depth information gathering. Their cooperative attitude in sharing experiences and knowledge about local practices in addressing environmental challenges enriched the field observations and analysis. The involvement of various stakeholders, from village officials to local communities such as Pokdarwis and Bintari, provided diverse perspectives and strengthened the understanding of how coastal communities adapt and collaborate to seek sustainable solutions.

Figure 21 Visiting a resident affected by tidal flooding in Semonet Sub Village

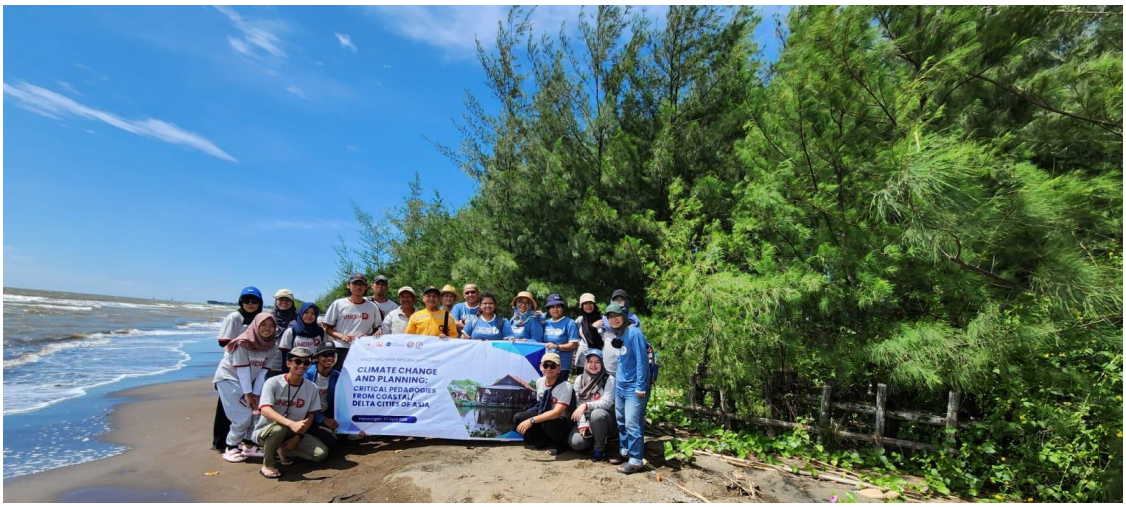


Figure 22 Interview with the Head of Api-api Village and the Leader of the Fishpond Farmer Group.

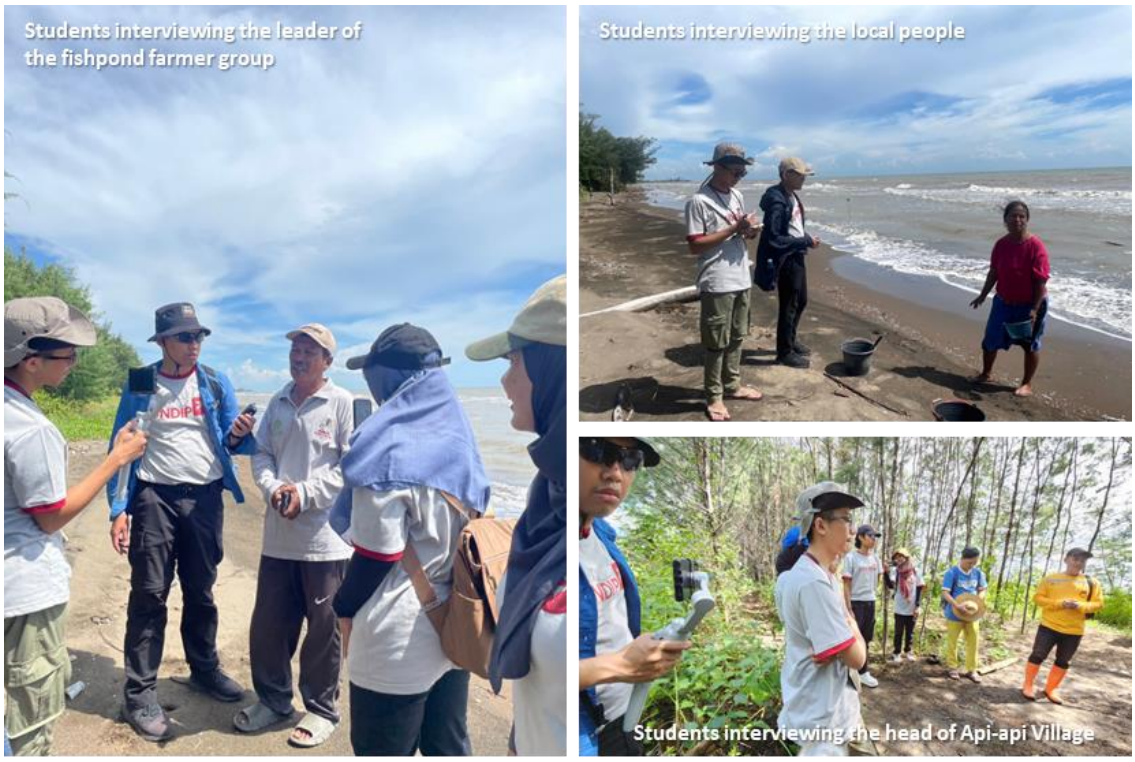


Figure 23 Students interviewing the local community

FGD in Wonokerto

In addition to the interviews, the team, along with students, also conducted a Focus Group Discussion (FGD) to discuss the projects that have been implemented in the northern coastal area of Wonokerto, particularly those related to coastal erosion, sea-level rise, and the development of coastal tourism by BUMDes (Village-Owned Enterprise). The FGD was attended by Mr. Arif Gandapurnama, a representative from Mercy Corps Indonesia, the head of Api-api village, representatives from local community groups (such as the fishpond farmers), BUMDes representatives, Bintari (NGO), Prof. Wiwandari, Dr. Rukuh, Prof. Iwan, Dr. Jenia, Dr. Shreyashi, Retno, as well as undergraduate and postgraduate students.

Figure 24 FGD in Wonokerto

3. Ujung Pangkah, Gresik

The survey was conducted on April 28, 2024, in Ujung Pangkah (see Fig 25), Gresik Regency. Ujung Pangkah is a delta formed at the mouth of the Bengawan Solo River. As one of the largest deltas in East Java, this area is an important habitat for coastal wetland ecosystems. The main estuary of Ujung Pangkah consists of three coastal villages: Pangkah Wetan, Pangkah Kulon, and Banyuurip. The team focused on the mangrove areas, which play a crucial role in protecting the coastline from abrasion and maintaining the stability of the local ecosystem.

Figure 25 The Location of Ujungpangkah

- **Field Observation**

The team focused on exploring the mangrove areas in Ujung Pangkah, Gresik. They visited several key locations, such as the Fish Auction Place (TPI), which serves as the center of economic activity for local fishermen. The team observed how marine catches are processed and traded, as well as how the presence of mangroves helps maintain the aquatic ecosystem that supports fishing activities.

Additionally, the team visited a mangrove nursery, which is part of local efforts in conservation and coastal preservation. This nursery serves as a source of mangrove seedlings for reforestation projects. Several tourism development spots were also explored, where mangroves are utilized as an eco-tourism attraction, such as the Banyuurip Mangrove Center (BMC). The site consists of small huts connected by walking tracks, although its condition was concerning—dirty and poorly maintained.

The team's focus of observation included how the extensive mangrove areas not only provide protection from abrasion but also support biodiversity and serve as a source of sustainable livelihoods for the community. Through this survey, the team learned about the interconnections between mangrove conservation, local economic development, and climate change mitigation efforts in the coastal area of Ujung Pangkah.

Figure 26 The Landscape of Ujungpangkah

Figure 27 Exploring BMC Area

- **Meet the People**

The community encountered in Ujung Pangkah consists of fishermen who rely on marine resources and the mangrove ecosystem for their livelihoods. Although the team observed the living conditions of the fishermen and the importance of mangroves for the sustainability of their occupations, exploring and conducting in-depth interviews with the fishermen was not the primary focus of the survey. The team concentrated more on observing the physical condition of the mangrove area, the nursery, and local initiatives related to conservation and ecosystem-based tourism development

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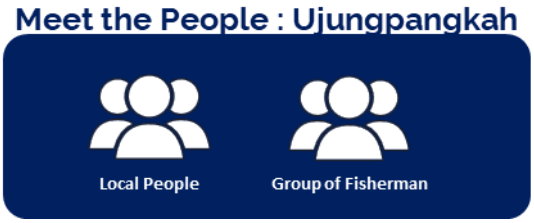

Figure 28 Interview and Exploring Ujungpangkah with the Group of Fisherman

Reflection

This chapter includes reflections from students at the Department of Urban and Regional Planning, Universitas Diponegoro who took part in the joint teaching research course, comprising seven undergraduate students and five postgraduate students.

On a scale of 1 to 10, the students gave an average satisfaction score: **8.75** ★★★★½

1. Postgraduate Students' Reflection

How did our transdisciplinary approach enhance your understanding of climate change and urban resilience?

Intan Agustiantika Soepomo
Postgraduate Student at Department of Urban and Regional Planning

"A transdisciplinary approach to climate change and urban resilience give a deeper understanding by giving insights and solution from another point of view. The same goal can be approached differently by different experts from various disciplines. This collaboration offers a more holistic view of the challenges and fosters the creation of solutions that consider social, economic, and environmental factors."

In what ways did knowledge coproduction (through collaboration and exchange between stakeholders) contribute to your learning experience?

Novia Ari Santi
Postgraduate Student at Department of Urban and Regional Planning

"Co-production of knowledge, such as collaboration and exchange between stakeholders, has significantly enriched my learning experience. For example, enriching my knowledge about implementation in the field regarding the integration of traditional and scientific knowledge. I got this in this course, especially during field trips in Pekalongan. where I saw, how good collaboration can really produce significant results. For instance, the use of local wave breaking technology called pegar, the result of collaboration between local residents and several organizations such as Bintari, Merci Corp, and the local government. This pegar can prevent sea waves from worsening coastal erosion. Even though it still has shortcomings in terms of maintenance, this method is quite effective in preventing abrasion. This example shows how the co-production of knowledge can lead to the development of more effective and sustainable climate change adaptation solutions."

What aspects of the course could effectively demonstrate primary principles of urban resilience?

Aisha Sakina S
Postgraduate Student at Department of Urban and Regional Planning

"A transdisciplinary approach demonstrates the need for diverse perspectives when building resilient cities. Also, the field trip, allows us to seeing the impacts directly and witnessing the community's coping mechanisms."

How well did the integration of different disciplines help you understand the complexities of urban resilience?

"It enhanced my understanding of urban resilience by providing a holistic view that encompasses social, economic, environmental, and infrastructural dimensions. This approach facilitated a more comprehensive analysis of the interconnected factors and potential solutions necessary for building resilient urban systems."

Adelia Kusuma N.
Postgraduate Student at Department of Urban and Regional Planning

What specific elements of the course structure (lectures, site visits, group work, etc.) were most exciting and beneficial to learning experience?

Rini
Postgraduate Student at Department of Urban and Regional Planning

"The lectures are essential to the learning process since they provide a theoretical foundation and a comprehensive overview of key concepts in climate change and urban resilience. However, in my opinion, the most exciting and advantageous aspects of the learning experience are the site visits. The site visits provided an invaluable opportunity to observe and engage with direct examples of urban resilience in action. The site visits brought theoretical concepts to life, making the theoretical foundation easier to understand."

2. Undergraduate Students' Reflection

How did the course help you appreciate the importance of stakeholder engagement in understanding resilience from multiple dimensions?

Akbar Ramadhani D.
Undergraduate Student at Department of Urban and Regional Planning

"I have tried to look at what the community had done and optimize in other courses and opportunities when doing site visit. I come into realization that we could start planning by inventorying what community had done and optimized those with the theory and logical framework I learnt in the university, making stakeholder engagement important. However, it is also important to see other stakeholder too such as the government and NGOs to inventories what role each could play."

To what extent did the course content align with your expectations regarding urban resilience and transdisciplinary learning? And how did the course facilitate your understanding of the challenges and opportunities offered by the urban resilience discourse and praxes?

"Participation of peoples and stakeholders that come through a different background of expertise and knowledge."

"The lesson learned regarding to the efforts of advocacy planning is important to both capacify building and community engagement."

Armeino Fadhlan A.
Undergraduate Student at Department of Urban and Regional Planning

In what ways did the experiential learning components (e.g., site visits) enhance your comprehension of course material? And how did the collaborative aspects of the course (e.g., group work, discussions, reflections, students' seminar, etc.) influence your learning experience?

"The experiential learning components, such as site visits, enhanced my comprehension of the course material by providing numerous examples of urban resilience in action."

Daiva Nafiiszia Y.
Undergraduate Student at Department of Urban and Regional Planning

"Collaborative activities encouraged peer learning, where I had the opportunity to learn from the knowledge and skills of the students from Kharagpur, India."

What improvements would you suggest for future iterations of this course?

Aura Fairuz K.
Undergraduate Student
at Department of Urban
and Regional Planning

"I think the site visits were really impactful, so adding more of these could enhance our understanding even further. Seeing different types of resilience projects would provide a broader perspective. Besides that, having some guest lecturers from different field studies could offer additional insights and show how urban resilience intersects with different areas. And also, after site visits or guest lectures, having follow-up sessions where we can discuss what we learned and ask more questions would be helpful. This could help solidify our understanding and make the connections between theory and practice clearer."

How did the course help you develop practical skills related to urban resilience? And to what extent did the course encourage you to think critically about current practices and potential improvements in urban resilience planning?

"The course helps me to develop practical skills on advocacy planning, communication, situation analysis, etc."

Raden Akbar Wira D.
Undergraduate Student
at Department of Urban
and Regional Planning

"The course did gave me new perspectives on how we see resilience building does not only crucially based on the top of bureaucracy, but also from the below of the community itself."

How did the course influence your perspective on the role of community-based approaches in urban resilience? And how well did the course balance theoretical knowledge with practical applications in the field of resilience?

Intan Nasiha Jatmiko
Undergraduate Student
at Department of Urban
and Regional Planning

"It deepened my appreciation for the important role of community-based approaches in building urban resilience."

"This course likely strikes a strong balance between those two by integrating academic learning with hands-on, practical experience using tools"

Is there anything else you would like to share about your experience in the course?

Zahran Sofyan F.
Undergraduate Student
at Department of Urban
and Regional Planning

"This course is one of the most interesting subjects for me not only in terms of the theory taught but in terms of the application of the approach as well."

Closing: Key Takeaways

The **key takeaways** from the programme are as follows:

Interdisciplinary and Integration Sciences

Cross-fertilized approaches integrating natural sciences and engineering with social sciences perspectives facilitate comprehensive understandings of complex systems (Norgaard and Baer 2005), enabling students and researchers to explore 'wickedness' of the more-than-urban ecological settings and intricacies.

These approaches also support a thorough understanding of space, in which both physical and social-ecological dimensions are viewed holistically. This perspective acknowledges space as a complex construct, encompassing physical infrastructure as well as socio-ecological interactions, thereby enriching understanding of spatial development processes.

Figure 29 Lecture by Assoc. Prof. Dr. Jenia Mukherjee on Kolkata case study

"Our visit to Indonesia for SMUS TANDEM was an explorative encounter with interactive approaches towards teaching and learning, in a different socio-ecological context. As inhabitants of a deltascape, it was an interesting opportunity to see the coastal interactions and effects of climate change in the coastalscape, while engaging in rich discussions with students of UNDIP."

-Dr. Shreyashi Bhattacharya, IIT Kharagpur, TANDEM Indian Team Member

Field as the 'Living Lab'

Effective learning extends beyond classroom theory and case studies to include field visits, which provide students with invaluable real-world exposure. Field trips not only allow students to observe but also to engage with transdisciplinary experts, enriching their perspectives and insights.

Classroom teaching complemented with field trips expose students to real world contexts, crafting deep-rooted impacts, metamorphosizing 'ways of being' (Rigolot 2020). The existing socio-ecological scenes from the 'living lab' are seen, felt, encountered, experienced, and internalized!

Figure 30 Field as the 'Living Lab'

Figure 31 Field Trip in Wonokerto

'With' and 'As' Transdisciplinary Actors

Transdisciplinarity (TD) goes beyond inter and intra-science exchanges (Keitsch and Vermeulen 2021) and involves more-than-academic partners or social stakeholders (Deutsch et al. 2023). Knowledge does not remain constricted within the findings of lab-based experiments that adhere to the fundamental principles of 'exact' sciences

(Näpinen 2011), but manifest through 'situated adaptive practices' (Mukherjee 2024 et al.) – innovated, executed, and improvised upon against place-based scenarios and requirements. Consultations and discussions with social stakeholders facilitate coproduction of knowledge where the students and researchers work 'with' and 'as' TD actors, motivated to craft knowledge-to-action frameworks and pathways towards 'transformative' change.

Figure 32 Focus Group Discussion (FGD) with various stakeholders


Figure 33 The Patachitra demonstrating multispecies entanglement

Artivism

To explore complex socio-ecological accounts of urban deltas and disseminate them to wider audience, 'science through art' is an effective pedagogical and practical intervention and implementation. In one of the classroom lectures at UNDIP, the Indian team shared the coevolutionary narrative of multispecies agencies and engagement in the Kolkata Wetlands. They explained how this agency was explored by school students inhabiting the wetlands ecosystem (through another SMUS project), and how they then showcased the more-than-human interactions using visual folk-art forms (known as *Patachitra* in the Bengali dialect) (Fig. 33.) and interactive theatrical performances.

"Our time in India, especially in the Sundarbans, was truly an eye-opening experience. I was deeply impressed by how humans and non-humans coexist so harmoniously. It was inspiring to see how humans respect nature to such an extent."

-Retno Sari Dewi, Universitas Diponegoro

The Indonesian team of architects and planners participated in a live *pala gaan* performance (Bengali traditional form of songs and poetry) by the inhabitants of the Kumirmari island village, Indian Sundarbans, during a regional workshop-cum-exhibition (conducted in September 2024), through which they described socio-climatic risks faced by the delta and how they gathered ethnographic data on risks and resilience as part of another transdisciplinary project with the IIT team (Fig. 34). Seeds of 'artivism' – a commitment to justice and fairness with pens, lenses, brushes, voices, bodies, imaginations – were sown, awaiting further collaborative-creative exchanges between Indonesian and Indian teams of interdisciplinary researchers.

Figure 34 Pala Gaan scene. Kolkata. September 3, 20204

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Appendics

LEARNING CONTRACT

COURSE
COMMUNITY-BASED URBAN AND RURAL RESILIENCE

Course Code: LTPW 6631
S1 Program of Urban and Regional Planning
Faculty of Engineering
Diponegoro University

Lecturers:
Prof. Dr. Iwan Rudiarto, M.Sc.;
Prof. Dr. Wiwandari Handayani;
Dr. Anang Wahyu Sejati;
Dr. Jenia Mukherjee

Semester: VI

LEARNING CONTRACT

Course	:	Community-Based Urban and Rural Resilience
Course Code/Credits	:	LTPW 6631/ 3 SKS
Lecturers	:	1. Prof. Dr. Iwan Rudiarto, M.Sc. (IR) 2. Prof. Dr. Wiwandari Handayani (WH) 3. Dr. Anang Wahyu Sejati (AWS) 4. Dr. Jenia Mukherjee (JM)
Semester	:	VI
Day/Time	:	Friday/16.00 – 18.30
Class Room	:	B. 202

1. Course Benefits

This course will benefits students by introducing the concept and practice of building community-based resilience in urban and rural areas. This is manifested in the form of introduction and explanation on the meaning and principles of developing the community-based urban and resilience resilience. Introduction and comprehension on the application of instruments or analytical tools that can be used to build the community-based resilience in urban and rural areas will also be given. In addition, this course also offers guidance on how to study the urban dan rural resilience through the case study and examples provided.

2. Description

This course discusses concepts and principles, instruments, as well as issues in building resilience from below in urban and rural areas in Indonesia, which are broadly divided into three main topics:

- Definitions, concepts, and principles of the impacts of urbanization and climate change that affect urban dan rural resilience, as well as the concept of resilient kampong as a solution to building resilience from below.
- Analytical instruments that can be used to build resilience from below that concist of spatial analysis and Community Based Disaster Risk Management (CBDRM).
- Case studies of the implementation of developing resilience from below in cities in Indonesia which in this course will be presented by the City of Semarang and the City of Pekalongan.

3. Expected Learning Outcomes

Course Learning Outcome (CPMK):

Students are able to analyze the concepts and practices of developing community-based urban dan rural resilience.

Specific Capaian Pembelajaran Matakuliah (Sub- CPMK):

1. Students are able to understand the meaning and principles of developing community-based urban dan rural resilience (C2).

2. Students are able to apply analytical instruments or tools that can be used to build community-based urban dan rural resilience (C3).
3. Students are able to examine urban dan rural resilience through the case study examples provided (C4).

4. Learning Method

The learning method applied in this course is combination of in-class and virtual lectures through several online-based materials and assignments. The learning approach is more emphasized on students where the main role of the lecturer is as a facilitator in lectures while the students play the central role (student center learning) in the learning process. Due to the central role of students, it is encouraged for the students to be more active in every lecture activity, be it in the form of group work or discussions in class, whether it be a focused discussion with large group or discussions in smaller groups.

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6. Assignments

There will be two types of assignment given in this course that consist of:

- Individual assignments: review and paper writing, and
- Group assignments: practice through discussions and writing report on the result of the discussions.

Term of reference (ToR) for students's gudance on the paper and report writings will be given seperately later during the course. Students are encouraged to carry out scheduled consultations related to group assignments.

7. Assessment

Assessment for this course is based on assignments and exams, with a composition of 60% for assignments (individuals and groups) and 40% for tests/exams (Quiz, UTS, and UAS) according to the following details:

1. Percentage of Mid Semester Exam (UTS) score= 15%
2. Percentage of Final Exam (UAS) score = 15%
3. Percentage of Quiz score= 10%
4. Percentage of minor assignments and discussions score = 30%
5. Percentage of group assignment score = 30%

8. Schedule

Week	Day/Date	Topic	Sub-Topic	Lecturer	Reference
1	Friday **16/02/2024**	Course Introduction and Impact of Urbanization and Climate Change	- Introduction to the course - Impact of Climate Change - Community-Based Resilience	IR	1, 4, 7, 14, 21, 39, 48
2	Friday **23/02/2024**	Concept and Definition of Urban Resilience	- Concepts and definitions related to urban resilience - The scope of urban resilience	WH	6, 13, 16, 17, 24, 27, 43, 47, 49, 50, 56
3	Friday **01/03/2024**	Concept and Definition of Rural Resilience	- Concepts and definitions related to rural resilience - The scope of rural resilience	IR	6, 13, 16, 17, 24, 27, 43, 47, 49, 50, 56
4	Friday **08/03/2024**	Case Study: Urban and Rural Resilience Practices	- Practices of urban/rural resilience from the perspective of the governments - The differences between the two concepts in practice	WH	6, 13, 16, 17, 24, 27, 43, 47, 49, 50, 56
5	Friday **15/03/2024**		- Practices of urban/rural resilience (Case from India) - The differences between the two concepts in practice	WH + JM*	31, 46, 58
6	Friday **22/03/2024**	Concept and Operationalization of Resilient Kampong	- Explanation on the concept of Resilient Kampong in urban areas - Strategy for maintaining and disseminating the implementation of Resilient Kampong	IR	31, 46, 58
7	Friday **29/03/2024**		- Practice in formulating the strategy of Resilient Kampong	IR	31, 46, 58
8	**01-19 /04/2024**	Mid Semester Exam (UTS)			

9	Friday **26/04/2024**	Etnography Approach to Build Urban/Rural Resilience in Coastal Cities	Process and practice	IR + JM**	2, 3, 11, 15, 18, 25, 29, 36, 40, 45, 53, 54, 55, 57
10	Friday **03/05/2024**	Spatial Instruments in Building Resilience: Land Use Change and Urban Carbon Emissions Analysis	- Process and practice of land use change analysis - Process and practice of analyzing urban carbon emissions	AWS	2, 3, 11, 15, 18, 25, 29, 36, 40, 45, 53, 54, 55, 57
11	Friday **10/05/2024**	Spatial Instruments in Building Resilience: Urban Heat Island (UHI) Analysis	- Definition of urban heat island - Process and practice of urban heat island (UHI) analysis	AWS	2, 3, 11, 15, 18, 25, 29, 36, 40, 45, 53, 54, 55, 57
12	Friday **17/05/2024**	Spatial Instruments in Building Resilience: Commuity Based Disaster Risk Management (CBDRM)	- Explanation on Commuity Based Disaster Risk Management (CBDRM) - Components and process of making CBDRM - Lesson learned from the making of CBDRM in Semarang City	WH	8, 12, 22, 23, 32, 33, 58
13	Friday **24/05/2024**	Group Work (Tentative)	- Group Work of IITKGP and UNDIP Under Graduate Students.	WH + JM*	5, 10, 30, 34, 35
14	Friday **31/05/2024**	Community-Based City Resilience: The Practice of a Flood Early Warning System in the Bringin Watershed Semarang and Waste Management Practice in the Waste Bank of Semarang City	- The process of developing and managing a flood early warning system - Lesson learned from the practice of flood early warning systems in Semarang City - Components and process of establishing and managing a waste bank - Lesson learned from waste bank practices in Semarang City	IR	19, 26, 41, 44
15	Friday **07/06/2024**	Community-Based Rural Resilience: A case study of adaptive toilets and ecosystem restoration in the coastal areas of Pekalongan	- Experience and process to control abrasion and restore ecosystems affected by rob/tidal flood - Lesson learned from ecosystem restoration practices in the coastal areas of Pekalongan	IR	28, 42, 52, 59
16	**10 – 21 /06/ 2024**	**Submission of Group Assignment Final Exam (UAS)**			

Note:
*in tandem with Dr. Jenia Mukherjee (JM) online from Kharagpur, India; **offline in Semarang, Indonesia.
Field Trip to Pekalongan: 27 April or 18 May 2024 (tentative)

LEARNING CONTRACT

COURSE
CLIMATE CHANGE AND PLANNING

Course Code: LTPW 8011
S2 Program of Urban and Regional Planning
Faculty of Engineering
Diponegoro University

Lecturers:
Rukuh Setiadi, PhD;
Prof. Dr.-Ing. Wiwandari Handayani;
Dr. Jenia Mukherjee

Semester: II

LTPW8011 CLIMATE CHANGE AND PLANNING

SECOND SEMESTER – 2023/2024

Workload : 2 credit units

Lecturers : Rukuh Setiadi, ST, MEM, PhD (*Course Coordinator*)
Prof. Dr- Ing. Wiwandari Handayani, ST, MT, MPS.
Dr. Jenia Mukherjee

Class : (Every) Tuesday, 1.00 pm – 2.40 pm

Room : Offline (Mostly) or Zoom (Occassionally)

A- COURSE AIMS

This course is important to expand the students' insight into the discourse of climate change and its implications for regional and city planning. Additionally, this course aims to increase students' analytical capacity related to mitigation and adaptation strategies that can be applied to respond to climate change in various forms of urban development sectors.

B- COURSE DESCRIPTION

It is now commonly acknowledged that we are entering a period of unprecedented change due to global climate change. Higher average temperatures, increased risk of drought in many areas worldwide, sea level rises, and extreme weather events are some the obvious emerging impacts of changes in the Earth's climate. It does indeed pose a very serious risk to the sustainability of humankind and nature. Nearly half of the climate-related disasters happen in Asia. In Indonesia, it is indicated by the experience of hazards such as flood, coastal inundation, and subsidence mostly in the coastal regions. The phenomena are getting worst as climate change impacts have been contributing quite a significance to the degrading environmental condition in the areas.

Accordingly, climate change should be acknowledged as an important issue to be addressed in the development planning. Planning is an intended intervention to a factual condition that leads to a condition that is better compared to that of without planning. Therefore, the intervention (i.e. climate change adaptation and mitigation strategies) is expectedly come up to foster development that simultaneously minimizes the harm caused by climate change impacts and minimizes greenhouse emissions without compromising development goals.

This course examines climate change phenomenon and planning strategies to adjust to, plan for and cope with the changing environmental conditions because of the climate change. Fruitful lesson learned will also further explored from different local, sectoral, national and international case studies of policy and practice from both developing and developed countries.

C- LEARNING COMPETENCY

COURSE LEARNING OUTCOME (CLO):

After completing this course, **students are able to formulate climate-sensitive policies and to plan climate change adaptation and mitigation strategies and actions within urban and regional development planning contexts and process**. Furthermore, in a more specific, the student will be able to:

1. Explain comprehensively the definition, trends and mechanisms (natural and anthropogenic) of climate change;
2. Explain the basic conceptual vocabularies in climate change discourse including *risk, hazards, vulnerability, resilience, mitigation and adaptation*;
3. Indicates the observable impacts of climate change in general and Indonesia in particular;
4. Prepare and conduct climate risk assessment process;
5. Propose and critically analyze either mitigation and adaptation strategies and actions in dealing with climate change;

D- TIMELINE AND CONTENTS

	Date	Subject	Lecturer
Key Concepts in Climate Change Study			
1	13 Feb	Introduction to climate change: trends, mechanisms and framing	RST
2	20 Feb	Climate change mitigation, adaptation and building climate resilience	WH
3	27 Feb	Climate change regulations and policies in Indonesia	WH
4	05 Mar	Climate change policy and stakeholders' involvement	WH+JM*
5	12 Mar	Key concepts in climate change: risk, hazard, and vulnerability	RST
6	19 Mar	Climate change vulnerability assessment: approaches and tools	RST
7	26 Mar	Urbanization, spatial planning and climate change	RST
	02 Apr	**Mid-Semester Exam (UTS)**	
Climate Change Impacts and Planning Issues			
8	23 Apr	Sea level rise, coastal ecosystems and climate change	RST+JM**
	27 Apr	FIELD TRIP TO PEKALONGAN	
9	30 Apr	Water, sanitation and climate change	WH+JM**
10	07 May	Climate change and disaster risk reduction	WH
11	14 May	Food security, livelihoods and climate change	WH+JM**
	18 May	FIELD TRIP TO PEKALONGAN	
12	21 May	Urban health issues and climate change	RST+JM**
Climate Change Governance and International Experience			
13	28 May	International perspective on climate change adaptation	WH
14	04 Jun	Governing and mainstreaming climate change in urban development	RST
	11 Jun	**Final Exam (UAS): Student Presentation**	RST+WH

Note:

Rukuh Setiadi, PhD (RST); Prof. Wiwandari Handayani (WH); Dr. Jenia Mukherjee (JM).

*in tandem with Dr. Jenia Mukherjee (online from Kolkata, India); **(offline in Semarang, Indonesia)

E- ASSESSMENT

There at least three types of assessment in this elective course. These are:

- **Major Assignment:** students will write a brief case study paper (2500 words) that critically assess the need of climate change adaptation and propose relevant climate adaptation measures. This assignment contributes to 50% of the total score. A guideline of this major assignment is provided (see Annex 1).
- **Mid-Semester Exam (UTS):** students will be assessed by their positive interaction within the class and good co-operation in this active learning process shares 25% of the total score, including participation on the fieldtrip.
- **Final Exam:** The other 25% scores will come from a sit down closed book exam on all aspects of the taught curriculum, including presentation of the major assignment.

F- REFERENCES

Some key reading materials that should be referred for doing the individual work in each theme includes and are not limited to:

Key Concepts in Climate Change

Adger, W.N. 2006. Vulnerability. *Global Environmental Change,* 16, 268–281.

Fünfgeld, H and McEvoy, D. 2014. Frame divergence in climate change adaptation policy: insights from Australian local government planning, *Environment and Planning C: Government and Policy*, 32, 603 – 622.

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Schneider, S.H., S. Semenov, A. Patwardhan, I. Burton, C.H.D. Magadza, M. Oppenheimer, A.B. Pittock, A. Rahman, J.B. Smith, A.Suarez and F. Yamin, 2007: Assessing key vulnerabilities and the risk from climate change. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,*

M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 779-810.

Schreurs, M.A. 2016. The Paris Climate Agreement and the three largest emitters: China, the United States, and the European Union. *Politics and Governance,* 4 (3), 219-223. doi: 10.17645/pag.v4i3.666

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UNEP 2012. *The Emissions Gap Report 2012.* United Nations Environment Programme (UNEP), Nairobi.

Climate Change Impacts and Planning Issues

Filho, W.L and Nalau, J. 2017. *Limits to Climate Change Adaptation.* Springer.

Haase, D., Frantzeskaki, N., and Elmqvist, T. 2014. Ecosystem services in urban landscapes: practical applications and governance implications, *Ambio,* 43, 407–412, doi 10.1007/s13280-014-0503-1

Hunt, A and Watkiss, P. 2011. Climate change impacts and adaptation in cities: a review of the literature. *Climatic Change, 104*, 13-49.

IPCC. 2014. WGII Assessment Report 5, *Chapter 3. 'Freshwater resources'.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

IPCC. 2014. WGII Assessment Report 5, *Chapter 7. 'Food security and food production systems'.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

IPCC. 2014. WGII Assessment Report 5, *Chapter 13. 'Livelihoods and poverty'.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Satterwaite, D. 2011. How urban societies can adapt to resource shortage and climate change, *Phil. Trans. R. Soc. A*, 369, 1762–1783. doi:10.1098/rsta.2010.0350

Satterwaite, D. 2009. The implications of population growth and urbanization for climate change. *Environment and Urbanization,* 21, 545-567.

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Vignola, R, Locatelli, B, Martinez, C and Imbach, P. 2009. Ecosystem-based adaptation to climate change: what role for policy-makers, society and scientists?, *Mitig Adapt Strateg Glob Change* , 14,691–696. doi 10.1007/s11027-009-9193-6

World Bank. 2010. *Cities and Climate Change: An urgent agenda.* World Bank. Washington.

Climate Change Planning and Mainstreaming

Corfee-Morlot, J., et al. 2009. Cities, climate change and multilevel governance, *OECD Environmental Working Paper*, 14, OECD Publishing.

Davoudi, S, et al. 2009. *Planning for Climate Change: Strategies for mitigation and adaptation for spatial planners.* London: Earthscan.

Harman, B.P., Taylor, B.M., and Lane, M.B. 2015. Urban partnerships and climate adaptation: challenges and opportunities. *Current Opinion in Environmental Sustainability*, 12, 74–79.

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Rauken, T., Mydske, P.K., Winsvold, M. 2015. Mainstreaming climate change adaptation at the local level, *Local Environment: The International Journal of Justice and Sustainability,* 20 (4), 408-423, doi 10.1080/13549839.2014.880412.

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Setiadi, R and Lo, A. Y. (In Press 2017). Does policy research really matter for local climate change policies? *Urban Policy and Research.* doi: https://doi.org/10.1080/08111146.2017.1377607.

Taylor, J and Lassa, J. 2015. How can climate change vulnerability assessments best impact policy and planning? Lessons from Indonesia, *Asian Cities Climate Resilience Working Paper Series, 22,* London: IIED.

Wilson, E. and Piper, J. 2010. Spatial planning and climate change. New York: Routledge

Yoseph-Paulus, R. 2014, Perspectives of planners on adaptation to climate change in Indonesia, *Asian Cities Climate Resilience Working Paper Series,* 9, London: IIED.

ANNEX 1

LPPW8011 Climate Change and Planning 2024

Assignment – Adaptation Case Study (Weighting 50%)

Due: Friday 10th June 2024 at 4 pm (4 pm *sharp*).

Assessment criteria (total 50 marks)

1. Identify and specify a geographic region, either in Indonesia or elsewhere, at a scale at least as large as a single local government area, but not so large as an entire continent.
2. List what you consider to be the most critical aspect or aspects of climate change in that region over a time span of approximately the next 50 years, specifying both the predicted changes to the physical environment, and the ecological and social consequences **(8 marks).**
3. Quantify the expected changes (i.e. impacts) as far as you can; explain why you think they will occur and why you consider them particularly critical; and if you have identified more than one relevant change, rank them in order of priority in terms of human adaptation and response, giving reasons briefly **(8 marks).**
4. Identify, as far as possible, who would have most to lose from the predicted changes you are considering, and who would have most to gain from the proposed adaptation measures or responses. If relevant, consider social and environmental as well as economic and financial costs and benefits **(7 marks).**
5. Specify what measures could be taken, within the geographic region itself, to adapt and respond to these predicted changes; what these measures could achieve and how **(8 marks).**
6. Identify, as far as you can, what individuals or organisations would have rights and/or responsibilities to undertake the adaptation or response measures you have identified, and how they would obtain funding or other resources to do so (i.e. Who is responsible and who pays?) **(5 marks).**
7. How likely do you think it is that your proposed adaptation measures would or will actually be adopted? What would be the likely consequences if they are not? **(5 marks).**

9 marks will be awarded for following instructions, presentation, spelling & grammar – a short, information-rich report like this should be well-edited, highly polished, clear and error-free.

Word limit

Length: 2500 words maximum (not including references), (students will provide a word count) – marks will be deducted above the 2500 words max limit.

Submission

You must submit the final version of your essay in MS Words and PDF version before 11th June 2021 at 4 pm to: **rukuh.setiadi@pwk.undip.ac.id**. Please name your files and send them in a single subject with title LTPW8011 which is followed by your name (**example:** LTPW8011_John Smith).

Referencing

Use APA Referencing Style 6th Edition. (The same style with the MPWK Thesis Guideline)

Student Feedback

Name	Program (Undergraduate/ Postgraduate)	How did our transdisciplinary approach enhance your understanding of climate change and urban resilience?	In what ways did knowledge coproduction (through collaboration and exchange between stakeholders) contribute to your learning experience?
Adelia Kusuma Nuringtyas	Postgraduate	It was given abroad knowledge tome especially there are different approach from adaptation and mitigation in climate change	The important thing that made me realize was about the local champions have a big impact to create a small way and movement to tackle the issues in their area.
Armeino Fadhlan Atana	Undergraduate	Gives multiple perspective on a resilience disciine that can be implemented in both rural and urban settings	Communication, group management
Intan Agustiantika Soepomo	Postgraduate	A transdisciplinary approach to climate change and urban resilience give a deeper understanding by giving insights and solution from another point of view. The same goal can be approached differently by different experts from various disciplines. This collaboration offers a more holistic view of the challenges and fosters the creation of solutions that consider social, economic, and environmental factors.	Knowledge coproduction, through collaboration and exchange between stakeholders, giving an insight about how perspectives and solutions can be learn from another stakeholders leading to a more comprehensive understanding of the issue. Moreover, by involving community members, policymakers, and scientists, knowledge coproduction ensures solutions are practical and address local needs.
Aisha Sakina S	Postgraduate	A transdisciplinary approach allows more comprehensive understanding for complex situation and challenges faced by a region due to climate change. Thus, it may help increase possibility to find a new solution to address climate change accross different field of knowledge.	Learning about how communities, NGOs, government agencies cand local people can work together to develop climate-resilient adaptation was incredibly valuable. For instance, with 'pegar' construction in Wonokerto. It showed me the importance of knowledge coproduction in crafting effective solutions.
Novia Ari Santi	Postgraduate	In my opinion, understanding climate change and urban resilience from various scientific perspectives is very interesting. This increases my knowledge about various proactive solutions that can be implemented involving many parties. An interesting example is the raising awareness activity carried out by Mrs. Jenia, involving the young generation with a very interesting and interactive method through non-actor human stories. Another example is the implementation of green infrastructure based on local knowledge in the Siapi-api village of Pekalongan, as an adaptation strategy to climate change.	Co-production of knowledge, such as collaboration and exchange between stakeholders, has significantly enriched my learning experience. For example, enriching my knowledge about implementation in the field regarding the integration of traditional and scientific knowledge. I got this in this course, especially during field trips in Pekalongan. where I saw, how good collaboration can really produce significant results. For instance, the use of local wave breaking technology called pegar, the result of collaboration between local residents and several organizations such as Bintari, Merci Corp, and the local government. This pegar can prevent sea waves from worsening coastal erosion. Even though it still has shortcomings in terms of maintenance, this method is quite effective in preventing abrasion. This example shows how the co-production of knowledge can lead to the development of more effective and sustainable climate change adaptation solutions.
Rini	Postgraduate	The transdisciplinary approach has improved my understanding and allowed me to recognize the connections between urban resilience and climate change from a variety of perspectives and knowledge areas. It offers a thorough understanding of how different sectors and disciplines contribute to urban resilience. They complement each other and allow us to develop solutions for addressing climate change.	Knowledge coproduction through collaboration and exchange between stakeholders has enriched my learning experience. For instance, during my site visit to Wonokerto, I saw the collaboration between the local community, Mercy Corp, and Bintari Foundation through the use of the PEGAR (Pemecah Gelombang Ambang Rendah) or breakwater application. The local community provided valuable insights into the historical and current impact of coastal erosion and flooding. Mercy Corp contributed its expertise in disaster risk reduction and community engagement, while Bintari Foundation offered technical knowledge on the design and implementation of low-crested breakwaters. The collaboration demonstrated the importance of combining local and expert knowledge to develop effective and sustainable urban resilience strategies.

Name	Program (Undergraduate/ Postgraduate)	How did our transdisciplinary approach enhance your understanding of climate change and urban resilience?	In what ways did knowledge coproduction (through collaboration and exchange between stakeholders) contribute to your learning experience?
Aura Fairuz Kurniazahra	Undergraduate	The transdisciplinary approach helped me understand climate change and urban resilience better by bringing in different perspectives and deeper insights. It also gave me the tools and knowledge to help create more effective and sustainable strategies to tackle these global challenges.	Collaborating with different people from government to community members really boosted my learning. Hearing all these different viewpoints helped me understand climate change and city resilience in a more practical way, not just from textbooks. I got to see how things actually work in real projects and learned a lot from experts in different fields. It wasn't just about learning facts; it was about figuring out new solutions together. Plus, it taught me how to think critically and work well with others, which are skills I know I'll need in my future career. Overall, working with all these different stakeholders was a big part of why I feel more prepared to tackle big global issues like climate change.
Daiva Nafiiszia Yusfianto	Undergraduate	the transdisciplinary approach enhanced my understanding by providing a more nuanced view of the challenges and opportunities related to climate change and urban resilience, emphasizing the importance of collaboration and diverse expertise in finding effective solutions.	Working with others fosters collective problem-solving skills. It encourages brainstorming and creativity in finding solutions, drawing on a wider range of ideas and strategies than would be possible individually.
Intan Nasiha Jatmiko	Undergraduate	it integrating diverse perspectives and expertise that encourages innovative solutions, inclusive planning, improves communication between stakeholders, and increases adaptive capacity.	in integrating diverse expertise, ensuring practical relevance, encouraging shared learning, enhancing problem solving, and enhancing stakeholder engagement.
Akbar Ramadhani Destu	Undergraduate	I believe to plan a comprehensive thinking is needed, and it could be done only by understanding deeper on each of aspect there is in a community; this where transdisciplinary approach become helpful in not getting trap in silos thinking.	They willingness to collaborate with each other enables them to formulate an effective strategy, realizing that a community resilience is built on the basis of mutual understanding; not only in between community, but also with NGOs, academia's, and government. This collaboration allows to play each role, with each amount of power. This ultimately had transformed my mindset of planning to look and work with the broader frame.
Raden Akbar Wira Dharma	Undergraduate	Transdisciplinary approach enhanced my understanding as climate change and urban resilience are not only could be built up from above, but also crucially from below.	Diversity of knowledge between stakeholders triggered a new understanding and scope of knowledge in learning resilience building especially based on what happen in the real time.
Zahran Sofyan Falahuddin	Undergraduate	With some of the methods taught, I can find out how to cope with community-based disasters such as the deepening of material on the Community Action Plan method and several other methods.	By learning directly with the stakeholders involved, I gained new learning and new knowledge that is often done by the following stakeholders, such as the application of adaptive fish ponds following the disaster.

Name	Program (Undergraduate/ Postgraduate)	What aspects of the course could effectively demonstrate primary principles of urban resilience?	How well did the integration of different disciplines help you understand the complexities of urban resilience?
Adelia Kusuma Nuringtyas	Postgraduate	As I mentioned before, the adaptation and mitigation about climate change have contributed to effectively demonstrate in urban resilience	It enhanced my understanding of urban resilience by providing a holistic view that encompasses social, economic, environmental, and infrastructural dimensions. This approach facilitated a more comprehensive analysis of the interconnected factors and potential solutions necessary for building resilient urban systems.
Armeino Fadhlan Atana	Undergraduate	FEWS, in Semarang	By learning the basic of resilience itself, and furthermore expand our way of thinking on how to adapt, mitigate, and plan.
Intan Agustiantika Soepomo	Postgraduate	The aspect is flexibility and adaptability, along with learning and innovation aspect. Those are can be found in the field trip and study case from India.	The point of view of different disciplines help very well although it may lack in a few aspect. Afterall, understanding another point from another discipline might be challenging.
Aisha Sakina S	Postgraduate	A transdisciplinary approach demonstrates the need for diverse perspectives when building resilient cities. Also the field trip, allows us to seeing the impacts directly and witnessing the community's coping mechanisms.	Integration of different disciplines allows us to see how these climate change issues are interconnected and how solutions need to consider all aspects (see the situation through a bigger picture). For instance, to overcome flood due to sea level rise, the engineer proposes physical solutions like irrigation system and pumping, meanwhile sociologist highlights the potential displacement of residents.
Novia Ari Santi	Postgraduate	In my opinion, the most effective aspect for demonstrating the main principles of urban resilience is through case studies, either directly in the field or from literacy about case studies from other countries. Through this case study, understanding urban resilience principles and practical applications is easier to understand.	This integration of different discipline give me insights about recognizing the interconnectedness of urban systems to provide a sustainable solution. For example, addressing flooding in Semarang requires not only engineering solutions like building dykes or improving drainage system, but also requires social solution like community engagement and education, as well as ecological solution such as mangrove restoration and improve ground water catchment.
Rini	Postgraduate	In my opinion, aspects such as site visits and case studies effectively demonstrated the primary principles of urban resilience. Visiting locations provides direct observation of how communities are implementing resilience strategies. For instance, seeing how local communities have adapted to climate change and improved their infrastructure to mitigate flood risks through elevated pathways and houses provided examples of adaptive planning. Meanwhile, case studies offered detailed insights into successful strategies and common challenges. Both site visits and case studies show the real-world application of theoretical principles, making the concepts easier to understand.	The integration of multidisciplinary approaches has improved my understanding of the complex nature of urban resilience. The multidisciplinary perspective gives me insight into the interplay between different factors and how they collectively impact urban resilience. I also learned that effective resilience planning requires an understanding of many factors, which only an integrated approach can provide.

Name	Program (Undergraduate/ Postgraduate)	What aspects of the course could effectively demonstrate primary principles of urban resilience?	How well did the integration of different disciplines help you understand the complexities of urban resilience?
Aura Fairuz Kurniazahra	Undergraduate	As a student, several aspects of our course effectively demonstrated the key principles of urban resilience. One of the most impactful parts was studying case studies of cities that successfully implemented resilience strategies. These real-life examples helped me understand concepts such as green infrastructure and community engagement practically, showing how cities have adapted to climate challenges. The field trips were also a real eye-opener for me. Seeing resilience projects first-hand, such as wave breakers and community mangrove planting initiatives, made the theories we learned in class real. These experiences not only deepened my understanding but also inspired me to think critically about how cities can adapt and thrive in the face of challenges.	The integration of different disciplines really helped me understand urban resilience better. By combining environmental science, urban planning, engineering, and social sciences, I got a full picture of how everything connects. It showed me that building resilience needs a mix of efforts across various systems. Working on projects with people from different fields was eye-opening and made real-world applications clearer. It also sparked innovative ideas, like combining sustainable building designs with community engagement strategies. Overall, this interdisciplinary approach helped me think more critically and see how important it is to work together to solve complex urban challenges.
Daiva Nafiiszia Yusfianto	Undergraduate	Emphasizing the role of community engagement and participatory approaches in building resilience fosters a bottom-up perspective.	by providing a more nuanced, interconnected, and practical view of how cities can prepare for and recover from various shocks and stresses. It has prepared me to approach urban challenges with a more holistic and innovative mindset, essential for addressing the complex issues
Intan Nasiha Jatmiko	Undergraduate	robustness, all principles are able to withstand, and capable of recovering from various shocks and stresses	integration provides a richer and different understanding of urban resilience, and the importance of cross-sector collaboration in effectively addressing the complexity of urban resilience.
Akbar Ramadhani Destu	Undergraduate	The infrastructure adaptability in supporting community in urban areas is one the primary examples of urban resilience. Urban communities are denser and relies on infrastructure more than on rural communities, making infrastructure is badly needed due to the compactness of built ups in urban setting. In the courses I do learn several demonstrations of urban resilience that is done by infrastructure adaptability, such as the sanitation and toilets pilot project in coastal areas affected by climate-related disaster.	It did very well, understanding that there is a relation between science and social, even each has a more specific discipline. Seeing from science alone will make me think from the regular theoretical approach, making me unable to see (or accept) what the community had done effectively. Same if the perspective is seen only from social perspectives, I would not realize that what the community gone through is also the result of the upstream region like Banjarnegara/Dieng High Terrain.
Raden Akbar Wira Dharma	Undergraduate	Meeting local stakeholders effectively demonstrate how transdisciplinary approach could effectivelye create urban resilience	It really helps me as an URP student to "get out" from the mainstream theories and logic that could not be explained without seeing the integration of transdisciplinary approach
Zahran Sofyan Falahuddin	Undergraduate	The site visits and meet with the stakeholder that involves.	Understanding urban resilience requires looking at them from many angles, like engineering, sociology, and economics. The approach that has been tought helps me to learn and analyze the impact and the way to get the urban resillience

Name	Program (Undergraduate/ Postgraduate)	What specific elements of the course structure (lectures, site visits, group work, etc.) were most exciting and beneficial to learning experience?	How did the course help you appreciate the importance of stakeholder engagement in understanding resilience from multiple dimensions?
Adelia Kusuma Nuringtyas	Postgraduate	Site visits and lectures with real examples	I found that it isn't easy things to do for the stakeholders to collaborate and give a ne direction or habits to the residents
Armeino Fadhlan Atana	Undergraduate	Lectures	By coming together in FGD, we as students know about the daily experience from the locals. Indeed it will be a fundamental knowledge for us as a future planners.
Intan Agustiantika Soepomo	Postgraduate	Lectures and site visits are the most enjoyable, the story learned from both are fun.	The course likely emphasized the importance of stakeholder engagement in understanding resilience from multiple dimensions through the interconnected systems. Resilience is not only about physical infrastructure since it also considers social, economic, and environmental aspects. Stakeholder engagement likely shed light on these interdependencies, showcasing how challenges in one area can impact others.
Aisha Sakina S	Postgraduate	Field trip to Wonokerto considering impactful, with the experience of witnessing the effects of climate change firsthand which cannot be learned only by textbook. It definitely increased our awareness with current situation and impact of climate change.	Stakeholder engagement contributes in creating an effective climate policies. Collaboration between government, NGOs, and communities along with stakeholder engagement processes (workshops, community meetings) demonstrated how different perspectives contribute to a more comprehensive understanding of vulnerabilities and potential solutions.
Novia Ari Santi	Postgraduate	Direct visits to the field provide an irreplaceable learning experience. Seeing the impacts of climate change firsthand, such as in Semut Village, Pekalongan, provides a deep understanding of the urgency of this problem. At Siapi-api village, we can learn how local knowledge and multi-stakeholder collaboration can produce effective and sustainable solutions.	Understanding climate change and its effects on the environment and society requires perspectives from various dimensions. From here I have an understanding that by involving various parties in the decision-making process, we can ensure that resilience strategies can be developed and are sustainable, so that they can reduce the impact of risks or even protect the entire community from the impacts of climate change and other disasters.
Rini	Postgraduate	The lectures are essential to the learning process since they provide a theoretical foundation and a comprehensive overview of key concepts in climate change and urban resilience. However, in my opinion, the most exciting and advantageous aspects of the learning experience are the site visits. The site visits provided an invaluable opportunity to observe and engage with direct examples of urban resilience in action. The site visits brought theoretical concepts to life, making the theoretical foundation easier to understand.	This course enriched my understanding of the various perspectives and contributions that stakeholders contribute to resilience planning, emphasising the need for inclusive and participatory methods in order to produce resilient plans that are both sustainable and successful. Engaging all relevant stakeholders ensures that resilience methods are comprehensive and suitable, eventually resulting in more efficient and sustainable results.

Name	Program (Undergraduate/ Postgraduate)	What specific elements of the course structure (lectures, site visits, group work, etc.) were most exciting and beneficial to learning experience?	How did the course help you appreciate the importance of stakeholder engagement in understanding resilience from multiple dimensions?
Aura Fairuz Kurniazahra	Undergraduate	The site visits were definitely the most exciting and beneficial part of the course for me. Seeing real-world projects up close made everything we learned in class feel more real and practical. It was amazing to see the concepts we discussed in lectures, like mangrove planting and flood management systems, being used in real life. These visits also gave me a chance to talk to professionals working on these projects, which provided valuable insights and made the learning experience much more engaging and memorable.	The course showed me how important it is to involve different stakeholders in understanding resilience. Talking to community members, policymakers, and industry experts gave me a more complete picture of how resilience works. Group projects and discussions proved that we need everyone's input to come up with solid solutions. I also learned that getting the community on board early makes projects more likely to succeed. By including diverse perspectives, I realized that resilience isn't just about buildings and infrastructure but also about social, economic, and environmental factors.
Daiva Nafiiszia Yusfianto	Undergraduate	Engaging in group work i think its one of the exciting expirience and most beneficial knowing that we could understand more, where we tackled resilience-related projects fostered teamwork, critical thinking, and problem-solving skills.	Recognizing the importance of community involvement in resilience planning, the course underscored the role of local residents and grassroots organizations in identifying vulnerabilities, building social capital, and fostering adaptive capacity within communities. This involvement is crucial for ensuring that resilience strategies are inclusive and responsive to local needs.
Intan Nasiha Jatmiko	Undergraduate	site visit, even though all activities are beneficial to the learning process but by doing the site visit, i can see the real problem and the solution to it	the course relating to stakeholder it helps understanding of resilience across multiple dimensions and stakeholder engagement is not just beneficial but essential for developing a comprehensive
Akbar Ramadhani Destu	Undergraduate	I feel that the most beneficial activities to the learning experience would be the discussion post-activities, such as during discussion we had after creating technical proposal and after site visit. There I just realize what we have study and what I have done for the assignment is proven practical. Most time during the assignment and site visit I do not realize that we utilize those approaches like comparative urbanisms, interdisciplinary exchanges, and trans-local exposures.	I have tried to look at what the community had done and optimize in other courses and opportunities when doing site visit. I come into realization that we could start planning by inventorying what community had done and optimized those with the theory and logical framework I learnt in the university, making stakeholder engagement important. However, it is also important to see other stakeholder too such as the government and NGOs to inventories what role each could play.
Raden Akbar Wira Dharma	Undergraduate	Lectures and sitevisit are beneficial as I personally received new knowledge on both elements.	Knowing that people in the community has a will to study for their survival and existence
Zahran Sofyan Falahuddin	Undergraduate	Site Visits	By learning from the approach that has been conducted from the stakeholders that already do the approach.

Name	Program (Undergraduate/ Postgraduate)	To what extent did the course content align with your expectations regarding urban resilience and transdisciplinary learning?	How did the course facilitate your understanding of the challenges and opportunities offered by the urban resilience discourse and praxes?
Adelia Kusuma Nuringtyas	Postgraduate	It exceeded my expectations regarding urban resilience. It enriched my understanding, highlighting the importance of collaborative approaches in addressing complex urban challenges.	The course facilitated my understanding of the challenges and opportunities in urban resilience using theoretical frameworks with practical case studies, demonstrating real-world applications and strategies for building resilient cities.
Armeino Fadhlan Atana	Undergraduate	Participation of peoples and stakeholders that come through a different background of experties and knowledge	The lesson learned regarding to the efforts of advocacy planning is important to both capacify building and community engagement
Intan Agustiantika Soepomo	Postgraduate	It is beyond my expectations, I never imagined before that the ordinary things in some culture are actually important.	The course provided an understanding of urban resilience through critical analysis, real-world examples, and interdisciplinary collaboration. It helped identify strengths and weaknesses in current approaches, provided insights into the potential and limitations of urban resilience initiatives, and highlighted the need for collaboration across disciplines.
Aisha Sakina S	Postgraduate	I expected to learn some technical knowledge about climate change adaptation. Instead, I came out with a much deeper understanding of urban resilience, its social and economic dimensions, and the importance of transdisciplinary collaboration.	The course helps us to understand the challenge like limitations in budget and resource can hinder the implementation of comprehensive resilience plans, especially in developing countries like Indonesia. Thus, we need a collaboration and stakeholder engagement.
Novia Ari Santi	Postgraduate	So far the Climate change lectures have been very satisfying and even exceeded expectations. It provided a comprehensive and engaging learning experience that emphasized the importance of local context, community engagement and practical application of knowledge. This experience provides an in-depth understanding of the challenges and opportunities in implementing adaptation strategies to enhance urban resilience.	Through a combination of theory, case studies, field visits, and interactions with experts and stakeholders, this course provides a comprehensive understanding of the challenges and opportunities in urban resilience discourse and practice. On the challenge side, for example in dealing with complexity where the resulting solution requires a multi-disciplinary perspective, so it requires strong collaboration. Then on the opportunity side, in this course I understand that nature-based solutions can have great potential for achieving urban resilience.
Rini	Postgraduate	I expected an exploration of theoretical concepts, but the course went further by integrating these with practical applications through a site visit. It surpassed my expectations regarding urban resilience and transdisciplinary learning.	The course facilitated my understanding by combining theoretical knowledge with practical applications. It included real-world examples, case studies, and direct engagement with experts and communities. Site visits and participatory activities further illustrated how resilience strategies are applied in diverse contexts, emphasizing the importance of adaptive, inclusive approaches to urban resilience.

Name	Program (Undergraduate/ Postgraduate)	To what extent did the course content align with your expectations regarding urban resilience and transdisciplinary learning?	How did the course facilitate your understanding of the challenges and opportunities offered by the urban resilience discourse and praxes?
Aura Fairuz Kurniazahra	Undergraduate	The course content pretty much met my expectations when it came to urban resilience and transdisciplinary learning. I was expecting to learn about different strategies to make cities more resilient to climate change, and the course covered that with case studies and site visits. I also hoped for a mix of perspectives from various fields, and we got that through Mrs. Jenia lectures and group projects. Working in the final assignment helped me see how everything is interconnected, which is exactly what I was looking for.	The course really helped me grasp both the challenges and opportunities in urban resilience. We dug into the tough issues cities face, like climate change impacts, through case studies and discussions. Seeing real-world examples during site visits made these challenges more tangible and easier to understand. At the same time, the course highlighted exciting opportunities, like using community engagement to build stronger neighborhoods. It showed me that while urban resilience is complex and requires innovative solutions, there are many ways cities can become more resilient and sustainable.
Daiva Nafiiszia Yusfianto	Undergraduate	The course content not only met but surpassed my expectations regarding urban resilience and transdisciplinary learning. It offered a solid basis of knowledge, skills, and perspectives necessary for tackling the diverse challenges involved in constructing resilient cities in a world that is becoming more intricate and interconnected.	Overall, the course not only deepened my understanding of the complex challenges cities face but also illuminated the diverse opportunities for innovation, collaboration, and sustainable development inherent in urban resilience discourse and practices.
Intan Nasiha Jatmiko	Undergraduate	it met my expectations by providing a comprehensive, integrated, and practical understanding of urban resilience, stakeholder engagement, and adaptive strategies.	This shows the potential for innovation, community involvement, integrated planning, supportive policies, and adaptive learning in building resilient urban environments
Akbar Ramadhani Destu	Undergraduate	It goes beyond what I expected, looking forward to applying the perspective again in other opportunities.	It did by showing me that the effective strategies done in the field is what could be done by the community; born by the character of the community and are easy maintained by the community itself -- not the strategies that never existed in the community, as it may be not contextual.
Raden Akbar Wira Dharma	Undergraduate	It does fulfil my expectations as I obtain a comparison between practice and theory	it does facilitate the process of understanding really well.
Zahran Sofyan Falahuddin	Undergraduate	quite aligned because this course helped me and gave me real learning and action in the field with the community related to community resilience and helped me to know how to approach the community. achieve community-based resilience	This course using moocs is very helpful in understanding the challanges in this course, in moocs there are many journals and videos that explain the material in this course.

Name	Program (Undergraduate/ Postgraduate)	In what ways did the experiential learning components (e.g., site visits) enhance your comprehension of course material?	How did the collaborative aspects of the course (e.g., group work, discussions, reflections, students' seminar, etc.) influence your learning experience?
Adelia Kusuma Nuringtyas	Postgraduate	The experiential learning components, such as site visits, enhanced my comprehension of the course material by providing numerous examples of urban resilience in action.	The collaborative aspects of the course, including group work and discussions, greatly enriched my learning experience by fostering diverse perspectives and deeper engagement with the material. Lecturer about the Kolkata Delta in India, for instance, allowed me to understand the real-world implications of urban resilience strategies in a complex and vulnerable region, highlighting the importance of collective problem-solving.
Armeino Fadhlan Atana	Undergraduate	The approach implemented in India	By bringing international lecturers
Intan Agustiantika Soepomo	Postgraduate	Experiential learning, such as site visits, can enhance course material by bringing concepts to life in real-world settings, and encouraging active engagement. This approach strengthens memory and reinforces classroom knowledge, as it brings concepts to life and helps me understand sustainable urban design principles. It also promotes active engagement, enhancing the overall learning experience compared to purely theoretical lessons.	The course's collaborative aspects have positively impacted the learning experience by exposing students to diverse perspectives, enhancing communication skills, and fostering shared learning.
Aisha Sakina S	Postgraduate	Local knowledge enriched my understanding of the complexities of urban resilience beyond just technical solutions. Seeing how climate change impact in Wonokerto helped me understand the specific challenges and potential solutions relevant to the region.	Discussions, reflections, student seminars brought together people from different backgrounds. These exposed us, the students to diverse viewpoints on climate change, resilience and broadened our understanding.
Novia Ari Santi	Postgraduate	The experiential learning components, especially field visits to Siapi-api Village and Semut Village, had a significant impact on improving my understanding of the course material on urban resilience. For example, first, a field visit to a sinking village, namely Semut Village in Pekalongan, provides a clear picture of how vulnerable coastal communities are to climate change. Second, the application of theories in class, such as nature based solutions, community based adaptation, and disaster mitigation, becomes clearer and more relevant after seeing examples in the field. how these concepts are applied, such as the Siapi-api village community with its local technology "pegar" as a solution to overcome coastal erosion.	Through group work, I learned to appreciate different perspectives and expertise. Each group member brings different knowledge and experience. Then, group discussions and reflection sessions provided space to critique our ideas and consider different points of view.
Rini	Postgraduate	Site visits enhanced my comprehension by providing practical insights and firsthand experiences. Observing and interacting with local communities, Mercy Corp and Bintari Foundation in Wonokerto regency allowed me to connect theoretical concepts with real-world practices, deepening my understanding of urban resilience strategies.	The collaborative aspects of the course provide a dynamic and interactive learning environment. Group work, discussions, and reflections encouraged active participation and diverse perspectives, enhancing my knowledge and understanding from various points of view.

Name	Program (Undergraduate/ Postgraduate)	In what ways did the experiential learning components (e.g., site visits) enhance your comprehension of course material?	How did the collaborative aspects of the course (e.g., group work, discussions, reflections, students' seminar, etc.) influence your learning experience?
Aura Fairuz Kurniazahra	Undergraduate	Experiential learning components, like site visits, really boosted my understanding of the course material. Instead of just reading about concepts in textbooks or listening to lectures, visiting actual sites where resilience strategies were implemented brought everything to life. For example, seeing PEGAR projects firsthand helped me understand their impact on urban sustainability much better than any description could. It was also inspiring to talk to community members and see how they tackled real-world challenges using the principles we learned in class. These experiences made the course material more relatable and showed me the practical side of urban resilience beyond theory.	The collaborative aspects of the course had a huge impact on my learning experience. Working in groups allowed me to hear different perspectives and ideas from my classmates. This helped us come up with more innovative solutions to the challenges of urban resilience. It wasn't just about learning from the lecturers; it was about learning from each other's experiences and expertise as well. Discussions and reflections were also key. They encouraged me to think critically about the course material and apply it to real-world situations. Sharing our thoughts and insights during seminars allowed us to deepen our understanding of complex topics and clarify any questions we had. Plus, hearing how others interpreted the readings or lectures often gave me new insights I hadn't considered before.
Daiva Nafiiszia Yusfianto	Undergraduate	Overall, experiential learning components such as site visits played a crucial role in enhancing my comprehension of course material by providing practical, hands-on experiences that complemented theoretical learning. They enriched my learning experience by bridging theory with practice, fostering deeper understanding, and preparing me to apply resilience principles	Collaborative activities encouraged peer learning, where I had the opportunity to learn from the knowledge and skills of the studebts from Kharagpur India
Intan Nasiha Jatmiko	Undergraduate	site visit and classes	in this course we were taught in many ways, especially when we were learning with mrs jenia we got a lot new perspectives and insights that helped me understand the course
Akbar Ramadhani Destu	Undergraduate	The site visits show me when the practice of the approaches learnt in the course material become handy and proven to be effective.	It did by giving insights from a lot of perspective and even backgrounds differences, giving more insights that may not become my focuses before.
Raden Akbar Wira Dharma	Undergraduate	Knowing the hazard that they face in the real time and also the will of the community to learn new knowledge	it gave me new perspectives as discussions creates pros and cons that sharpen my perspective on the topic
Zahran Sofyan Falahuddin	Undergraduate	Video in MOOCS and Site Visit	group work and discussion are very effective in improving the understanding of learning in this course.

Name	Program (Undergraduate/ Postgraduate)	What improvements would you suggest for future iterations of this course?	How did the course help you develop practical skills related to urban resilience?
Adelia Kusuma Nuringtyas	Postgraduate	For now it was all enough, or maybe given more site visits or several case studies to be discuss in the class	The course helped me develop practical skills related to urban resilience by providing hands-on experience with tools and methodologies for assessing and enhancing the resilience of urban systems.
Armeino Fadhlan Atana	Undergraduate	Study visit to the urban settings as well. For example in semarang	Both from social and engineering skillset.
Intan Agustiantika Soepomo	Postgraduate	The course's future iterations should incorporate more experiential learning, including hands-on activities like simulations or role-playing exercises, to enhance theoretical concepts.	The course likely provided practical skills for urban resilience through field trip and interdisciplinary collaboration. Field trip and case studies from India provided hands-on experience in applying resilience principles. Moreover, interdisciplinary collaboration allowed for the integration of different perspectives to develop well-rounded resilience solutions.
Aisha Sakina S	Postgraduate	In the future, an activity like a role-playing exercise could be an interesting way to learn climate change effect. Simulating stakeholder negotiations or community engagement meetings could be a powerful way to understand the challenges and opportunities of collaboration in building resilience.	Analyzing case studies, discussing solutions, and reflecting on the social, economic, and technical aspects of resilience exercises critical thinking and problem-solving skills. The course's focus on stakeholder involvement teaches us about the importance of collaboration between communities, NGOs, businesses, and government agencies and it helps us to participate in future activities.
Novia Ari Santi	Postgraduate	In my opinion, perhaps adding lessons about technology such as modeling and mapping related to the impacts of climate change would be very useful for developing technical skills in the field of urban resilience.	Analysis and critical thinking skills such as identifying problems, analyzing data to produce adaptive solutions to face the challenges of climate change.
Rini	Postgraduate	For future iterations, it would be beneficial to integrate more guest speakers from diverse backgrounds, including government officials, policymakers, urban planners, and community leaders, who could provide varied insights and a richer learning experience. Maintaining site visits is also essential to giving a broader perspective on the complexities of urban resilience.	The course helped me develop practical skills through site visits and group assignment. These activities enhanced my abilities in risk assessment, resilience planning, and stakeholder engagement, providing valuable tools for addressing urban resilience challenges in practice.

Name	Program (Undergraduate/ Postgraduate)	What improvements would you suggest for future iterations of this course?	How did the course help you develop practical skills related to urban resilience?
Aura Fairuz Kurniazahra	Undergraduate	I think the site visits were really impactful, so adding more of these could enhance our understanding even further. Seeing different types of resilience projects would provide a broader perspective. Besides that, having some guest lecturers from different field studies could offer additional insights and show how urban resilience intersects with different areas. And also after site visits or guest lectures, having follow-up sessions where we can discuss what we learned and ask more questions would be helpful. This could help solidify our understanding and make the connections between theory and practice clearer.	the course provided a good mix of theoretical knowledge and practical experience, equipping me with the skills I need to contribute to urban resilience projects in the future. For example, the site visits gave me hands-on experience by showing how real-world projects are implemented and maintained. Seeing these projects in action helped me understand the practical challenges and solutions involved.
Daiva Nafiiszia Yusfianto	Undergraduate	On having new site visit or other similar problems or practices regarding community resilience	Understanding the importance of community participation in resilience initiatives, the course equipped me with skills to engage local residents and community organizations.
Intan Nasiha Jatmiko	Undergraduate	I think it's good enough, maybe it can be more attractive interactions to understand more	this course provided a blend of theoretical knowledge and practical skills, preparing participants to apply what we learned in implementation of urban resilience planning
Akbar Ramadhani Destu	Undergraduate	I guess all is well-done, however I think it is important to check before the site visits whether that all of the students had the open mindset and ready to have interdisciplinary approaches; not sticking too much with the theory they had learnt.	It develops my practical skills by showing me the concrete activities in urban resilience practice as well as giving the opportunity to directly discuss with the community and involved stakeholders.
Raden Akbar Wira Dharma	Undergraduate	-	the course help me to develop practical skills on advocacy planning, communication, situation analysis, etc.
Zahran Sofyan Falahuddin	Undergraduate	More interactive video	By doing the assesment and join courses with the student from india.

Name	Program (Undergraduate/ Postgraduate)	To what extent did the course encourage you to think critically about current practices and potential improvements in urban resilience planning?	How did the course influence your perspective on the role of community-based approaches in urban resilience?
Adelia Kusuma Nuringtyas	Postgraduate	The impacts and drawbacks from climate change really changed my view how important urban resilience planning is.	It was given a new perspective to me
Armeino Fadhlan Atana	Undergraduate	The context of resilience is one complexity on how the role of 'togetherness' is the main critical point on implementing the practices	Especially in CBDRM, it is interesting that community cannot stand alone. There have to be integrated efforts to face the climate change within the community
Intan Agustiantika Soepomo	Postgraduate	The course emphasized critical thinking about urban resilience planning through case studies and field trip. It encouraged a critical analysis of frameworks, and focusing on case studies that actually happened at many places. I was encouraged to identify areas for improvement and consider alternative approaches. Moreover, by examining emerging trends and challenges, I was understand different ways to climate change adaptation.	The course emphasizes the importance of community-based approaches in urban resilience. It highlights the role of local knowledge and social capital. Communities possess valuable knowledge about their local context, vulnerabilities, and strengths, which can be incorporated into resilience planning for more effective and sustainable solutions. Furthermore, social capital fosters collaboration, trust, and empowers residents to take an active role in shaping their city's resilience. Long-term sustainability is also crucial, as community empowerment and awareness is crucial for the long-term success of resilience initiatives.
Aisha Sakina S	Postgraduate	This course explored the limitations of current practices, like seawall as an example of technical solutions. It also addressed the shortcomings of top-down planning methodologies that don't involve communities.	The course likely exposed us to the limitations of top-down planning methodologies that don't involve communities. The field trip to Wonokerto emphasized the value of local knowledge. Witnessing the challenges faced by the community and their coping mechanisms would have shown us how communities possess valuable insights for building resilience.
Novia Ari Santi	Postgraduate	this course significantly pushed me to think critically about current practices and potential improvements in urban resilience planning. The transdisciplinary approach, which combines insights from multiple fields, challenges my current assumptions and expands my understanding of the complexities involved. I also think about what climate change conditions are occurring in the city I work in, and how I will contribute to the area where I live and work.	Previously, I tended to view urban resilience as a technical problem requiring infrastructure and technological solutions. However, after taking this course, I realized that a community-based approach is just as important, perhaps even more important, in building resilient cities. I realized that local people have deep knowledge about their environment, the risks they face, and traditional ways of dealing with problems. This knowledge is invaluable in designing effective and sustainable resilience solutions. For example, in Siapi-api Village, local knowledge about "pegar" has proven effective in dealing with coastal erosion.
Rini	Postgraduate	The course strongly encouraged critical thinking through discussions, reflections, and case studies. It challenged me to evaluate current practices, identify gaps, and consider innovative solutions for improving urban resilience planning, fostering a mindset geared towards continuous improvement.	The course highlighted the crucial role of community-based approaches in urban resilience, emphasizing the importance of local knowledge, participation, and empowerment. The integration of local insights and traditional knowledge proved essential in addressing specific vulnerabilities and fostering a sense of ownership among residents. This experience underscored the necessity of viewing communities not just as beneficiaries, but as vital collaborators in the resilience-building process.

Name	Program (Undergraduate/ Postgraduate)	To what extent did the course encourage you to think critically about current practices and potential improvements in urban resilience planning?	How did the course influence your perspective on the role of community-based approaches in urban resilience?
Aura Fairuz Kurniazahra	Undergraduate	The course really pushed me to think critically about current practices and potential improvements in urban resilience planning. Through case studies and site visits, I saw both successful strategies and areas where things could be done better. This made me question why certain approaches worked and others didn't. The course didn't just teach me about urban resilience—it taught me to analyze and question existing practices and think deeply about how we can make cities more resilient in the future.	The course really changed my perspective on the importance of community-based approaches in urban resilience. I realized that involving local communities is crucial because they understand their own needs and challenges best. The course made it clear that empowering communities and listening to their input is essential for creating effective and lasting urban resilience strategies.
Daiva Nafiiszia Yusfianto	Undergraduate	By examining case studies that facing resilience challenges, the course prompted critical analysis of current practices in urban resilience planning. Studying both successful and unsuccessful examples allowed me to identify strengths, weaknesses, and lessons learned that could inform future improvements.	It emphasized my knowledge of the need for inclusive, participatory, and context-specific strategies that empower communities to become active agents in building and sustaining and resilient.
Intan Nasiha Jatmiko	Undergraduate	this course encouraged me to question current practices, seek innovative solutions, and continuously seek improvements in urban resilience planning	it deepened my appreciation for the important role of community-based approaches in building urban resilience.
Akbar Ramadhani Destu	Undergraduate	Very much, as I mentioned in previous question, I believe that there is so much potential if planners start planning by inventorying the community characteristics and what they have done currently or in the past, optimizing the community activity and not changing it completely.	It did by giving the understanding that the effective plan is the plan that is could be done; where most of this plan will rely on the community to conduct and adhere to the plan.
Raden Akbar Wira Dharma	Undergraduate	The course did gave me new perspectives on how we see resilience building does not only crucially based on the top of bureaucracy, but also from the below of the community itself.	The course gave me a new perspective that the community is vitally important to be part of the urban resilience building process
Zahran Sofyan Falahuddin	Undergraduate	This course encouraged me to know approaches to resilience that I didn't know before and this course encouraged me to take an effective approach to achieving resilience in an area.	This course influenced me that community-based resilience is important to do not only through engineering resilience but community-based as well.

Name	Program (Undergraduate/ Postgraduate)	How well did the course balance theoretical knowledge with practical applications in the field of resilience?	Is there anything else you would like to share about your experience in the course?	On a scale from 1 to 10, how satisfied are you with the course overall?
Adelia Kusuma Nuringtyas	Postgraduate	It was well balanced, since we got the opportunities to site visit the location which impacted by the climate change	It was all good yet exciting!	8
Armeino Fadhlan Atana	Undergraduate	Very well, the course brings a realistic experience and stories. We student could feel on how to deal with people later on	Several reschedule led to confusement on the learning path.	8
Intan Agustiantika Soepomo	Postgraduate	Very good, specificaaly since it gives a real-life case study and experiences.	The joint lectures were fun, the field trip also enjoyable. I also found insight about how adaptation and mitigation are different in climate change aspect.	9
Aisha Sakina S	Postgraduate	The course provided a strong foundation in the theoretical aspects of climate change, resilience principles, and relevant policies in Indonesia. Supported by interdisciplinary approach which provided a holistic understanding of resilience; field trip shown the real-world challenges faced by communities.	Transdisciplinary learning really showed me the importance of collaboration in tackling complex issues. Despite witnessing and increasing awareness of climate change challenges, we also learning about innovative solutions and successful resilience projects around the world that we can implement to build a more sustainable future for Indonesian cities.	10
Novia Ari Santi	Postgraduate	Firstly, this course provides a conceptual foundation of what climate change is, mitigation efforts and adaptation strategies as well as knowledge about urban resilience theory. Then this course provided valuable experience through field trips so that I could better understand how the problems and theories existed in the field. I was able to observe how local communities adapted to environmental changes and how local governments and NGOs worked together to build resilience.	Apart from academic knowledge and practical skills, this course also contributed to my personal growth. Watching communities and other stakeholders face the challenges of climate change inspires me and strengthens my commitment to working towards a more sustainable future.	10
Rini	Postgraduate	The course balanced theoretical knowledge with practical applications effectively. Lectures provided a solid theoretical foundation, while site visits, group work, and case studies offered practical insights and hands-on experiences, bridging the gap between abstract concepts and their implementation, providing a comprehensive and integrated learning experience in urban resilience.	Overall, I express my gratitude to all the lecturers who provided knowledge and insights for us, increasing our understanding of climate change and urban resilience. I am delighted to have the opportunity to participate in this course, which is proving to be a really important experience for me.	9

Name	Program (Undergraduate/ Postgraduate)	How well did the course balance theoretical knowledge with practical applications in the field of resilience?	Is there anything else you would like to share about your experience in the course?	On a scale from 1 to 10, how satisfied are you with the course overall?
Aura Fairuz Kurniazahra	Undergraduate	The course did a great job balancing theoretical knowledge with practical applications in the field of resilience. The lectures provided a solid foundation of concepts and principles, while the site visits showed how these ideas work in real life. Case studies helped bridge the gap between theory and practice, making the lessons more relatable and easier to understand. The mix of classroom learning and real-world experience made the course both informative and engaging.	I absolutely enjoyed this course! The combination of lectures, site visits, and group projects made learning about urban resilience really engaging and fun. I especially enjoyed the the opportunity to see real-world applications of what we were learning in class. This course was definitely sparked my interest in pursuing a career in urban resilience.	9
Daiva Nafiiszia Yusfianto	Undergraduate	Overall, the course successfully integrated theoretical knowledge with practical applications, ensuring that students not only understood resilience concepts but also gained the skills and experiences.	I think its enough from my explanation before	8
Intan Nasiha Jatmiko	Undergraduate	This course likely strikes a strong balance between those two by integrating academic learning with hands-on, practical experience using tools	Thank you for the lesson and experience	8
Akbar Ramadhani Destu	Undergraduate	I feel that is already well done, combining earlier lectures on theories before the mid-exams and the site visits as well as practical examples after the final exams.	All good.	9
Raden Akbar Wira Dharma	Undergraduate	The situation are not balanced, as one of the example is the provision of housing relocation that suppose to be provide by the government is not fulfiled by the government	-	8
Zahran Sofyan Falahuddin	Undergraduate	This course provides a solid foundation in theoretical concepts related to resilience, such as principles of community resilience, risk assessment, and adaptive capacity. The course also emphasizes practical application by including case studies and sitev visit. This combination made me not only understand the concepts but also acquire the skills needed to effectively implement resilience strategies within the community.	This course is one of the most interesting subjects for me not only in terms of the theory taught but in terms of the application of the approach as well.	9

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