

**Thesis Labs**  
Leiden-Delft-Erasmus Universities



# **Sustainable Urbanism in East Kalimantan**

2025 - 2026



Universiteit  
Leiden

 **TU**Delft

  
ERASMUS UNIVERSITY ROTTERDAM

# Interested in joining this Lab?

Get in touch with or submit your application online



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# Main Challenge

How can **sustainable urban development** principles be integrated and aligned with tropical forest-coastal **ecosystem conservation** and **indigenous cultural values** to create resilient and inclusive cities in East Kalimantan?

# Thematic Challenges

The lab invites students to apply for thematic challenges that connect to this overall thematic focus. Those challenges will then be re-formulated by the students to make it suitable for a thesis assignment within their specific study programmes. Related to the following thematic challenges:

- 1. Climate-Responsive Architecture & Urban Design**
- 2. Biodiversity Conservation & Urban Ecology**
- 3. Water Management & River Systems**
- 4. Cultural Preservation & Social Inclusion**
- 5. Circular Economy & Resource Management**



# #01 Climate-Responsive Architecture & Urban Design

**Developing solutions that integrate modern sustainability with traditional Dayak, Kutai, Banjar and others coastal construction methods, utilizing local materials like sustainably harvested timber while incorporating smart building technologies for tropical-coastal environments. Focus on flood-resilient design, natural ventilation systems, and buildings that respond to both riverine and coastal flooding patterns.**

Students can engage with research questions from a **design-oriented perspective**, exploring issues at the intersection of **landscape architecture** and **urban planning**.

- For example, student might investigate how coastal cities can incorporate flexible zoning and land-use policies that respond to shifting riverine and coastal flood risks, or examine the ways in which traditional water-based settlement patterns—such as floating villages and stilted clusters—can inspire resilient urban layouts in contemporary tropical-coastal environments.
- Other questions could focus on how planning frameworks might integrate informal or adaptive settlement practices without erasing their cultural and ecological value, or how multi-scalar planning at neighborhood, city, and regional levels can better address the interconnectedness of river, delta, and coastal systems.
- Finally, students could explore how landscape planning strategies might leverage mangrove forests, floodplains, and riparian corridors not only as protective infrastructure, but also as vital cultural landscapes.

Students can also explore **social perspectives**, such as:

- How do individuals and communities determine what constitutes a "safe" or "sustainable" building?
- Whose perspectives are prioritized in the design of climate-resilient urban environments?
- How is knowledge about climate resilience—such as flood preparedness—passed down across generations and embedded in daily practices?
- What social or political dynamics influence which architectural strategies are adopted within various communities?



# #02 Biodiversity Conservation & Urban Ecology.

**Creating frameworks maintaining ecological corridors between cities and tropical forests, implementing green solutions, and developing strategies for urban-wildlife coexistence.**

In this theme students from Msc programs relating to **environmental sciences, biology, ecology, biodiversity** or **other related disciplines** can explore questions or issues like, for example but not limited to:

- how can ecological corridors be integrated into rapidly urbanizing tropical landscapes without fragmenting ecosystems?
- how can urban planning balance development pressures with the preservation of habitats for keystone species.
- how do residents perceive urban wildlife and how does indigenous ecological knowledge inform biodiversity planning, as well as the collaborations or conflicts that arise between conservation initiatives and urban development?
- how can traditional knowledge guide the design of multifunctional flood-control landscapes that support livelihoods such as aquaculture and agroforestry, and
- how can ecological corridors connect urban expansion areas with riverine and coastal ecosystems to maintain biodiversity under urban pressure?

From a **social perspective**, student projects might examine questions such as:

- What does it mean to share space with nature in an expanding urban context? How do local residents perceive and interpret encounters with urban wildlife?
- In what ways does indigenous or local ecological knowledge contribute to biodiversity conservation in city environments? What kinds of tensions or collaborations arise between conservation initiatives and urban development? And how are the concepts of “nature” and “urban” constructed, challenged, and negotiated in rapidly urbanizing tropical regions?

## #03 Water Management & River Systems

**Designing integrated water systems addressing flooding, security, and treatment while preserving Mahakam River ecological integrity, combining traditional practices with modern urban hydrology.**

Within this theme, students investigate:

- how traditional **water management** practices might be incorporated into contemporary urban hydrological systems to enhance resilience across scales, and how integrated riverfront designs can support both flood protection and community livelihoods.
- examine how historical community adaptations to seasonal flooding can inform planning responses to the challenges of climate change, and how the cultural and spiritual significance of the Mahakam River can be translated into guiding principles for riverfront development.
- How can **planning** processes and **governance** structures ensure meaningful local participation in water infrastructure decisions, and how can river systems be managed simultaneously as ecological commons and as critical components of urban infrastructure?

A range of **social** scientific questions also emerge around riverine life, such as:

- How do people coexist with, and manage, the river? How have communities historically adapted to seasonal flooding, and in what ways are these practices evolving?
- What is the cultural and social significance of the Mahakam River, and how do river-based livelihoods inform collective identity?
- Who holds decision-making power over water infrastructure, and to what extent are local voices included, or excluded, in these processes?



# #04 Cultural Preservation & Social Inclusion

**Ensuring indigenous Dayak, Kutai, Banjar and local communities are meaningfully integrated into urban planning, preserving cultural landscapes and traditional knowledge while providing equitable urban access.**

At its core, this is a deeply **social** scientific theme, but we invite interdisciplinary inquiries from students from other disciplines as well. Students can research exemplary questions such as:

- What does inclusive development truly look like? How is meaningful participation in urban planning experienced from the perspectives of Dayak, Kutai, and Banjar communities? In what ways is traditional knowledge protected, revived, or sidelined in urban contexts? How do urban development projects affect cultural heritage sites and practices? And how do marginalized groups organize and advocate for cultural recognition and spatial justice within rapidly transforming urban environments?
- What does inclusive urban development look like from the perspectives of Dayak, Kutai, Banjar, and other local communities?
- How is traditional knowledge protected, adapted, or sidelined in rapidly urbanizing contexts?
- Students can examine the ways in which development projects reshape or threaten cultural heritage sites and practices, as well as how participatory planning can move beyond tokenism to empower indigenous voices in decision-making processes.
- Additional lines of inquiry include how marginalized groups organize and advocate for spatial justice, and how cultural landscapes can be preserved as living environments rather than static heritage objects within planning frameworks.



# #05 Circular Economy & Resource Management

**Transforming extractive industries into circular systems, creating sustainable forestry and agricultural value chains while minimizing urban waste and maximizing tropical resource efficiency.**

In this theme, students from Msc programs relating to topics as **just transitions, regenerative economies, forestry, agriculture, value chains, and other relevant disciplines**, can explore questions or issues like:

- What does the transition from extractive to regenerative economies mean for tropical urban and rural communities, and how can forestry and agricultural value chains be redesigned to support both sustainability and local livelihoods?
- how local understandings of waste, reuse, and value diverge from formal recycling or circular economy frameworks, and what a “just transition” would look like for communities historically dependent on extractive industries.
- how are local actors mobilizing around sustainable agriculture, forestry, and alternative livelihoods, and how can urban planning integrate circular economy principles to reduce waste and optimize resource flows in tropical cities?

From a **social** perspective, student projects might examine questions such as:

- What does the shift from extraction to regeneration truly entail?
- How do local understandings of waste and value diverge from formal recycling systems?
- What might a “just transition” look like for individuals and communities dependent on extractive industries?
- And how are communities mobilizing around sustainable agriculture, forestry, and alternative livelihoods?



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