INUCOST

Indonesia-Netherlands Universities Consortium for Sustainable FuTures

Call for Expression of Interest for Joint Research Cooperation

Ministry of Higher Education, Science, and Technology, Republic of Indonesia | 2025

University member:

Universitas Indonesia

Universiteit Leiden

TU Delft

Erasmus University Rotterdam

Supported by:

lpdp

lembaga pengelola dana pendidikan

Call for Expression of Interest for Joint Research Cooperation: Indonesia–Netherlands Universities Consortium on Sustainable Futures (INUCoST)

1. About INUCoST: A JOINT RESEARCH COOPERATION ON SUSTAINABLE FUTURES

The Indonesia-Netherlands Universities Consortium for Sustainable Futures (INUCoST) is a four-year program involving three Dutch leading universities and five Indonesian universities with the financial support based on matching principle by Leiden-Delft-Erasmus Universities Alliances (LDE) and the Ministry of Higher Education, Science, and Technology (MoHEST). The matching funds will be provided by the Indonesia Endowment Fund for Education Agency (LPDP).

This consortium collaboration encompasses three modalities: research, education, and community development. The research collaboration resulted in 8 selected proposals in 2024 after a matchmaking was organized for all consortium members. For the second round of identifying potential research proposals, the consortium members are invited to submit an Expression of Interest

In 2012, Leiden University, Delft University of Technology, and Erasmus University Rotterdam (LDE) established a strategic alliance. The Alliance is a scientific powerhouse in a knowledge-intensive region of South Holland Province that also includes important universities of applied sciences, innovative companies, various science parks, ESA-ESTEC, world class museums, libraries and archives, and many important national and international institutions.

In 2023 the LDE Alliance established a strategic partnership with a consortium of five Indonesian universities. This consortium is formed by Universitas Indonesia in Depok, Institut Teknologi Bandung, Universitas Gadjah Mada in Yogyakarta, Universitas Airlangga in Surabaya, and Universitas Mulawarman in Samarinda. These are five leading Indonesian universities working in the same and complementary fields as Leiden University, TU Delft, and Erasmus University Rotterdam.

2. Objectives

INUCoST aims to establish a strong and sustainable partnership between three leading Dutch universities and five Indonesian universities. This collaboration is expected to create a structural foundation for long-term cooperation. By combining expertise from both countries, the research initiatives will address urgent societal challenges through interdisciplinary collaboration and based on the development priorities set by the Indonesian government

3. Eligible Topics

Aligning with the Indonesian government's priority areas, the collaboration within the Indonesia-Netherlands Universities Consortium will focus on **Sustainable Futures** with the emphasis on two key topics: **(1) Health; (2) Resilient and Connected Society**.

Health

We invite LDE and Indonesian partner universities scholars to conduct joint and multidisciplinary research on the following sub-themes:

a. Public Health

The highest attainable standard of health is a fundamental right of every human being (WHO constitution 1946). For this, preparedness for emerging infectious diseases, environmental hazards, aging population, and changing disease patterns that are seen with increasing urbanization need to be studied together.

b. (Non) communicable disease

While the prevalence of stunting faced by children in Indonesia is still high compared to WHO standard, those living in the Netherlands has a high prevalence in obesity. While the population of rural areas struggle with neglected diseases such as malaria, TB and parasitic infections, whereas those living in megacities and in Dutch urban centers are more prone to cardiovascular diseases and cancer. As we learnt, pandemics have no borders, and we are all vulnerable to new emerging viral infections or superbugs resistant to antibiotics.

c. Mental Health

Equally important, we need to pay closer attention to mental health, as psychological well-being is a critical yet often overlooked aspect of public health. Rapid urbanization, social inequalities, and global crises, including pandemics, have intensified mental health challenges across different populations.

Resilient and Connected Society

It is a multidisciplinary research topic that invites collaboration across STEM and social sciences to address complex societal challenges. It emphasizes the integration of technological innovation, social systems, and sustainability principles to design inclusive and resilient society in a rapid changing environment. Researchers are encouraged to explore how human-centered design, technology and scientific advancement can jointly foster societal well-being, environmental stewardship, and equitable development through the following sub-themes:

a. Energy Transition & Energy Justice

Energy is important in supporting sustainable economic development. For the rapidly growing economy of Indonesia, the fourth most populous country in the world, a reliable and sustainable energy supply is crucial. This is in line with Indonesian energy policy which requires 25% of electricity to be obtained from new renewable energy sources by 2025 and the Net Zero 2060 ambition. However, the energy transition efforts should be equally distributed and benefited marginalized groups. The objective of INUCoST collaborative research is to develop a strategic energy implementation plan which ensures regional economic growth for the inhabitants of both regions that minimizes carbon dioxide emissions.

The proposed research could focus on exploring the following key elements:
1) Mapping of renewable energy resources at both national and regional levels. The focus will be on the development of relevant renewable sources, including solar photovoltaics, onshore and offshore

wind, ocean energy, small hydropower, and sustainable bio-energy resources, combined with land restoration.
2) Designing energy systems for focal regions: Developing systems with increasing renewable energy shares, focusing on inter-island connectivity, system integration, demand management, and ethical, sustainable supply chains.
3) Strategy and policy development: co-creating strategies with relevant stakeholders emphasizing energy justice, opportunities for developing renewable energy innovation systems and their relevance for business development.
These efforts aim to bridge upstream research with actionable downstream impacts, fostering innovation for sustainable futures.

b. Climate Change Adaptation and Mitigation

Climate change affects different communities in diverse ways, with the severity and nature of its impacts often shaped by geographical, social, and economic factors. Vulnerable and marginalized groups—such as low-income populations, indigenous communities, and women—tend to bear a disproportionate burden due to limited access to resources, infrastructure, and decision-making power. As such, addressing climate change effectively requires coordinated efforts among multiple stakeholders, including governments, private sector entities, civil society organizations, and local communities. Adaptation strategies must be context-specific and inclusive, ensuring that the voices of the most affected are central in planning and implementation. Meanwhile, mitigation efforts—such as reducing greenhouse gas emissions and addressing biodiversity loss—must be pursued alongside adaptation to minimize future risks. Ultimately, a multidisciplinary approach is crucial to build resilience and promote sustainable development in the face of a changing climate.

c. Artificial Intelligence & Digital Technology

Currently, Artificial Intelligence (AI) brings a major impact on all business sectors, our private lives, and society as a whole. According to many, AI will strongly determine our future prosperity and well-being. AI is part of what is called the 'Digital Society' as digital techniques are becoming more and more part of daily life. The collaboration between the LDE universities and the five Indonesian universities offers a range of expertise that is relevant to urgent and complex societal challenges around the growing urbanization. The ambition is to develop research which can connect various domains of science and social knowledge in order to arrive at new solutions with the help of digital techniques.

Collaborations among government agencies, private sectors, academic institutions, and digital technology providers are crucial to building a comprehensive smart city ecosystem in Indonesia, addressing challenges such as data privacy, security, and ethical considerations. In this context, AI can collect and analyze data from various domains, including transportation, energy, healthcare, environment, and social services. By integrating these data sources, city authorities can either gain a holistic view of urban operations, governance, and make informed decisions or use AI-powered predictive models to forecast traffic congestion, energy demand, air quality. Digital twin technology can create virtual replicas of traffic and energy management systems for better monitoring and planning. Digital technology can also facilitate citizen engagement through mobile apps, social media, and online platforms increasing the listening to the citizen's needs.

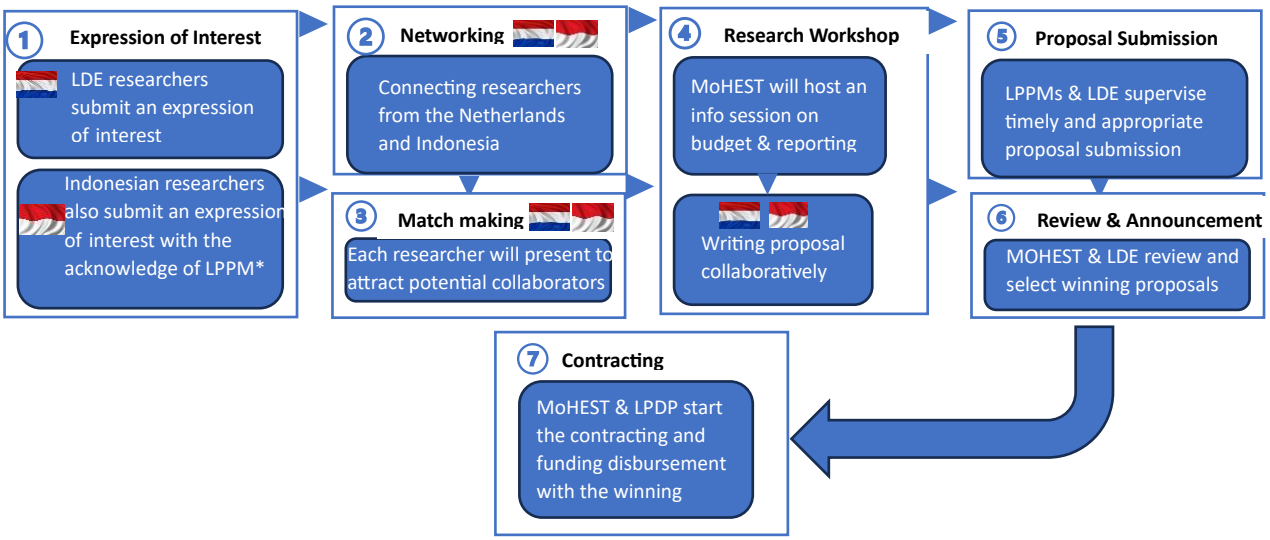
These three key topics are closely connected, and researchers are allowed to conduct research on those related topics. For example, Artificial Intelligence (AI) and digital technology could play a significant role in improving healthcare and energy transition by providing data-driven insights, optimizing resource allocation, and enhancing decision-making. While AI can assist in forecasting renewable energy generation to optimize its integration into the grid, research on digital health can accelerate access to healthcare services, in which particularly beneficial for people living in remote areas.

4. Eligible Candidates

In light of those pressing issues, we invite permanent contract researchers employed by one of the INUCoST partner universities to express their interest to participate in collaborative efforts aimed at addressing those challenges. The applicants need to possess formal appointment from your respective universities during the period of research. We seek multidisciplinary research collaborations that will be translated into concrete implementation such as contribution to the needs of cutting-edge innovation in industry, policy development, or community-based interventions to shape the sustainable futures.

5. Application Process

The submission process for the Expression of Interest will slightly differ between Indonesian and Dutch researchers. Indonesian researchers must inform the LPPM at their respective universities. LPPM is a research and community service institute at Indonesian universities that focuses on overseeing research and community empowerment conducted by academics and students. Please refer to the following application process:



6. Important Dates

Step	Description	Timeline
1. Submission of Expression of Interest	Individual researcher from LDE, partner universities in Indonesia and private sector submit an Expression of Interest (EOI) separately by uploading a maximum two-page CV template which contains personal details, a brief summary of your profile, **research interests,** and **5 most relevant** publications **to the** shared folder**.**	11 June - 2 July 2025
2. Networking & Online Matchmaking	To facilitate networking and initial collaboration, LDE provides a shared folder where potential collaborators can explore each other's research interests. Researchers are invited to proactively connect with other potential partners. Additionally, Zoom meetings will be organized to facilitate discussions for online match making session. For those who are interested in Health, the matchmaking will be held on 14 July 2025 while the other theme will be held on 15 July 2025.	14 & 15 July 2025
3. Collaborative Research Workshop	Representatives from each university or institution participate in a workshop session to form a research team. Due to funding regulations, each team needs to consist of minimum of 1 LDE and **2 Indonesian universities** or partner **institutions** that can submit proposals.	21 August 2025
4. Budget & Proposal Development	Once teams are established, the Ministry of Higher Education, Science, and Technology (MoHEST), Republic of Indonesia will host an information session on budget allocation and reporting requirements**.** This session will provide guidance on structuring proposals effectively. Each team is also expected to discuss and write extended outline for the proposed research project.	21 August 2025
5. Proposal Submission	Each team is expected to collaboratively develop a research proposal, ensuring alignment with the program's goals. The final proposal must be submitted by Early October 2025**.** Please see previous awarded proposals in the Annex.	7 October 2025
6. Proposal Review & Announcement	MoHEST will review all submitted proposals and announce the successful applicants.	7 November 2025

7. Evaluation Process

Reviewers appointed by MoHEST will assess proposals based on their alignment with the Indonesian Government's priorities in advancing the downstreaming research results. Given the complexity of this initiative, proposals must demonstrate innovative approaches, such as frugal innovation, to develop impactful solutions that benefit the government, industry, and/or local communities.

To ensure practical value, proposals will be evaluated on their ability to actively engage relevant stakeholders throughout the research process. This includes mechanisms for facilitating the adoption and implementation of research findings at the project's conclusion.
The evaluation will consider the following key criteria:

1. Relevance
    - Alignment with the national government priority programs and broader societal challenges.
    - Potential to support the Indonesian government's downstreaming *(hilirisasi*) efforts.
2. Innovation and Feasibility
    - Application of frugal innovation or other novel approaches.
    - Clear methodology and realistic implementation plan.
3. Stakeholder Engagement
    - Active involvement of government, industry, and/or local communities to ensure societal impact.
    - Strategies for knowledge transfer, if appropriate.
4. Research Output
    - Contribute to the practical implication for sustainable development and meaningful societal change.
    - Potential for adoption by local government, industry, and/or local communities.

By integrating these evaluation criteria, the selection process aims to identify proposals that drive real societal impact, ensuring research efforts translate into practical, sustainable, and transformative solutions.
The keywords that will be leading are downstreaming, frugal innovation, and sustainability.

8. Project Duration and Execution

Selected research projects will be funded by:

a. Dutch applicants: Leiden, Delft, Erasmus Universities Alliances (LDE)
b. Indonesian applicants: Endowment Fund for Education Agency (LPDP)

Each awarded research team can be supported up to three years, but the support for the second and third year is subject to the first- and second-year review by LPDP. Typical a-3-year research project will be funded up to 600 million IDR per year by LPDP for the Indonesian participants. LDE contribution will be calculated by time invested in the collaboration and 1-time international mobility out of pocket costs (subject to availability).

9. Annex: Example of Previous Awarded joint projects (INUCoST match-making batch 1)

Topic A: AI and Smart Cities

I. **Towards Smart Cities and Smart Urbanism: A Study on Citizen Knowledge, Democratic Governance, and Inclusive Development in IKN and Its Surrounding Areas**
Principal investigators: Erlis Saputra – Universitas Gadjah Mada Bart Barendregt – Leiden University
Abbreviated **Project Description**: The principal objective of this research is to examine the potential for harmonizing smart city initiatives in IKN Nusantara with the principles of democratic governance and inclusive development. This objective is then divided into five minor objectives, as follows: 1. To evaluate the extent of public awareness and understanding of smart city technologies among residents of IKN Nusantara, with a particular focus on their knowledge of the development of IKN Nusantara as a smart city. In general, this objective is to evaluate the extent of public awareness and understanding of smart city technologies among residents of IKN, including indigenous communities, and its surrounding areas, and to investigate the impact of this knowledge on citizen participation in urban planning and decision-making processes. One of the fundamental prerequisites for the success of smart city initiatives is the level of public awareness and understanding of the technologies that underpin them. In the context of IKN, it is of paramount importance to evaluate the extent to which residents and stakeholders are informed about these technologies and their implications. The level of citizen knowledge has an impact on participation in urban planning and decision-making processes, which are essential for ensuring that smart city projects reflect the needs and priorities of the community. An understanding of the extent of residents' awareness can facilitate the identification of knowledge gaps and the delineation of areas where targeted educational initiatives may be required to empower citizens. In addition to this awareness concern, the project will identify and map bottom-up technologies that may be overlooked by policymakers and academics. This encompasses digital, political, and other forms of literacy, which are not only essential for citizens but also for policymakers. 2. To analyze the extent to which democratic principles are incorporated into the development and implementation of smart city projects in IKN. This entails an investigation of the mechanisms through which citizens can engage or be engaged in the formulation of policy, the transparency of governance practices, and the alignment of smart city initiatives with democratic values. Democratic governance is a crucial element in the successful implementation of smart city projects. In IKN, an evaluation of the incorporation of democratic principles necessitates an examination of the mechanisms for citizen participation in policy formulation, the transparency of governance practices, and the alignment of smart city initiatives with democratic values. This entails an assessment of the extent to which the needs of communities at different levels are encouraged in the smart city planning and development process. Effective governance structures can facilitate citizen engagement, ensure accountability and promote transparency. 3. To examine the influence of multi-stakeholder collaboration on the realization of inclusive development in IKN Nusantara, with a particular focus on the partnerships between central and local governments, non-government organizations, and local communities in the formulation of smart city policies. The realization of inclusive development in smart cities frequently hinges on the efficacy of multi-stakeholder collaboration. In IKN, the formation of

partnerships between central and local governments, NGOs, and local communities is of paramount importance in the creation of smart city policies, with the objective of ensuring that they are inclusive and equitable. An investigation of these collaborations will reveal the contributions and influences of different stakeholders on the development and implementation of smart city initiatives, as well as the inclusivity of the development.

4. To examine the influence of smart city strategies on diverse demographic groups, with a particular emphasis on marginalized communities, e.g., local people of Balik and Paser. The objective is to evaluate the extent to which inclusive development is incorporated into the processes of new city development (IKN) to address social inequalities and guarantee the equitable distribution of technological benefits. It is important to assess the impact of smart city strategies on various demographic groups, particularly marginalized communities. The assessment of the effectiveness of inclusive development measures will provide insights into the extent to which the city's smart technologies contribute to social equity and identify any challenges in addressing the needs of marginalized groups.

5. To identify optimal practices and potential challenges in the integration of smart technologies with democratic governance and inclusive development. By analyzing case studies and governance frameworks from IKN case, the research aims to provide actionable recommendations for improving citizen engagement, enhancing governance structures, and promoting social equity in smart city initiatives. These insights will be valuable for policymakers, urban developers, and community leaders working towards more effective and equitable smart city development.

II. Developing a Smart Mobility Framework for Sustainable Campus

Principal investigators:
Ova Candra Dewi – Universitas Indonesia
Carola Hein – TU Delft

Abbreviated **Project Description**:
The aim of the joint project is to improve operational efficiency and environmental sustainability, urban centers worldwide are transitioning to smart cities. A smart city is an urban area that utilizes digital technology to provide real-time information on the main cities' operating systems. Transitioning to smart cities involves the integration of advanced technologies and innovative practices to more effectively manage city resources and services, resulting in an enhanced quality of life for residents and a reduction in environmental impacts. Educational institutions are undergoing comparable transformations as they transition to "smart campuses" by incorporating sustainability principles and smart technology.

Through community engagement, education, and cutting-edge research, educational institutions are important in promoting sustainability. A sustainable campus is not limited to reducing environmental impacts; it also includes sustainability in its fundamental functions, such as teaching, research, and campus operations. The smart campus concept expands upon this by integrating information and communication technologies (ICT) to improve the effectiveness and efficiency of campus services, thereby improving the quality of life and educational experiences. Smart campuses implement advanced building management systems, smart lighting, waste reduction, and smart energy management systems to significantly reduce the campus's carbon footprint. Furthermore, these campuses often serve as tiny replicas of larger smart cities, providing a testing ground for innovative technologies and strategies before their wide-scale implementation.
Smart mobility is the efficient management of campus transportation through digital technology in

a smart city and, by extension, a smart campus. It involves the implementation of ICT to enhance transportation safety, reduce congestion, optimize traffic flow, and mitigate environmental impacts. Autonomous transit services, electronic parking management systems, bicycle-sharing programs, and mobile applications for real-time transport data are frequently included in initiatives.
When implemented on campuses, smart mobility solutions can have significant operational and environmental advantages. One of them is the encouragement of non-motorized transport modes and optimizing traffic management to reduce greenhouse gas emissions. Furthermore, smart mobility improves the accessibility and dependability of on-campus transportation, thereby facilitating better navigation for students, faculty, and staff.

Adopting innovative approaches is not as frequent in multiple developing countries, including Indonesia, due to constraints such as the lack of local expertise in smart mobility planning, technological barriers, and limited funding. The proposed study will close this gap by developing a comprehensive smart mobility framework, particularly for campus settings, and incorporating sustainable practices and digital innovations into this framework to improve campus transportation systems. In addition, this study will investigate the behavior changes required within the campus community to optimize and support the advantages of smart mobility initiatives.

TOPIC B: **Energy Transition**

I. Examining Legal and Governance Implications of Just Energy Transition in Indonesia
Principal investigators: Arie Afriansyah - Universitas Indonesia Shivant Jhagroe - Leiden University
Abbreviated **Project Description**: This research project explores the law and governance regarding the energy transition in Indonesia. This topic aligns with the thematic area of energy transition. The issue of climate change has become a common focus for the international community. Various movements that support carbon emission reduction are starting to be implemented. In accordance with the Paris Agreement, Indonesia, as one of the countries that has demonstrated its commitment to achieving the Net-Zero Emission target, is also implementing steps to reduce carbon emissions. The role of international cooperation is paramount in the context of carbon reduction commitment. The Paris Agreement also contains commitments that include providing financial assistance from developed countries, efforts to reduce carbon emissions from developing countries, and global mitigation efforts in adapting to climate change. Carbon reduction necessitates shifting the status quo of energy production towards a more sustainable and climate-friendly manner. In this way, implementing renewable energy as a solution to carbon reduction strategy might radically alter and negatively affect society, particularly with regard to the access to energy and the employment of people in developing countries. Indonesia is one country that is greatly dependent upon fossil fuels as an energy source. To better alleviate the negative consequences, “Just Energy Transition” must be implemented within the paradigm of sustainable energy transition. “Just Energy Transition” entails, principally, “defunding fossil fuels in a way that reduces inequality, shifting the costs of climate action onto wealthy polluters while prioritizing economic, racial, and gender justice”. What constitutes “Just Energy Transition” is still becoming an academic and policy debate. Indeed, given the importance, supporting regulations are needed to realize Just Energy Transition. Under the status quo, however, civil society calls out that there are regulatory frameworks in Indonesia that explicitly refer to the concept of Just Energy Transition.

Despite the lack of a strong regulatory basis, Indonesia formed the Just Energy Transition Partnership (JETP), enabling international donors to partner with each other to provide funds needed to finance energy transition in Indonesia. However, lack of conceptual understanding and strong legal framework would potentially become an obstacle in implementation of JETP in the future. To date, just energy transition is mainly understood to pull investment and financial commitment for energy transition rather than understanding the core concept of just energy transition, e.g. rights-based mitigation towards impacted parties, just energy pricing, renewable energy subsidies.
This project elaborates on the socio-legal implications of just energy transition for the community in Indonesia especially. This research involves not only doctrinal analysis of law but also employs non-doctrinal analysis of law. This is done by considering primary data such as interviews with affected persons, policymakers, civil society organizations, and other key stakeholders. To better capture the issue at an in-depth scale and to avoid generalization through numerical figures, qualitative data is therefore sought. A special case study will be made in the region of South Sulawesi, given the availability of renewable energy sourcing from the region.

This research proposal focusses on the socio-legal dimensions of a "Just Energy Transition" in Indonesia. As global efforts intensify to address climate change, Indonesia's commitment to the Paris Agreement highlights its critical role in reducing carbon emissions. The transition from fossil fuels to renewable energy sources, essential for achieving the Net-Zero Emission target, directly aligns with the global mandate for sustainable energy practices. By analyzing the governance structures and legal frameworks guiding Indonesia's energy transition, this project responds to the urgent need for scholarly and policy-driven insights in this area.

The objectives of this research is to answer the following research questions;
1. How is 'just energy transition' understood in existing legal frameworks in Indonesia?
2. What are the socio-legal implications of energy transition in Indonesia?
3. What are the legal and policy gaps in implementing just energy transition in Indonesia?
4. How should the Indonesian legal framework be adjusted to accommodate just energy transition?
5. What lessons can be drawn from the practices in Europe in terms of just energy transition law and governance?
By combining the expertise from the Dutch and Indonesian universities, this project allows for broadening the understanding of legal and governance implications of energy transition in the Indonesian context. Previously, as elaborated in the literature, in Europe, the carbon reduction commitment that entails tp energy transition policy has implicated European society at large. Thus, transnational experts could better perform the cross-fertilization of the knowledge and experience from the two regions.

II. Towards Democratic, Just, Resilient, and Sustainable Energy Transition in New Capital of IKN and Its Surrounding Areas: Study on Smart Energy System to Support Clean, Democratic, and Just Energy Governance

Principal investigators:
Hasrul Hanif – Universitas Gadjah Mada
Jaco Quist – TU Delft

Abbreviated **Project Description**:
This project adopts a comprehensive research approach by combining both doctrinal and non-doctrinal legal analysis to explore the socio-legal implications of the energy transition. Initially, secondary data, including legal texts, regulations, policy documents, and scholarly literature, will

be gathered through desk research to establish a foundational understanding of the existing legal framework. Following this, primary data will be collected through qualitative methods, such as interviews with key stakeholders—affected individuals, policymakers, civil society organizations, and other relevant actors. By incorporating diverse perspectives, this approach allows the research to capture the nuanced social impacts and challenges of the energy transition. The qualitative focus ensures an in-depth understanding of personal experiences, contextual factors, and policy implications, avoiding the limitations of quantitative generalizations and providing rich, detailed insights that are crucial for shaping effective, equitable energy policies. A special case study will be made in the region of South Sulawesi, given the availability of renewable energy sourcing from the region.

This project will impact scientifically by providing on-the-ground level state of affairs regarding the implementation of just energy transition in Indonesia. Thus, information and data provided will further create impact for the upcoming scholarship in the similar field. This project holds significant beneficial impacts on society, particularly by addressing pressing societal challenges related to the energy transition. The study of law and governance in this context enables a deep understanding of the complex dynamics and challenges involved, such as regulatory frameworks, societal equity, and environmental sustainability.

By producing policy papers, the project provides policymakers with actionable insights, allowing them to make informed decisions that balance economic, social, and environmental needs. This empowers communities and governments to navigate the energy transition more effectively, ensuring that the process benefits society as a whole. In particular, it contributes to meeting societal challenges like reducing carbon emissions, fostering social inclusivity, and promoting long-term energy security.

Contact Persons

LDE Indonesia Coordinator
Risa Nihayah
LDE@universiteitleiden.id