



REER PILLARS


For year 2021-2024




Low Carbon Transformation



Clean Energy



Clean Energy for Community Resilience



Renewable Energy Financing

RENEWABLE ENERGY AND EMISSION REDUCTION REER



Research Cluster Profile

Renewable Energy and Emission Reduction (REER) cluster works in topics such as alternative energy resources, renewable energy in remote area, urban renewable energy, and institutional capacity to strengthen sustainable policies. This cluster also concerns on the emission reduction process in Indonesia and its impact to global climate,

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RESEARCH STATIONS

REER Cluster has carried out a number of research projects continuously in several locations in Indonesia, among others:



PARTNERS



CLIENTS



Our Researcher: Prof. Ir. Dr. Suzana Yusup | Dr. Bridgid Chin Lai Fui | Dr. Pomkamol Unrean | Dr. Acda Menandro | Dr. Yudha Prambudia | Dr. Aminu Haruna Isa | Dr. Ari Tarigan | Dr. Saut Sagala | Dr. Eko Sandhi Bramono | Tedjo Harjaya, M. Eng | Dodon Yamin, M. Eng | Praditya Adhitama, M. Sc. | Wahyu Lubis, M. Sc. | H. Alberdi, M.URP. | Nadiya Pranindita, M.Eng | Amelia Christina Atmowidjojo | Danang Azhari, S.PWK | Esy Gracia, S.Hub.Int. | Rifqi Dewanto

Current Publication:

Loy, A., Gan, D., Yusup, S., Chin, B., Lam, M., Shahbaz, M., Unrean, P., Acda, M., Rianawati, E. (2018). *Thermogravimetric kinetic modelling of in situ catalytic pyrolytic conversion of rice husk to bioenergy using rice hull ash catalyst*. Bioresource Technology.

Gan, D., Loy, A., Chin, B., Yusup, S., Unrean, P., Rianawati, E., Acda, M., (2018). *Kinetics and thermodynamic analysis in one-pot pyrolysis of rice hull using renewable calcium oxide based catalysts*. Bioresource Technology.

Tarigan, A., Sagala, S. (2018). *The pursuit of greenness: explaining low-carbon urban transformation in Indonesia*. International Planning Studies.

Unrean, P., Chin, B., Rianawati, E. Acda, M., (2018). *Comparative techno-economis assessment and environmental impacts of rice husk-to-fuel conversion technologies*. Energy Journal.

REER CLUSTER

ROAD MAP

RDI's vision to improve its research in renewable energy is manifested in our road map below. Our current focus are low carbon transformation, clean energy transition, clean energy for community resilience as well as renewable energy financing.

REER cluster has gotten research fundings from UK-based (GCRF), Europe-based (EU Horizon 2020, IFS), ASEAN-based (COST, SEARCA) and Japan-based (JASTIP, Asahi) grants. Currently, there are **two flagship projects** that are being run by the REER Cluster. The projects are the Biogas Project under the *Digital Global Biogas Cooperation (DiBiCoo) platform* and the *Acceleration of Biofuel Implementation*, including sustainable business models, renewable energy financing and biofuel upgrading.

REER ACTIVITIES

By conducting a certain number of research every year, collaborating with multiple partners, national and internationals. We also aspire to take part in international events.

INTERN

About 20 skilled interns join the REER cluster every year. The activities comprise: conducting data collection and literature reviews, assisting team members on writing and design, and supporting team members in developing other project output and deliverables. Our interns come from various university such as Bandung Institute of Technology, Universitas Gadjah Mada, Wageningen University, and Czech University of Life Science.

COLLABORATION

RDI has collaborated with various institutions for either projects or events. Some of the key collaboration include:

- National Workshop Series:**
 - #1 Biogas Policy in Emerging Economics, with GIZ Germany, APBA, ABgl, EBA, FvB, AKBOE, INTA Argentina.
 - #2 Accelerating Biomethane Utilization with GIZ Germany, APBA, ABgl, Curtin University Malaysia, Kumamoto University Japan, Universiti Teknologi PETRONAS, National Center for Genetic Engineering (BIOTEC).
- Regional Workshop on Bioenergy Policy and Utilization** with APBA, ABgl, Curtin University Malaysia, Kumamoto University Japan, Universiti Teknologi PETRONAS, National Center for Genetic Engineering (BIOTEC).
- Capacity Building Series:**
 - #1 Biogas Holistic Planning & Technology Implementation
 - #2 Sustainable Biogas Project Financing Bankability with GIZ Germany, PFAN Indonesia, GreenCape South Africa, GGGI Indonesia, ITB, ABgl, TLFF Indonesia, and IRID.
- Study on Carbon Capture and Storage with Energy Studies** Institute, National University of Singapore.

2021

Low Carbon Transformation:

1. Developing carbon trading system/framework for future carbon market
2. Fossil fuel subsidies reform as enabling condition for low-carbon transformation

Clean Energy Transition:

1. Policy analysis for the Development of Biogas from Palm Oil Waste as Renewable Energy at District Level
2. Policy and sustainability analysis on Biofuels Production using Palm Oil Residues
3. Clean energy product to market

Clean Energy for Community Resilience:

1. Community acceptance towards renewable energy in education infrastructure

Renewable Energy Financing:

1. Bankability of Biogas Project: structure and financing mechanism
2. Financially feasible business model for Biogas Project
3. Potential financing sources for de-risking and sharing costs of Biogas Project
4. Carbon financing as potential revenue stream to increase financial viability of renewable energy project
5. Sustainable business model for renewable energy development in rural area

2022

Low Carbon Transformation:

1. Low-carbon technology roadmaps including low carbon transportation (EV)
2. CCUS (Carbon Capture, Utilization, and Storage)
3. Advancing regional energy policy and planning including on carbon taxing for business

Clean Energy Transition:

1. Smart grid for energy resilience at the cities
2. Solar PV development in Indonesia
3. Future prospect of hydropower and geothermal as prominent renewable energy sources in installed power capacity
4. Marine renewable energy potentials for small islands
5. Lesson learned from hydro and geothermal power plant for securing power demand

Clean Energy for Community Resilience:

1. Inclusive approaches for sustaining clean energy transition (energy justice)

Renewable Energy Financing:

1. Enabling financial tools towards sustainable renewable energy financing
2. Sustainable financing instruments for small-scale renewable energy projects

2023

Low Carbon Transformation:

1. Energy efficiency and conservation efforts in industrial and commercial sectors
2. Lesson learned in mainstreaming EV in economic emerging countries
3. Encouraging sub-national policy for energy efficiency

Clean Energy Transition:

1. Sub-national RE policy with broader coverage of energy consumers
2. Energy Trilemma (energy poverty–energy security–environment sustainability)
3. Social Network Analysis (SNA) in renewable energy sector

Clean Energy for Community Resilience:

1. Community participation for rural renewable energy project
2. Women and non-normative gender participation in renewable energy sector development

Renewable Energy Financing:

1. Inclusive financing to push more sustainable, affordable, and equitable economy

2024

Low Carbon Transformation:

1. Urban design for supporting low carbon transformation; energy efficiency measures in the residential, commercial, and industrial buildings
2. Social issues and approach of increasing general public awareness on EV

Clean Energy Transition:

1. Renewable energy diplomacy

Clean Energy for Community Resilience:

1. Circular economy that focus on waste, renewable energy and sustainable bioenergy
2. Develop the approach to the nexus of water-food-energy and climate
3. Improve the quality of local content to achieve independence and resilience in energy development technology