



The Impact Rankings Questionnaire

University : Universitas Indonesia
Country : Indonesia
Web Address : www.ui.ac.id

[7] SDG7: Affordable and clean energy
[7.4] Energy and the community
[7.4.3] Energy efficiency for services and industry

Description :

Universitas Indonesia (UI) provides direct services to local industry aimed at improving energy efficiency and clean energy (energy efficiency assessments, workshops, research renewable energy options). UI is committed to actively produce research that is in line with the national and global efforts to create affordable and clean energy sources. The university provides internal funding as well as partners with external entities including governmental institutions, non-government organizations, and corporations to support studies on this issue. UI also has three research centers: Research Center for Climate Change (RCCC), Tropical Renewable Energy Center (TREC), Center for Sustainable Infrastructure Development (CSID), and Scientific Modeling, Application, Research, and Training for City-centered Innovation and Technology (SMART CITY).

Applied Research Program held by RCCC UI

Study on Oil Palm Smallholders Economic in Sustainable Oil Palm Framework

The study was led by Dr. Sonny Mumbunan and funded by Indonesia Business Council for Sustainable Development (IBCSA) and World Resources Institute (WRI) Indonesia. The study has been carried out from May until October 2016 in Riau and South Sumatra Province, involving 1,350 smallholders and the total of 2—8ha farmland which spread in 96 villages. Riau and South Sumatra were chosen as the study sites based on its significance in oil palm production which cover almost half (47.5%) of national oil palm production. There are three main components of this study: (1) Risk perception on oil palm smallholders. (2) Willingness to accept sustainable oil palm schemes. (3) Economic rent on smallholders in high-valued conservation areas.

Applied Research Program held by SMART CITY

Designing Smart Energy System for Smart City through Municipal Solid Waste to Electricity: Techno-Economic Analysis

Smart energy system is one of the important infrastructures for building smart cities. Waste to energy (WtE) is an innovative solution using municipal solid waste (MSW) as a source for electricity. This research was conducted to design WtE Plant in Depok and to assess the economic viability of different business models. The technologies applied in WtE are anaerobic digestion and gas engine to generate electricity. The simulation was conducted using SuperPro Designer and UniSim Design software to evaluate the technical performances of electricity production from organic solid waste. The feasibility of project implementation of various business models are evaluated through economic analysis. The result of this study shows that the organic fraction of municipal solid waste in Depok has potential to generate electricity up to 28 MW. From economic aspect, pay off business scheme greatly affects the value of NPV and IRR. Meanwhile, the intervention scheme on fiscal incentives

and low loan interest rate have slight effect on IRR values. A combination of Viability Gap Fund (VGF) and increased tipping fees intervention scheme is an optimum business scheme to build WtE plant and achieve electricity price below the offtaker's willingness-to-pay.

Below are examples of research projects related to affordable and clean energy (funded by internal and external research grant):

1. Fiscal Incentives to Support Renewable Energy Investments in Indonesia: The Search for the Suitable Instruments
2. Development of Nickel Based Materials for Applications in Renewable Energy
3. Design of Optimal Smart Home Energy Management System (O-SHEMS) to Support Community-Based Renewable Energy Smart Network Development
4. Study of the Application of Direct Load Control and Energy Saving Performance Contracts for Electrical Energy Efficiency in the Industrial and Commercial Sectors

	Researchers	Project Title	SDG Focus
1	Dr. Djoni Hartono, S.Si., M.E.	Fiscal Incentives to Support Renewable Energy Investments in Indonesia: The Search for the Suitable Instruments	Affordable and Clean Energy
2	Asep Saefumillah	Studi Adsorpsi Fosfat Menggunakan Fly Ash Termodifikasi dari Limbah Pembakaran Batu Bara dan Arang Aktif dari Limbah Lindi Hitam untuk Mengatasi Fenomena Algae Bloom dalam Sistem Akuatik	Affordable and Clean Energy
3	Iman Abdullah	Sintesis dan Karakterisasi Material Jejaring Berpori untuk Aplikasi Energi dan Lingkungan	Affordable and Clean Energy
4	Taqyuddin	Pengembangan Energi Terbarukan untuk Stabilitas Suhu Pendukung Wilayah Wisata di Kepulauan dan Pantura Jawa Bagian Barat	Affordable and Clean Energy

5	Triarko Nurlambang	Kajian Pemanfaatan Energi Terbarukan, Local Value, dan Virtual Geography untuk Pembangunan Berkelanjutan	Affordable and Clean Energy
6	Yunus	Investigasi Keberadaan Sumber Panas yang Berasosiasi dengan Sistem Geothermal di Daerah Prospek Geothermal Tulehu (Maluku) Menggunakan Metode Remote Sensing, Geologi dan Gravitasi	Affordable and Clean Energy
7	Ivandini Tribidasari Anggraningrum	Pengembangan Material Berbasis Nikel untuk Pengaplikasian dalam Energi Terbarukan	Affordable and Clean Energy
8	Dr. Nining Betawati Prihantini, M.Sc.	Optimasi Perbanyakan Biomassa Strain Culturable Cyanobacteria Indigenous dari Indonesia untuk Produksi Biodiesel	Affordable and Clean Energy
9	Paulus Wirutomo	Model Penerimaan Sosial terhadap Pengembangan Energi Panas Bumi (Studi Kasus dalam Pengembangan PLTP Baturraden di Kab. Banyumas)	Affordable and Clean Energy
10	Abdul Halim	Perancangan Optimal Smart Home Energy Management System(O-SHEMS) Untuk Mendukung Pengembangan Jaringan Cerdas Energi Terbarukan Berbasis Komunitas	Affordable and Clean Energy
11	Kalamullah Ramli	Pengembangan platform peer-to-peer energy network berbasis blockchain	Affordable and Clean Energy
12	Iwa Garniwa	Studi Penerapan Direct Load Control dan Energy Saving Performance Contract untuk Efisiensi Energi Listrik di Sektor Industri dan Komersial	Affordable and Clean Energy

13	Rinaldy	Clean Energy Management dengan Kendaraan Listrik di Pulau Bali, Analisis Energi Surya (PLTS) terhadap Konsep Smart Building dan Pembangkit Listrik Energi Terbarukan di Kepulauan Seribu	Affordable and Clean Energy
14	Heri Hermansyah	Optimal Design of Biorefinery to Produce Biochemical and Bioenergy Products	Affordable and Clean Energy
15	Heri Hermansyah	Energy Recovery From Larvae Biowaste Treatment By Anaerobic Digestion	Affordable and Clean Energy
16	Muhammad Idrus Alhamid	Pengembangan Solar Thermal Energy untuk Industrial Heat Pump	Affordable and Clean Energy
17	Muhammad Idrus Alhamid	Pengembangan Organic Rankine Cycle (ORC) sebagai Pembangkit Listrik dengan Solar Thermal Energy	Affordable and Clean Energy
18	Adi Surjosatyo	Waste to Energy: Peningkatan Insinerator Fixed-Bed Berbahan Bakar Sampah Padat Perkotaan Kapasitas 20 kW dengan Pendekatan Nilai Energi	Affordable and Clean Energy
19	Nandy Setiadi Djaya Putra	Karakterisasi Sifat Termal Palmwax/Graphene sebagai Phase Change Material (PCM) untuk Aplikasi Thermal Energy Storage (TES)	Affordable and Clean Energy

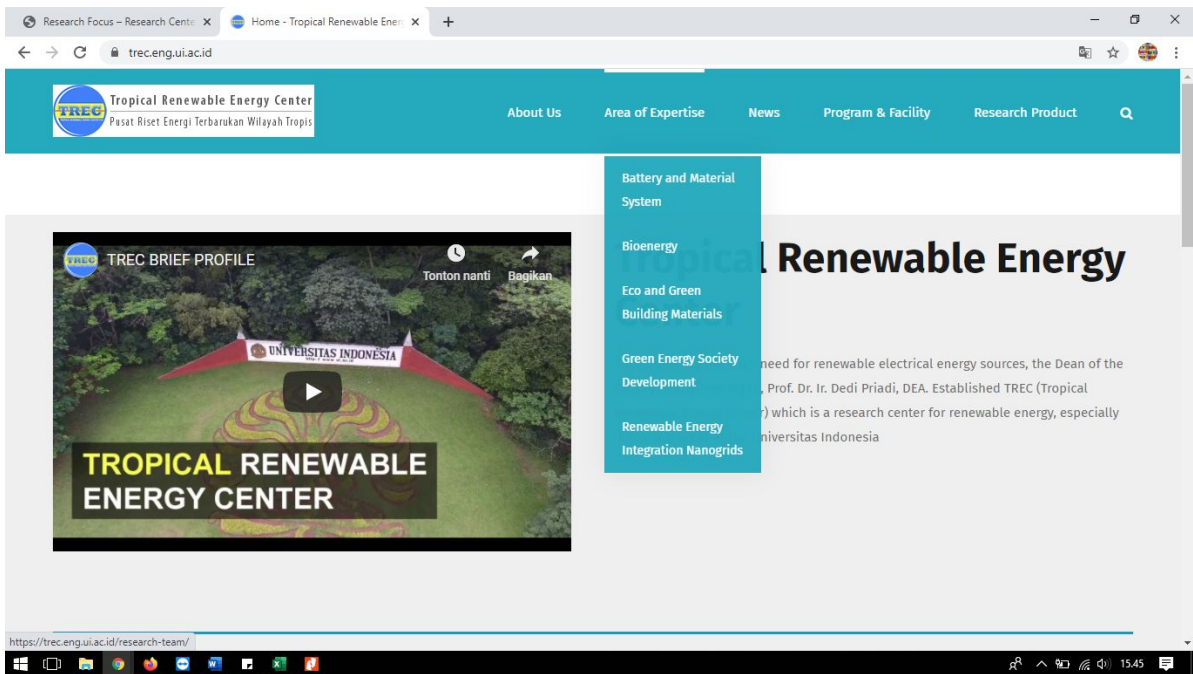
Evidence Link :

1. <https://trec.eng.ui.ac.id/>
2. <https://csid.eng.ui.ac.id/>
3. <https://research.ui.ac.id/research/en/>
4. <https://rccc.ui.ac.id/>
5. <https://research.ui.ac.id/research/wp-content/uploads/2020/11/SK-476-dikompresi1.pdf>
6. <https://research.ui.ac.id/research/wp-content/uploads/2020/11/List-of-UIs-research-projects-related-to-Sustainable-Development-Goals.pdf>

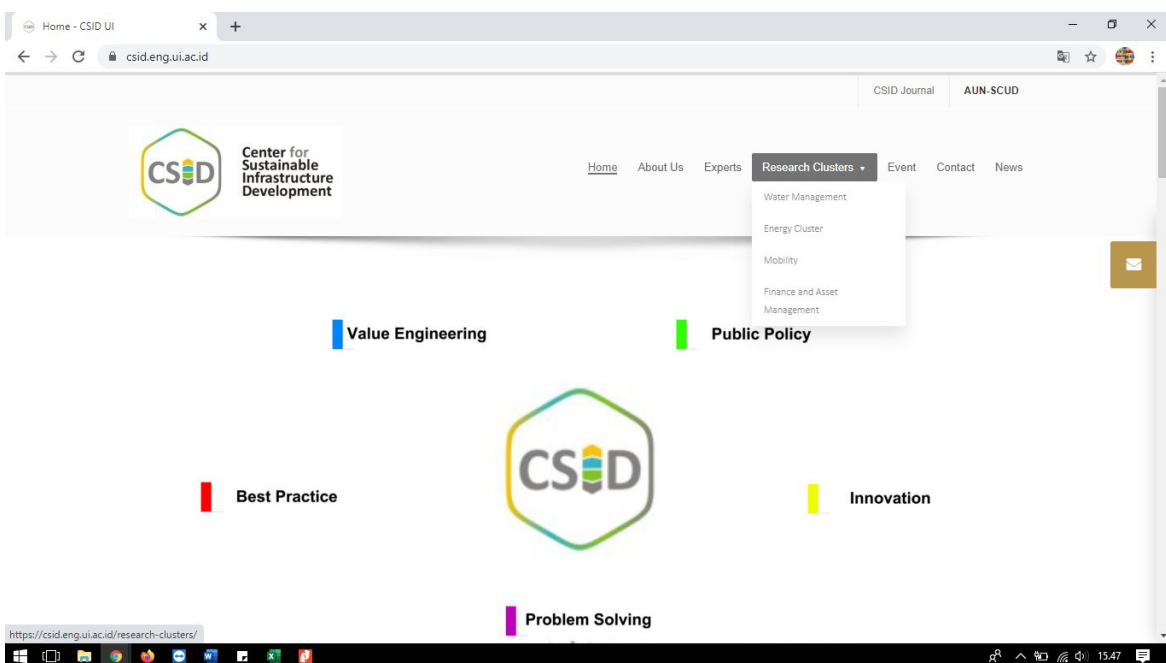


7. <https://www.smartcity.ui.ac.id/about-us/research-list/energy-and-environment/research-detail/recent-and-perspective-of-fuel-quality-control-method-in-indonesia.html>

Screenshot TREC's website



Screenshot CSID's website





Screenshot RCCC's website

Applied Research – Research Cen x +
rccui.ac.id/applied-research/

RCCC UI
sustainable solution

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Development of reduction emission scenario's strategy and health consequences of air pollution in Indonesia – Toyota Motor Corporation Japan and RCCC – UI | An environmental issue that continuously worsens living conditions in many of Indonesia's big cities is air pollution, especially that from vehicle emissions. Air pollution in major cities, especially in developing countries, has reached a crisis point. The bad air quality is responsible for death of 3 million people each year and presents a dilemma for millions worldwide that suffer asthma, acute respiratory diseases, cardiovascular diseases, and lung cancer (MOE and KPBB, 2006). Air pollution is proven as a major environmental hazard to residents in Jakarta, regardless of their socioeconomic status. Transportation comprises 27% of Indonesia's GHG emissions, and traffic congestion is a huge problem in Jakarta (Haryanto, 2008). Diseases stemming from vehicular emissions and air pollution include acute respiratory infection, bronchial asthma, bronchitis, and eye and skin irritations, and it has been recorded that the most common disease in northern Jakarta communities is acute upper respiratory tract infection – at 63% of total visits to health care centers (Haryanto, 2008). The estimation of negative health impacts of air pollution in Jakarta at approximately \$300 million per year in 1990, and this was projected to increase tenfold by 2010 unless serious control efforts were implemented (WB 1994). The overall goal of this research is to develop reduction emission scenarios of air pollutants and to study the causes and consequences of air pollution within the broad framework of the health consequences, with an empirical focus on the Greater Jakarta region and followed by other regions in Indonesia. The expected outputs are a module of emission inventory and reduction emission scenarios to air pollution and Green House Gases in Indonesia and a module of comparative study of exposure to pollution and health effects for members of

Screenshot SMART CITY's website

smartcity.ui.ac.id/home.html

SMART CITY
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Scientific Modeling, Application, Research, and Training for City-centered Innovation and Technology

Application

Scientific Modelling

Research

Training for city centered Innovation and technology

SMART CITY UI

Energy and Environment Infrastructure ICT and Mobility Quality of Life



Screenshot of Rector's decree regarding the projects that have won the competitive internal funding in 2019.

