



IPB University
— Bogor Indonesia —



SUSTAINABLE
DEVELOPMENT
GOALS



IPB UNIVERSITY

SUSTAINABILITY DEVELOPMENT GOALS

SDGs Report 2024



Book Titles:

SDGs Report 2024

Contributors:

Bunga Anggraeni
Eny Widiya Astuti
Gaetania Faza Adhara
Hafizh Purnama Putra
Husayn Musarrafi
Nabilah Zulfah Ramadhani

Design and Cover:

Akbar Muhammad Fauzi
Ghina Khansa
Mufrihatun El Walidayni

**Directorate of Strategic Studies and Academic Reputation
IPB University**

Gedung LSI 1 Floor Jalan Kamper,
IPB University Dramaga Campus, Bogor-Indonesia 16680
Phone number: +6251-8624057 | E-mail: dkasra@apps.ipb.ac.id
Website: <https://sustainability.ipb.ac.id>

Published by Directorate of Strategic Studies and Academic Reputation, IPB University,
Bogor - Indonesia 2025

GLOSSARY

B

BUMDes : Badan Usaha Milik Desa (Village-Owned Enterprises)

K

KLES : Korea Leading Energy Solution

KKN : Kuliah Kerja Nyata (Thematic Students Community Service Program)

P

PLN : Perusahaan Listrik Negara (State Electricity Company)

R

RT : Rukun Tetangga (Neighborhood Association)

RW : Rukun Warga (Community Unit)

S

SBRC-IPB : Surfactant and Bioenergy Research Center - Institut Pertanian Bogor



Ensure access to affordable, reliable, sustainable and modern energy for all



Learning Program

IPB University demonstrates its strong commitment to integrating sustainability principles into its academic and research agenda. The university currently offers **14 study programs** in vocational, bachelor and graduate level directly related to clean and renewable energy, encompassing disciplines such as environmental engineering, bioenergy science and technology, sustainable agriculture, and green economy policy. These programs equip students with the knowledge and technical capacity to address national energy challenges through interdisciplinary and innovation-driven approaches.



Building upon this foundation, IPB University strengthens energy transition education through national seminars and student-led initiatives. In 2024, the Graduate Student Forum organized the **National Seminar on Just Energy Transition in the Transportation Sector**, emphasizing the importance of social, economic, and environmental justice in Indonesia's net-zero journey. The event, attended by representatives from the **Ministry of Environment and Forestry** and the **Ministry of Energy and Mineral Resources**, encouraged students to contribute innovative solutions for sustainable energy systems.



Additionally, IPB integrates **clean energy literacy** into its academic programs, enabling students to explore renewable technologies such as **bioenergy, solar power, and sustainable agricultural systems**. The establishment of the **Agri-Photovoltaic Research Station** the first in Indonesia serves as a living laboratory that links agricultural productivity with solar energy generation, advancing both energy efficiency and sustainable food production.





Ensure access to affordable, reliable, sustainable and modern energy for all

2

Research and Innovation

IPB University continues to position research and innovation as the cornerstone of its contribution to national and global energy transitions. Through the **Surfactant and Bioenergy Research Center (SBRC)**, the university advances the frontier of renewable energy development, particularly in :



biomass conversion



biodiesel production



bioethanol innovation

In partnership with **PT Multi Hanna Kreasindo Tbk**, SBRC-IPB successfully transformed industrial waste glycerine pitch into **carbon-based catalysts**, providing sustainable alternatives for green fuel and industrial applications. This initiative not only illustrates IPB's scientific capability but also embodies the university's commitment to **circular economy transformation** and **green chemistry principles**.



Complementing these advancements, IPB University hosted the **9th International Conference on Biomass and Bioenergy (ICBB 2024)**, which convened experts, policymakers, and industry actors to deliberate on the role of biomass in achieving global decarbonization targets. The forum reaffirmed IPB's leadership as a knowledge hub that bridges research outcomes with tangible climate action.



A milestone of this commitment is the establishment of the **Agri-Photovoltaic Research Station**, which stands as a testament to IPB University's ability to **merge collaboration, innovation, and environmental responsibility** in facing the challenges of climate change. The project embodies a real-world application of renewable energy in agriculture—enhancing efficiency, reducing emissions, and promoting sustainable land use. The station integrates:

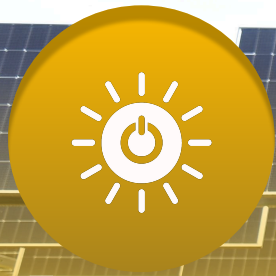


Solar Power Generator

with agricultural cultivation.
With a total capacity of

50,000 watts

the system harmonizes crop photosynthesis with solar energy conversion, demonstrating a model of dual land utilization that produces both food and clean energy. The station's operation is enhanced by **artificial intelligence (AI)** to manage **smart greenhouse environments** and **electric vehicle (EV) charging systems**, forming part of IPB's broader ecosystem for green campus transformation. Generating around **5 kilowatts of electricity daily**, the facility contributes to reducing dependence on fossil fuels while providing an applied learning platform for sustainable energy management



Ensure access to affordable, reliable, sustainable and modern energy for all

3

Campus Operation



Developed in collaboration with **ENVELOPS** and **KLES**, the Agri-Photovoltaic Research Station encapsulates IPB University's holistic approach to sustainability uniting research, education, and community engagement. More than a technological innovation, it is a **symbol of academic leadership in low-carbon development**, demonstrating how agricultural productivity and renewable energy generation can coexist harmoniously to build a climate-resilient future.

As part of its sustainability agenda, IPB University implements energy-efficient infrastructure across the campus. The **Faculty of Medicine building** incorporates natural ventilation and daylight design to minimize energy consumption, reflecting IPB's commitment to green campus operations. IPB has several renewable energy sources, including solar panels, diesel generator sets, wind power, and micro-hydro systems, which were distributed across several IPB campus sites, namely Dramaga Campus, Gunung Gede Cilibende Campus, and Sukabumi Campus. In 2024, there was a significant increase in the energy supply from solar panels, reaching up to 116,000 kWh.

The electricity generated was allocated for charging electric vehicles and supporting the planned operation of a smart greenhouse, with the entire system enhanced by artificial intelligence (AI) for efficient management. This initiative reflected IPB University's steps in addressing climate challenges and promoting the food-energy-water (FEW) nexus through sustainable, technology-driven solutions.

Research in Number



365 scholarly output in 2020-2024



98 FWCI in 2020-2024



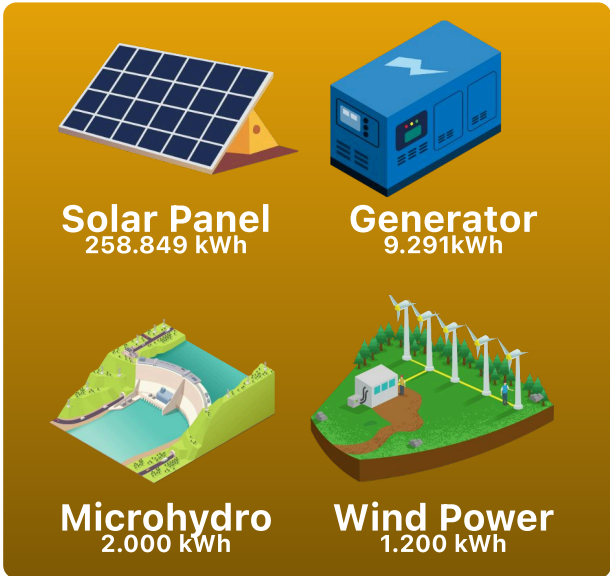
2413 citation count in 2020-2024



7,52% of all Indonesian citation count



8,12% of all Indonesian scholarly output





Ensure access to affordable, reliable, sustainable and modern energy for all



Community Engagement

IPB University supports rural energy resilience through research and community partnerships. Collaborating with **PLN** and local farmer groups, SBRC-IPB contributes to the **biomass co-firing program**, converting plants such as **Indigofera** and **Gamal** into renewable fuel for coal-fired power plants. This initiative restores degraded land, provides sustainable biomass comparable to coal in calorific value, and strengthens **village-based biomass ecosystems** managed by farmer cooperatives and BUMDes. These efforts support Indonesia's low-carbon transition while fostering inclusive, community-based energy development.



Complementing institutional initiatives, IPB University students have also pioneered community-driven renewable energy innovations **FOREGAS (Fuel of Renewable Gas)** program, developed under the Student Creativity Program for Community Service (PKM-PM). Led by Lukas Satia Exaudi Lubis, with team and under the supervision of Prof. Dr.-Ing. Ir. Suprihatin, this project focuses on producing biogas from market organic waste and tofu wastewater in Pasar Lama Ciampea, Bogor. The program was initiated in response to the significant waste management challenges in the area, where approximately 600 kilograms of organic waste are generated daily, and four tofu factories discharge around 1,000 liters of wastewater into nearby rivers. FOREGAS partners with a youth group from RT 03 RW 02 Desa Benteng, consisting of 16 members, who serve as pioneers in managing and maintaining the biogas installation.



The FOREGAS initiative aims to achieve three primary objectives: first, to improve community well-being by converting vegetable and fruit waste into biogas; second, to mitigate river pollution through the utilization of tofu wastewater as a renewable energy resource; and third, to enhance community knowledge and capacity in transforming organic and industrial waste into value-added products such as biogas and bio-slurry fertilizer. Implemented between June and October 2024, the program consisted of seven activity components and six participatory meetings involving local stakeholders. Ultimately, FOREGAS aspires to establish the youth group of Desa Benteng as a model for other communities in promoting sustainable waste-to-energy practices.





Ensure access to affordable, reliable, sustainable and modern energy for all

5

Student Activities

IPB University actively fosters student-driven innovation and entrepreneurship in clean energy through both research and community engagement. A notable example is **Algae Power Indonesia**, a student-led start-up that secured a position in the **Top 3 Energy Founder category at Pertamina Seed and Scale 2024**, organized by PT Pertamina (Persero). The team developed **biofuel from microalgae cultivated using palm oil waste**, representing an innovative approach to circular bioenergy and sustainable waste utilization. This recognition not only underscores IPB students' scientific and entrepreneurial competence but also demonstrates how university-supported start-ups contribute to **Indonesia's clean energy transition to Affordable and Clean Energy**. Pertamina's collaboration with investors further amplifies the real-world impact of such initiatives, empowering young innovators to scale their technologies toward industrial application.



Beyond competition-based innovation, IPB students integrate sustainability into local communities through **KKN-T (Thematic Community Service Programs)**. For instance, in **Sumberdem Village, Malang**, IPB students collaborated with peers from Universitas Brawijaya to implement four flagship programs: **Next Level Farm, Black Soldier Fly (BSF) maggot cultivation, organic pesticide development, and village credit union management assistance**.

These programs enhance local capacity in **bioenergy production, sustainable agriculture, and waste-to-resource practices**, enabling villages to adopt eco-friendly livelihoods and circular economies. Collectively, such initiatives embody IPB's commitment to cultivating young leaders who bridge innovation, entrepreneurship, and community empowerment for a more sustainable energy future.





IPB University
— Bogor Indonesia —



IPB UNIVERSITY SUSTAINABILITY DEVELOPMENT GOALS SDGs Report 2024

"Affordable clean energy is not just a goal — it is the foundation of a fair and sustainable future"



SDGs Report 2024 : Supplementary Report