IPB University
Bogor Indonesia

SUSTAINABLE DEVELOPMENT GOALS

Supplementary

Sustainability Report 2021

SDG 7:

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

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sustainability.ipb.ac.id ipbofficial

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Learning Program

1 Livestock Waste Management Public Lecture

The Department of Animal Production Science and Technology (IPTP) of the Faculty of Animal Science, IPB University, presents Alice Rocha from the Department of Animal Husbandry, University of California, United States as a guest lecturer in a Guest Lecture with the theme Animal Waste Management, (04/05). In this activity, Alice explains about fertilizer management in the United States. The activity was moderated by Windi Al Zahra M Si, IPB University Lecturer from the IPTP Department, Faculty of Animal Husbandry.

Alice mentioned that in the United States several fertilizer management policies have been implemented, especially for the livestock industry. This policy is included in the category of the National Pollutant Discharge Elimination System (NPDES), which is a small part of the Environmental Protection Agency by implementing three types of policies.

https://ipb.ac.id/news/index/2021/05/hadirkan-dosen-tamu-dari-california-departemen-ilmu-produksi-dan-teknologi-peternakan-ipb-university-gelar-kuliah-umum-bahas-manajemen-pupuk-dalam-industri-peternakan/97d39ecc32ffa9f12232c85f42fab6ce

2

Webinar and Conference

SBRC IPB University has an online webinar program, namely the SBRC Webinar Series Bioenergy/Biosurfactant (SWSB). The SWSB activity aims to disseminate the development of bioenergy research conducted at the SBRC IPB University and to find out the progress of Indonesia's bioenergy utilization achievements. IPB's SBRC also holds the 2021 International Conference on Biomass and Bioenergy (ICBB) which will be held online on 9-10 August 2021. This activity aims to update technological developments on the use of biomass bioenergy and biomaterials, and as a forum for initiating collaborations at home and abroad. , as well as facilitating the publication of research results through the Scopus indexed proceedings, namely the IOP Conference Series: Earth and Environmental Series.

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https://sbrc.ipb.ac.id/2021/08/international-conference-on-biomass-and-bioenergy-icbb-2021-2/

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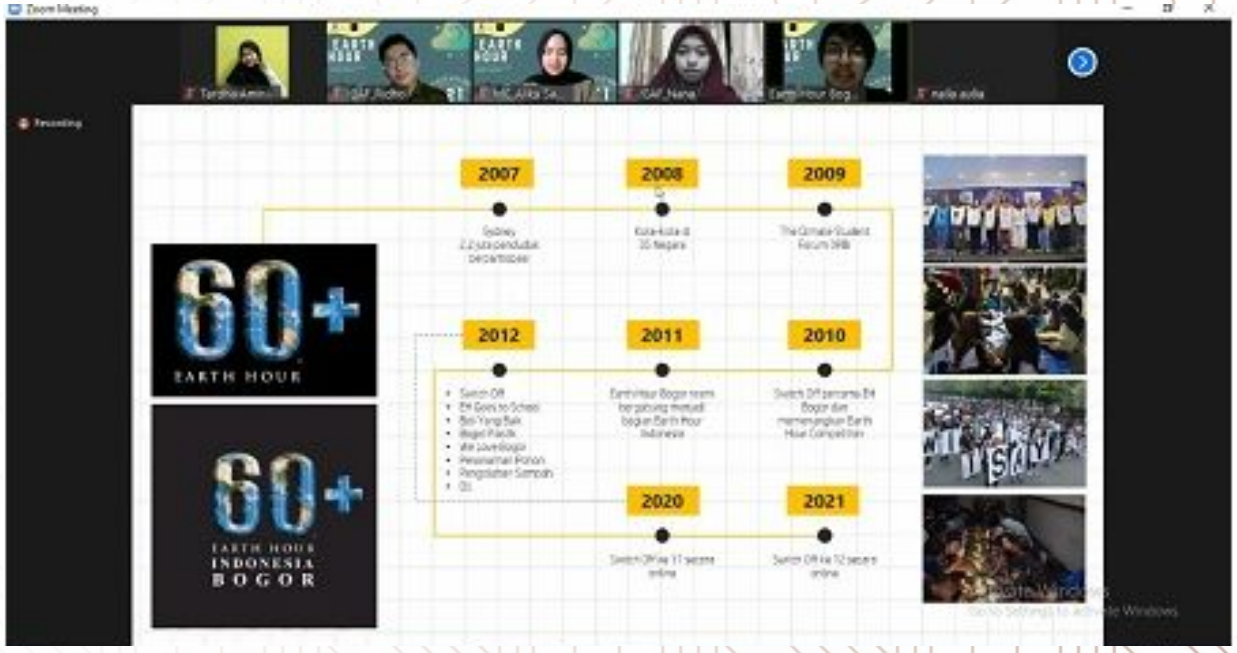
Student Activities

3

Engage Community to Saving Energy

Student Activity Unit (UKM) Indonesian Green Action Forum (IGAF) IPB University commemorates Earth Hour (27/3) by holding a talkshow "Healing, Shooting, and Saving Our Earth in One Hour". This annual routine activity wants to invite individuals, students, communities, and society to always be part of the global momentum to help overcome climate change symbolically through the act of turning off lights and electronic devices that are not used for 60 minutes. GAF collaborated with the Earth Hour Bogor community to hold this activity and invited the coordinator of the daily Earth Hour Bogor.



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https://sbrc.ipb.ac.id/2021/08/international-conference-on-biomass-and-bioenergy-icbb-2021-2/

4 Biodiesel Used Cooking Oil

Three IPB University students managed to get 3rd place in the National Student Competition in the Field of Business, Management and Finance (KBMK) from the Renewable and Affordable Clean Energy Aspect. This competition is held by the National Achievement Center, Ministry of Education, Culture, Research and Technology (Kemendikbudristek). Shabrina Ghaissan who is the Head of BI FUEL Team said that her team raised the idea of biodiesel from used cooking oil. He explained that used cooking oil can be processed into biodiesel through esterification.

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https://sbrc.ipb.ac.id/2021/08/international-conference-on-biomass-and-bioenergy-icbb-2021-2/

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Research, Innovation, and Bussiness

5 Performance Evaluation of Solar Energy-Based Drying Machines To Improve Energy Efficiency of Drying Agricultural Products

Drying of agricultural products is usually done by sun drying or using mechanical dryer with fuel oil or agricultural waste as energy sources. Sun drying has operational problems when it rains suddenly and the drying temperature varies. While the mechanical dryer requires a high enough fuel or energy. One solution to overcome the obstacles in both drying techniques is the development of a solar energy-based drying machine with the greenhouse effect (GHE) technique. A number of industries have developed various types of GHE dryers. In order to guarantee the quality of GHE dryers, a number of GHE dryers have been evaluated in 2021. The evaluation results show that the developed GHE drying machines can be used for drying agricultural commodities with good quality results and meets the specified quality requirements. Activities contribute to achieving the SDGs 7 for clean and affordable energy.

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6 Study on Social and Economic Impacts of National Capital Investment 2015-2021 to PT PLN (Persero)

PMN funds obtained by PT PLN in 2021 amounted to Rp. 5 trillion and is used to fund transmission, substation, and distribution sector projects, including the implementation of village electricity programs, Renewable Energy (EBT) generation, as well as to support the village electricity program (Lisdes) of which 44.20 percent is used to fund distribution projects. rural electricity, 7.82 percent for non-rural electricity projects, 42.37 percent for transmission and substation projects, and 5.60 percent for KIT EBT projects. In addition to its impact on the economy, the addition of PMN for PT PLN (Persero) electricity projects has increased the absorption of sectoral workers, especially those working in the Electricity Sector and the Building and Electrical Installation, Gas, Drinking Water and Communications Sector where both sectors are directly related to the project. -projects carried out by PT PLN that result in the highest accumulation of sectoral output compared to other highest sectors.

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Essential bio-additives to improve diesel quality

Bioadditive is a mixture of various volatile oil derivatives including rhodinol, turpentine, and clove terpenes to improve the quality and performance of biodiesel (B30) on a large industrial scale that is safe for machines and the environment, named GRINZEST. The benefits of GRINZEST Bioadditives are 1) It can reduce water content and fuel particulates (B0, B30, and B100), 2) it can reduce the rate of fuel consumption, improve fuel performance in diesel engines, and emissions. These activities include:

1. Optimization of bioadditive formula
2. P2 testing in the relevant environment
3. DED process technology scale 1,500 L/day
4. Field test at PT. Solusi Bangun Indonesia, PT. Indesso, and IPB University

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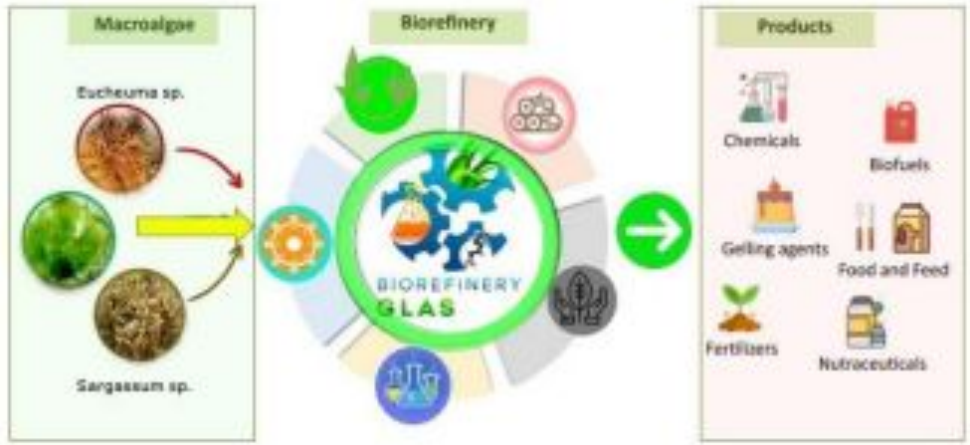
https://sbrc.ipb.ac.id/2021/12/grinzest-bioaditif-berbasis-minyak-atsiri-untuk-biosolar/

8

High Value of Chemical and Syngas Production from Microalgae

This research focuses on the production of high value chemicals from Indonesian marine macroalgae, including rare sugar, levulinate esters, furfural, and biopigment as well as syngas production from Indonesian marine macroalgae. The benefit of this research is to increase the added value of marine macroalgae into high value chemical products, rare sugars, esters levulinate, furfural, and biopigment and bioenergy products in the form of syngas.

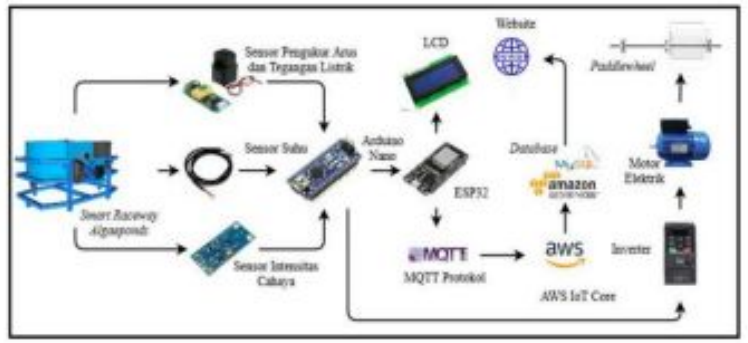


https://sites.google.com/ulm.ac.id/risprokimacrolaga/home?authuser=0

9 Cellular Automata Machine (CAM) modeling in algal biomass production

This research develops a precision agriculture system in the production of microalgae biomass using advanced digital technology, namely the application of sensors, IoT, and Cellular Automata Machine (CAM) modeling as well as automation of microalgae cultivation operations to increase precision and yield automatically. significantly so that the productivity of microalgae biomass is more effective and efficient. The benefit of this research is to increase the productivity and feasibility of the microalgae biomass production system. This research activity includes:

1. Design of a prototype intelligent algae pond integrated with sensors, Internet of Things (IoT)
2. Making a smart algae pond
3. CAM modeling study for microalgae biomass



10 Indonesian Bioenergy Sustainability Indicators (IBSI) Research

Indonesian Bioenergy Sustainability Indicators (IBSI) is an assessment instrument used to calculate the bioenergy sustainability index in Indonesia. IBSI consists of 11 indicators which are divided into 3 criteria, namely environmental aspects, social aspects, and economic aspects. The benefit of this research is to improve the sustainability status (sustainability index) of bioenergy development in Indonesia and be able to expand the export market and at the same time increase the positive image of palm biodiesel in the eyes of the world which is an agricultural product that has strategic value.

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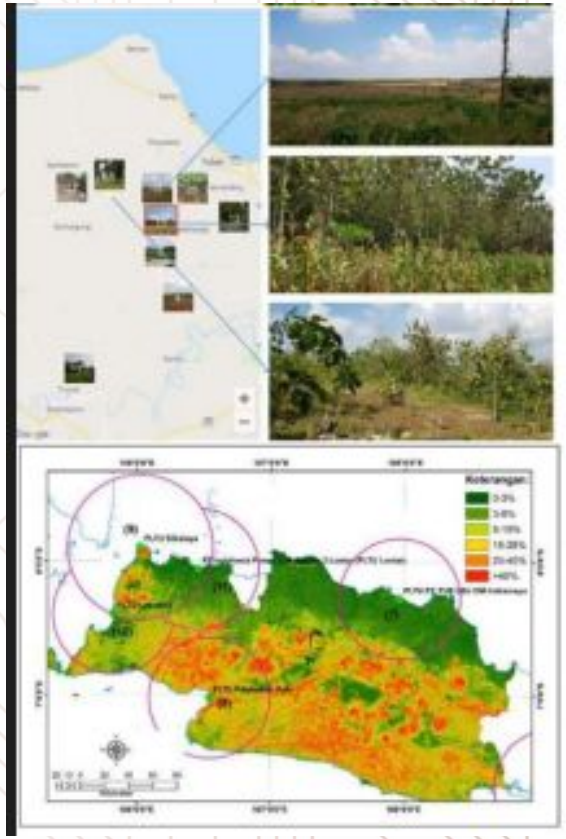
https://sbrc.ipb.ac.id/2021/12/studi-implementasi-ibsi-pada-bubbn/

11 Sustainability Biomass Co Firing in Java

The study was conducted to see the potential use of dry land and community plantation forests on the island of Java to be used by PT. PLN (Persero) becomes an energy forest in order to ensure the sustainability of biomass supply. The benefits of this research activity are 1) Knowing the spatial dry land and community plantation forest (HTR), land ownership on the island of Java, 2) Knowing the types of biomass plants that are suitable for planting on dry land and the supply chain of biomass to the nearest PLTU, 3) Knowing the economics of cultivation and the economics of sawdust processing and the most ideal business scheme with dry land owners.



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Campus Operation

12 Towards Green Energy

Procurement of 2 Units ETS Stabilizer for Dramaga Data Center

Routine PJU repair = 30 points

Installation of PJU 17 Pole Cikabayan road

Repair of Electrical Panels = 23 panels

Genset 180 KVA Data Center 1 Unit

Genset 10 kva Portable 12 Unit

Maintenance of Elevator Fapet Faperta Taman Kencana Rectorate Faperta

Installation of 1000 KVA Genset FEM Building, SSC etc 1 Unit

Transformer and Cubicle Maintenance at 11 Substations

13 Electricity Reliability Improvement

In 2021, IPB will hold a generator set of 14 units, each with a capacity of 1000 KVA, 1 unit of 180 KVA and 12 units of a capacity of 10 KVA are portable generators. To maintain electrical stability in units that are very sensitive to fluctuations in electrical voltage, 2 units of electrical protection equipment have been provided to be installed on the IPB server. Maintenance is also carried out routinely at the electrical substations in the IPB environment so that the installation can function optimally.

Electric Treatment System

ETS is a tool that provides protection and improvement of electrical quality, where all the features needed are integrated in one device. Here are some of the functions of ETS:

1. Auto Cut-Off Protection
2. Zero Grounding Processing
3. Stabilizer
4. Filtering
5. Auto Overload
6. Network Line Protection

In 2021, 2 units of ETS with a capacity of 21 KVA and 24 KVA have been procured for the server room on the 2nd floor of the AHN building.

Substation Maintenance

IPB Has 11 Substations which every year maintenance is carried out on Medium Voltage (TM) devices, namely in the form of Cubicle and Transformer. Most of the electrical energy distributed by PLN to IPB customers comes from substations. Maintenance of substation equipment is very important to maintain electrical reliability and maintain the distribution network of electrical installations properly. So that the electricity supply for the IPB campus can be maintained properly.

14 Mini Plant Trial for MES Surfactant Production

Methyl ester sulfonate (MES) surfactant is a palm oil-based green surfactant produced as a result of the IPB University SBRC Cooperation with PT. Petrokimia Gresik at a capacity of 600 kiloliters (KL) per year. MES surfactant has been tested by KSO Pertamina EP-Samudera Energy BWP Meruap, Sarolangun, Jambi with a requirement of 7,000 liters of surfactant. This collaboration is one of the forms and roles together in building the nation's independence to support the crude oil production target of 1 million barrels per day (bpd) in 2030 which was launched by the government through SKK Migas.

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https://sbrc.ipb.ac.id/2021/05/surfactant-mes-terobosan-ramah-lingkungan-hasil-kerjasama-sbrc-ipb-university-dan-petrokimia-gresik/

15 Webinar: Integrated Mass Public Transport Service Effort

Webinar in the context of socializing the "Bis Kita" public transportation, which is comfortable and safe. This webinar was held in the EDTC PKSPL IPB Building (27/11/2021) in collaboration between the Ministry of Transportation, BPTJ, IPB University, and HA FPIK IPB. The benefit of this activity is that the people of Bogor, especially the City of Bogor, are informed of our Bus transportation facilities which are comfortable, safe, affordable, and environmentally friendly. More and more people are being informed and interested in using this safe and comfortable means of transportation (Bis Kita).

https://ipb.ac.id/news/index/2021/11/ipb-university-and-bptj-held-webinars-on-integrated-mass-public-transportation-services/8cf00e0fa5ece9ea8b849aa5bb823ba2

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Community Engagement

16 Assistance in the Management of Environmental Approval for Geothermal Field Development Activities

In the last three years (2019-2021) PPLH IPB University has partnered with the contractor company PT Pertamina Geothermal Energy (PGE). namely SEGS (Star Energy Geothermal Salak, Ltd.) and SEGDII (Star Energy Geothermal Darajat II, Limited) in terms of obtaining environmental permits (currently environmental approvals) for geothermal. The intended environmental approval is for the development of the Gunung Salak geothermal field in Sukabumi and Bogor regencies as well as the Darajat II geothermal field in Garut Regency and Bandung Regency, West Java Province. This is done as an effort to maintain steam supply, maintain stability and maintain electricity production capacity. PPLH-LPPM IPB University is in accordance with its competence, one of which is public consultation and services related to environmental management (Decree of IPB Chancellor No. 176/13/0T/2010). has carried out its role in the preparation of environmental documents for environmental management and assisted SEGS and SEGDII in obtaining environmental approvals for the planned activities.

Rapat Teknis untuk Penyaringan Saran dan Masukan Proses Kelayakan Lingkungan Hidup SEGS di KLHK

17 IPB Students Create Stoves Fueled by Waste Cooking Oil to Help Skin Cracker Entrepreneurs

Student of the Department of Mechanical Engineering and Biosystems IPB University made an innovation, namely a stove fueled with crude biodiesel by utilizing waste cooking oil. This activity was held in Bogor (10/2021). This activity aims to create other alternative energy sources and design a technology, namely High-Pressure Stove with crude biodiesel fuel from used cooking oil. Then help partners solve problems by minimizing the waste of used cooking oil and of course with this science and technology it can help save gas use and increase profits for partners. Improving the quality of work at the Bogor cracker factory with savings of Rp. 87,772 compared to LPG and the operation of tools combined into one so that it can make it easier for business owners to process waste into new fuel that can be used immediately in a short time. SGD Achievements of this activity are Household Waste Treatment, Food Security, Sustainable Agriculture and Resilient Innovation

https://tmb.ipb.ac.id/id/index.php/2021/10/25/mahasiswa-ipb-ciptakan-kompor-berbahan-bakar-minyak-jelantah-untuk-membantu-pengusaha-kerupuk-kuli//


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