

# SUSTAINABILITY REPORT 2021



**Book Title:**

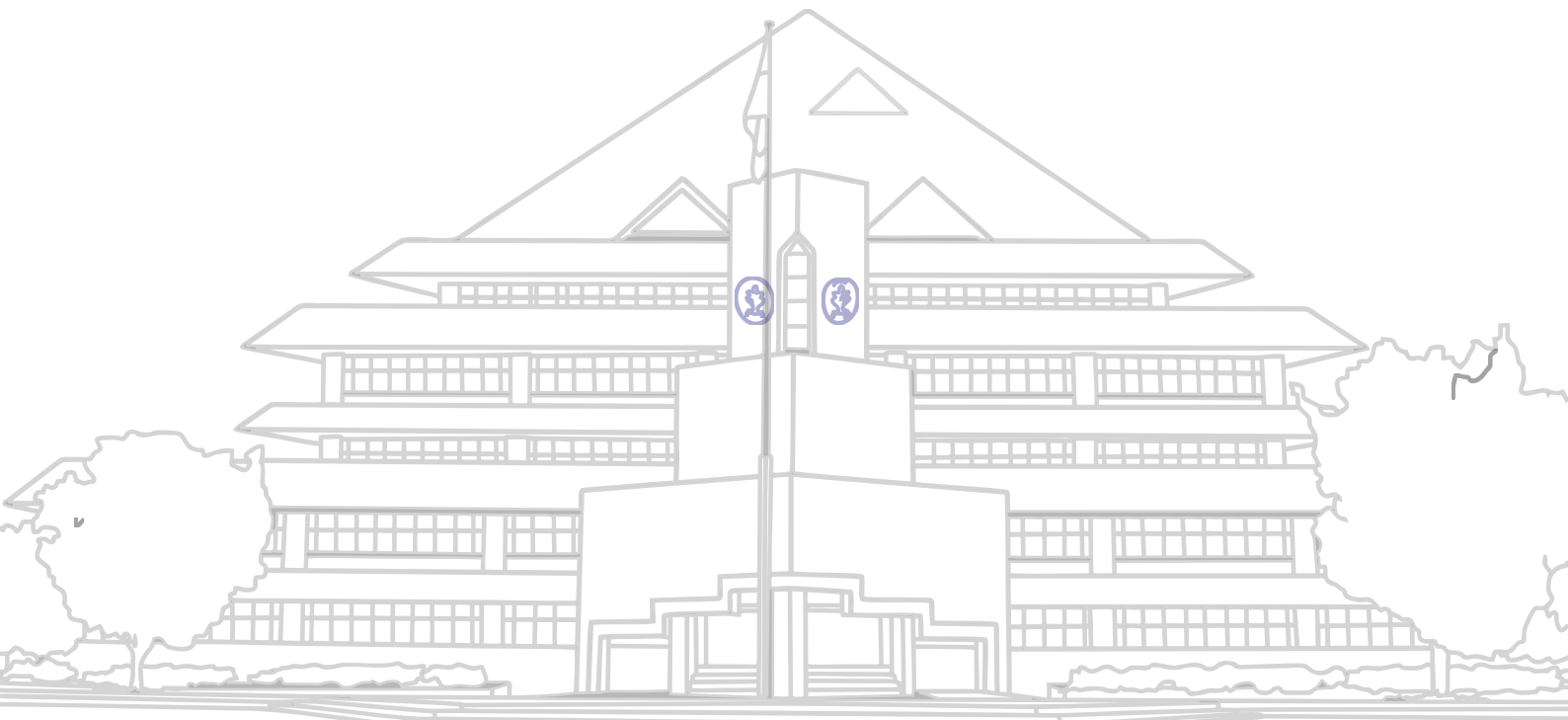
Sustainability Report 2021

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# RECTOR MESSAGE



SDGs address essential aspects of human life and the planet, and higher education has a unique role to play in helping to achieve the SDGs through mainstreaming SDGs into curricula, research, strategies and organizational practices of higher education. As one of Indonesia's leading universities, we've championed sustainable development through higher education. Despite the enormous challenges posed by the Covid-19, IPB University is eager to respond to the pandemic's aftermath in ways that strengthen, sustain, and make our education system resilient.

Integrating the SDGs into higher education can be thought of as a "strategic journey" that evolves over time and through different stages. It depends on three factors: (i) the alignment of organizational and individual academic interests; (ii) the alignment of individual academic interests with one or more Global Goals; and (iii) academics' belief that integrating the SDGs into their work will make their own teaching and research even more relevant for their students and corporate clients. It is apparent that bottom-up motivation and engagement of the academic body are crucial concrete goals, actions and deliverables. Our experiences also indicate that explicit support from the leadership team, backed by adequate resources and incentives are indispensable.


















Critical challenges need to be tackled inside and outside the institution environment, such as incorporating sustainability principles, political environment and stakeholders' interest. Therefore, universities need to adopt sustainability principles as norms that guide their activities in learning, research, and community development. It needs transformation in mindset and actions. Universities cannot walk alone on this path. They should collaborate with the government, private sectors, NGOs, and community as it is a key to creating a major contribution to SDGs.

As a signatory to SDGs, we commit ourselves to deliver progress reports on SDGs annually through SDG Accord. We also regularly publish a Sustainability Report since 2019 that informs progress on SDGs that IPB University has made based on aggregate data that have been collected through our database systems. We also publish reports on more detailed progress by faculties and study centers to achieve SDGs as part of this report. These reports are published on our website, <https://sustainability.ipb.ac.id>.

This report provides examples of a range of initiatives our people are leading in pursuit of the goals. We outline our progress based on SDGs. Each SDG comprises five elements: Learning Programs, Student Activities, Research, Innovation and Business, Community Development, and Campus Operation. This report may not capture and present all the fantastic work of our staff and students across research, teaching, engagement/outreach and operations. Our most profound appreciation for all kinds of contribution to SDGs, and we believe these works/activities will set us on a path to a more sustainable future for all.

Prof. Dr. Arif Satria  
Rector of IPB University

# LIST OF CONTENTS

IPB University Profile	01	 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	46
Aggregate Contributions by SDGs	08	 10 REDUCED INEQUALITIES	50
 1 NO POVERTY	14	 11 SUSTAINABLE CITIES AND COMMUNITIES	54
 2 ZERO HUNGER	18	 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	58
 3 GOOD HEALTH AND WELL-BEING	22	 13 CLIMATE ACTION	62
 4 QUALITY EDUCATION	26	 14 LIFE BELOW WATER	66
 5 GENDER EQUALITY	30	 15 LIFE ON LAND	70
 6 CLEAN WATER AND SANITATION	34	 16 PEACE, JUSTICE AND STRONG INSTITUTIONS	74
 7 AFFORDABLE AND CLEAN ENERGY	38	 17 PARTNERSHIPS FOR THE GOALS	78
 8 DECENT WORK AND ECONOMIC GROWTH	42		

# IPB University PROFILE



IPB University  
Bogor Indonesia

## Change for the Future

Institut Pertanian Bogor (IPB) was established on September 1<sup>st</sup>, 1963, by Decree of the Minister of Higher Education and Science (PTIP) of the Republic of Indonesia Number 91, which was later ratified on September 1, 1965, by the Presidential Decree of the Republic of Indonesia Number 279. The new brand of IPB was officially launched in early 2019, based on the decree of the Board of Trustees (MWA) No. 7/IT3.MWA/OT/2019 concerning Ratification of Rebranding Under the Name of IPB University. The decision to rebrand was made for various purposes. For a long time, IPB referred to itself as "Bogor Agricultural University", but with the new brand, it enhances IPB profile and recognition in the global community, and makes it easy to recognize. Another reason is that IPB has long expanded with more comprehensive study programs, with the IPB University brand that will build broader associations and promise higher value. Along with this new brand, IPB University also came up with a new motto/tagline, namely "Inspiring Innovation with Integrity" (short version) and "Inspiring Innovation with Integrity in Agriculture, Ocean, Biosciences for a Sustainable World" (extended version). This motto indicates the readiness of IPB University to face a disruptive era and increasingly fierce competition.

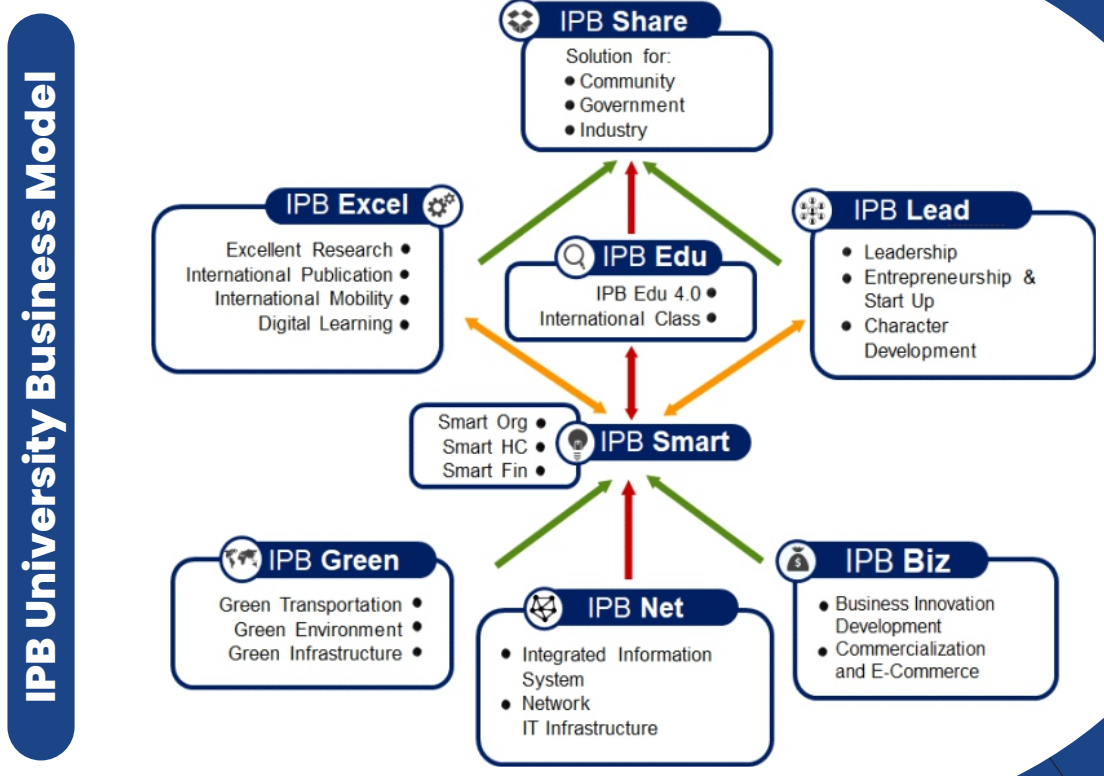
## Strategies and Programs

IPB University has the vision to become an outstanding research-based university and leading in innovation towards a techno-socio-entrepreneurial university in agriculture, marine, and tropical biosciences (IPB University Strategic Plan 2019-2023). It has several missions, as follows:

- 01** Providing higher education by strengthening research-based universities to produce outstanding techno-sociopreneur graduates with noble character based on faith and piety to God, high nationalism, professional competence, millennium soft skills, leadership, globally insightful, and become a trendsetter of innovation and change;
- 02** Pioneering leading research in transformative science and technology for the creation of quality of sustainable life and innovation for the people's economy and national industry;
- 03** Exploring the latest sciences in agriculture, marine and tropical biosciences to determine current science trends at the national and global level;
- 04** Improving proactive services that contribute and solve community problems and enhance roles of IPB University in determining the direction of national policy;
- 05** It is strengthening the higher education governance system that can guide the development of modern management systems of higher education in the 4.0 era.

**The development of IPB University is carried out with 5 (five) strategies:**

1. Strengthening IPB University as an anchor of academic excellence that produces graduates with superior character techno-solopreneurs.
2. Constructing an innovation ecosystem that is adaptive to the transformation of the digital society.
3. Capitalizing current achievements to strengthen IPB University's strategic alliance in regional and national development.
4. Building a spirit of advancing together and transforming a culture of excellence by strengthening the engagement of the IPB University academic community within the framework of bureaucratic reform with the principles of the learning organization.
5. Bridging and playing an active role in building local, national, and global connectivity.



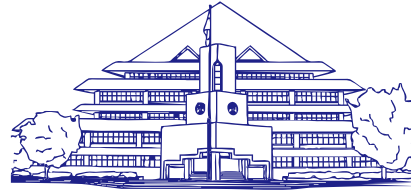
Eight strategic initiatives have determined business model in all working areas under the framework of IPB University 4.0. These initiatives were created in response to major disruptions, due to fast growing technologies. The occurrence of the Covid-19 Pandemic emphasizes the importance of incorporating these initiatives into ten university's programs.

## Ten Programs of IPB University

- 1. Education:**  
Structuring study programs and Curriculum 2020, strengthening entrepreneurship education and character education, increasing intake quality
- 2. Research Development:**  
Research center clusterization and advancing research management and utilization
- 3. Community Development:**  
Enhancing the Role of IPB University for Society and International Community Service Programs
- 4. Business and Innovation:**  
Innovation and business development, development of student and alumni entrepreneurship, development of endowment fund;
- 5. IPB University Smart:**  
Enhancing effectiveness and efficiency of organizational systems and increasing IPB University Ranking at national and international level
- 6. Human Resources:**  
Improving human resources performance;
- 7. Finance:**  
Increasing funding resources and improving financial management
- 8. Infrastructure:**  
Improving management and development of facilities and infrastructure
- 9. Information and Communication Technology:**  
Development of information systems for academics, finance, health, employment, cooperation, and some others; and
- 10. Student and Alumni Affairs:**  
Fostering character building, soft skills, leadership and entrepreneurship and graduate careers, improving student welfare, mapping student interest and talent, increasing cross-cultural interaction and relationships between alumni and student.



# Campus Areas



- Dramaga (Main Site) 277.2 ha
- Jonggol (University Farm) 277.2 ha
- Baranangsiang 12.6 ha
- Vocational School 62.9 ha
- Research Station (15 sites) 91 ha
- Science Technopark 3.5 ha

**26** Campus Site **707.2** ha

# Faculties and Research Centers

## | Faculties

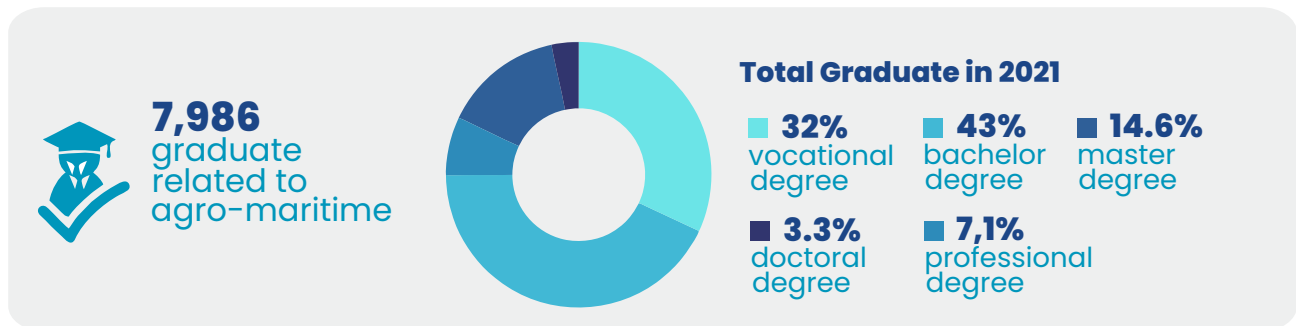
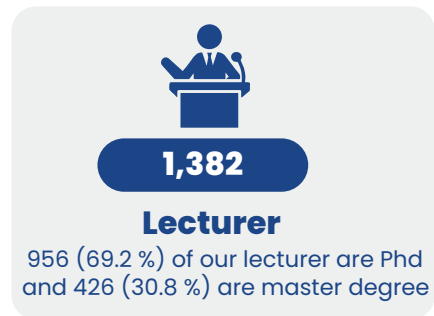
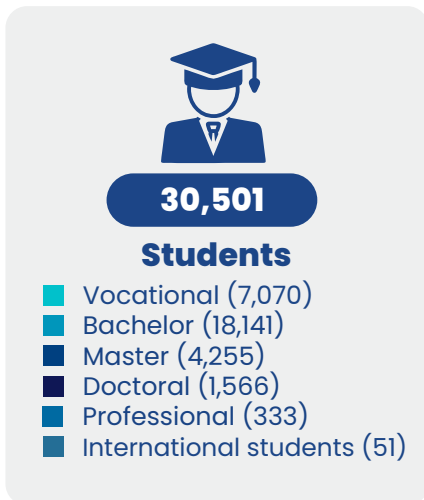
 Faculty of Agriculture	 Faculty of Mathematics and Natural Sciences	 Faculty of Forestry and Environment
 School of Veterinary Medicine Bio-medical Science	 Faculty of Economics and Management	 School of Business
 Faculty of Fisheries and Marine Science	 Faculty of Human Ecology	 Faculty of Agricultural Engineering and Technology
 Faculty of Animal Science	 Vocational School	

## | Research centers

1. Environmental Research Center (PPLH)
2. Center for Agricultural and Rural Development Studies (PSP3)
3. Research Center for Bio-resources and Bio-technology
4. Center for Research for Engineering Application on Tropical Agriculture (CREATA)
5. Southeast Asian Food and Agricultural Science and Technology Center (SEAFAST)
6. Surfactant and Bioenergy Research Center (SBRC)
7. Center for Regional Systems Analysis, Planning and Development (P4W)
8. Center for Coastal and Marine Resource Studies (PKSPL)
9. Primate Research Center (PSSP)
10. Research Center for Tropical Horticulture (PKHT)
11. Center for Tropical Animal Studies (CENTRAS)
12. Research Center for Human Resources Development (P2SDM)
13. Tropical Biopharmaca Research Centre (TropBRC)
14. International Center for Applied Finance and Economics (InterCafe)
15. Center for Alternative Dispute Resolution, Regulation and Policy (CARE)
16. Center for Climate Risk and Opportunity Management Southeast Asia and Pacific (CCROM-SEAP)
17. Research Center for Mine Reclamation (REKLATAM)
18. Center of Disaster Studies (CERDAS)
19. Center for Islamic Business and Economic Studies (CI-BEST)
20. Center for Gender and Child Studies (PKGGA)
21. Center for Agrarian Studies (PSA)
22. Center for Halal Science
23. Center for Transdisciplinary and Sustainability Science (CTSS)



# Campus Population



# Research Stations

## Cluster of Research in IPB University

Research at IPB University is carried out with the following clusters:

1. Renewable resources based industry
2. Biorelated sciences and health
3. Indigenous knowledge/technology
4. Food security and food safety
5. Genetic resources and engineering and breeding
6. Conservation and environment
7. Social, economy, and culture
8. Biophysics, mechanics, and equipment
9. Management and information technology
10. Regional development and community empowerment

## Tinjil Island (Primate Conservation)



Tinjil Island is one of island that registered under the government of Banten Province. The island is located in Indian Ocean to the south of Java island. Since 1988, Tinjil island was set to be breeding place of long-tailed monkeys brought in from Sumatra and Java. Tinjil Island is used as a place for semi-natural breeding and captivity which is managed by the Center for Primate Animal Studies (PSSP) of IPB University for research activities.

## Fish Pond (Aquaculture)



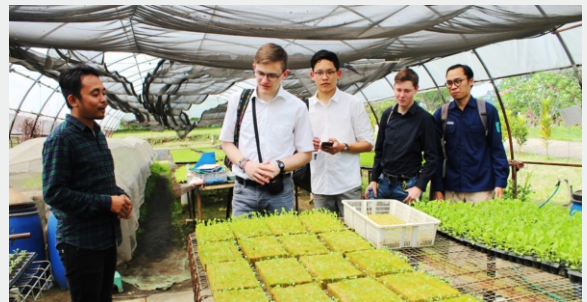
Gunung Walat Education Forest (GWEF) has area of 359 hectare. The site is located in Cibadak and Cicantayan Subdistrict, Sukabumi Regency, about 50 km from Bogor. GWEF is a State forest area designated as an Education and Training Forest whose management is handed over to the Faculty of Forestry, IPB University. In the GWEF area, there are a wide variety of wildlife species including mammals, reptiles, birds, dan fish.

## Sabisa Farm (Farm Business)



Sabisa is an acronym of Sarana Belajar Petani Sarjana or literally means Learning Facilities for Undergraduate Farmers. Sabisa Farm can be the learning tools for students that are interested in arming and farm businesses. Sabisa farm offers guidance service to students while managing their horticulture businesses. Sabisa Farm was established in 2013 and is in Jalan Sindang Barang, Bogor City. The farm is planted with not more than 2000 red flesh dragon fruit trees and 200 white flesh dragon fruit trees in area of 6000 m2.

## Agribusiness Technology Park (Horticulture)



IPB University has Agribusiness and Technology Park (ATP), which is an integrated agribusiness pilot center located in Cikarawang Village, Dramaga, Bogor. In addition to functioning as a means of research and development of horticultural products, ATP also provide variety of fresh vegetable and fruit products and various plant seeds.

## Gunung Walat Education Forest



Gunung Walat Education Forest (GWEF) has an area of 359 hectares. The site is located in Cibadak and Cicantayan Subdistrict, Sukabumi Regency, about 50 km from Bogor. GWEF is a State forest area designated as an Education and Training Forest whose management is handed over to the Faculty of Forestry, IPB University. In the GWEF area, there are a wide variety of wildlife species including species of mammals, reptiles, birds and fish.

## Pasir Sarongge Farm



Pasir Sarongge Garden is located in Pacet Subdistrict, Cianjur Regency, West Java. The activities at the site include vegetable cultivation, packing house and agro-tourism package as a place for field practicum for students in cultivation aspects, post-harvest handling, to marketing aspects.

## Cikabayan Farm (Plant Collection)



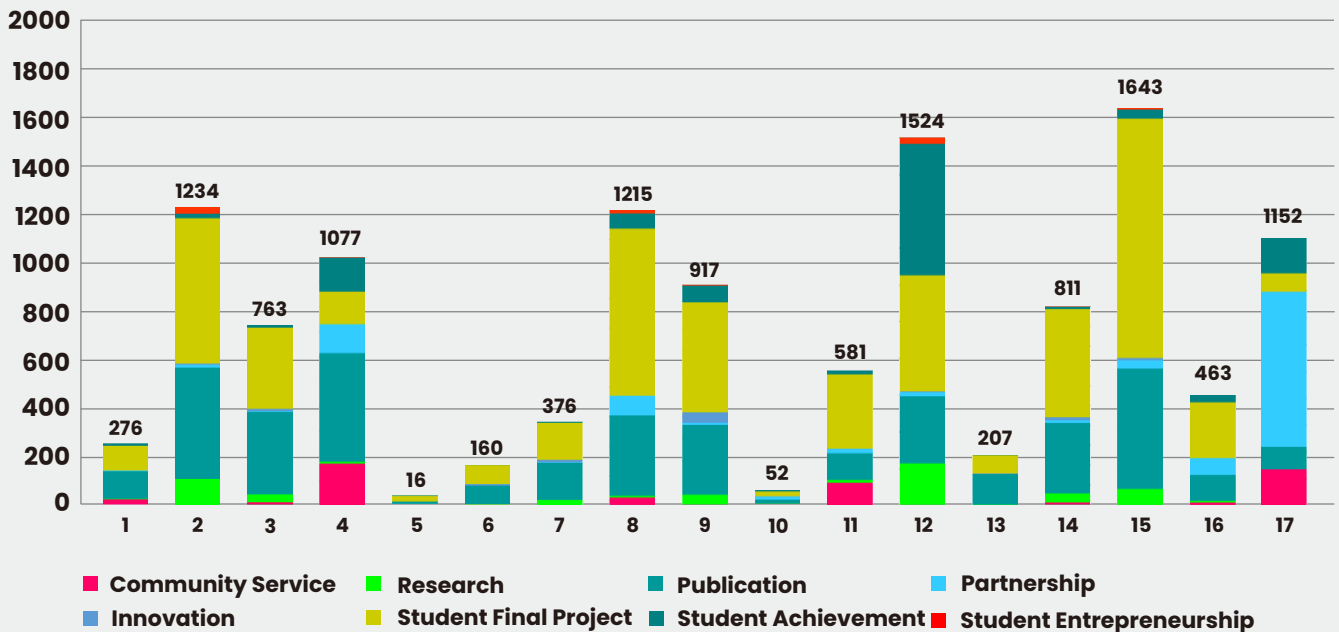
In the Cikabayan farm there are several plant collection zones that can support practical activities and student research such as collections of durians, palm, coffee, aloe vera, breadfruit, and others.

## Pelabuhan Ratu (Fisheries and Marine Sciences)



The Marine Field Station is one of the facilities owned by the Department of Aquaculture of IPB University. Built on an area of 4 hectares, this field station is equipped with lecture rooms, labs and lodging (guest house) located in Pelabuhan Ratu, Sukabumi. At Pelabuhan Ratu there is also a field practice of fishing. At this location, IPB University also collaborated with a private sector to enlarge and process eel into kabayaki, a product that is exported to Japan.

# Aggregate Contributions by SDGs

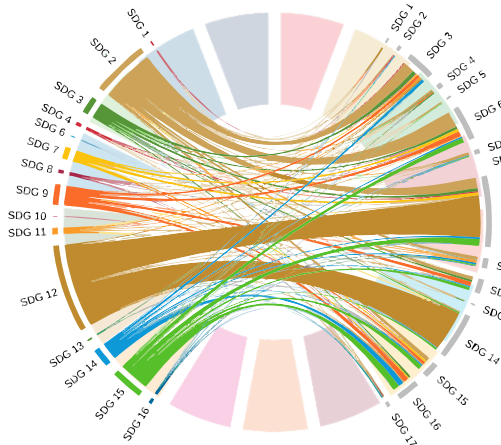


IPB University commits to make considerable contributions to SDGs in various activities, including learning activities, student activities, research and innovation, community services, and campus operations. The individual, group, or institution-level activities have been recorded by our database system and classified into eight categories: innovations, research, publications (national and international), community service, partnership student final projects, student achievement, and student entrepreneurship.

In 2021, the total recorded activities were 12,467, coded based on the SDGs and categories. Figure 3 above shows that based on the SDGs, the majority of activities recorded address SDG 15-Life on Land (1,643), SDG 12 -Responsible Consumption and Production (1,524), and SDG 2 -Zero Hunger (1234) and SDG8-Decent Work and Economic Growth (1,215). Most of these activities are carried out through partnerships and broader cooperation in education, publication, student final project, and student achievement at the national, regional, and global levels.

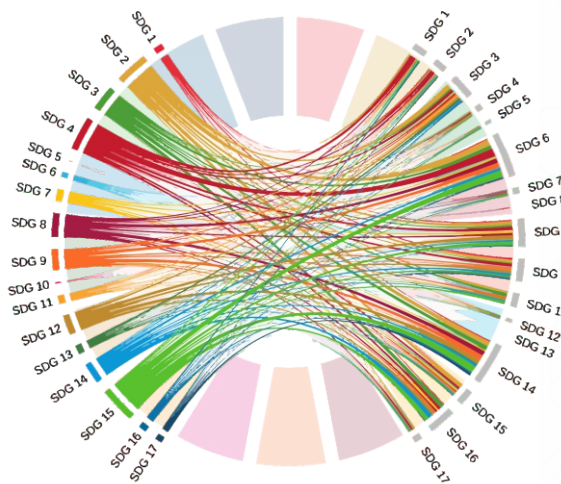
In addition to these four SDGs goals that have become the strengths of IPB University, we keep improving and encouraging more activities contributing to other SDGs goals that are considered potential and relevant, as we understand that there are linkages among SDGs. The contribution to the SDGs in 2021 has increased from the previous year and has impacted society. The community has widely used several innovations. They have contributed to improving facility for covid, increasing efficiency, and improving community welfare, such as hospital for Covid-19 isolation, Antivirus Test Laboratory, Bio-Informatics for Cancer, Lecturer's Community Services, Precision Agriculture, Enzymatic Membrane Reactor, etc.

# Research Activities by SDGs



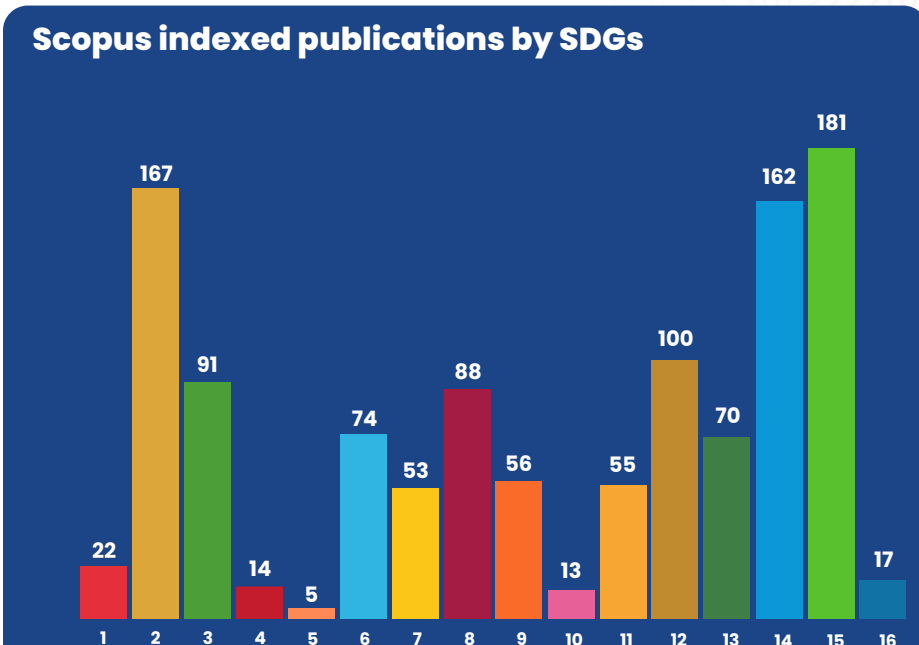
Research activities by SDGs in 2021 are mostly related to **SDGs 12 (Responsible Consumption & Production), SDGs 2 (Zero Hunger), SDGs 15 (Life on Land), SDGs 9 (Industry, Innovation & Infrastructure) & SDGs 14 (Life Below Water)** as many as **175, 112, 64, 41 & 37** of the total 530 research activities.

# National & International Publication by SDGs



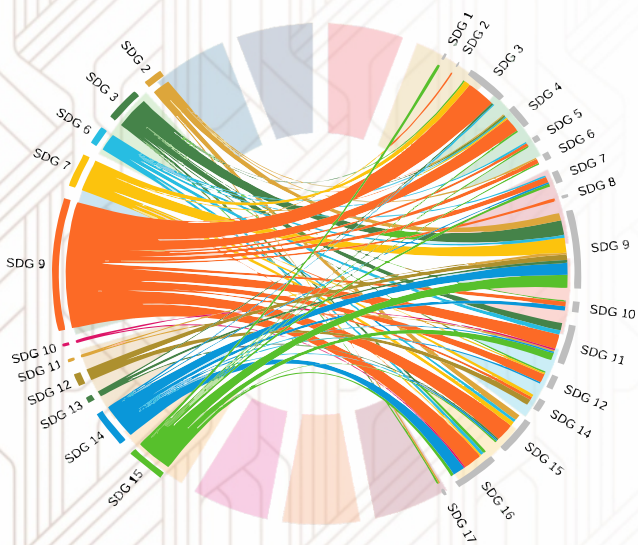
National & International Publication by SDGs in 2021 are mostly related to **SDGs 2 (Zero Hunger), SDGs 4 (Quality Education), SDGs 15 (Life on Land)** as many as **459, 471 & 498** of the total **3,791** publication.

## Scopus indexed publications by SDGs



*“Scopus indexed publication by SDGs in 2021 are mostly related to **SDGs 15 (Life on Land), SDGs 2 (Zero Hunger) & SDGs 14 (Life Below Water)**, as many as **181, 167 & 162** of the total **1,168** publication.”*

# Innovations by SDGs



IPB University's Innovations by SDGs in 2021 are mostly related to **SDGs 9 (Industry, Innovation, and Infrastructure)** as many as **43** of the total **109** innovations that are circularly related to SDGs 3, SDGs 4, SDGs 11, SDGs 15, and SDGs 16.



**IPB SORICE**

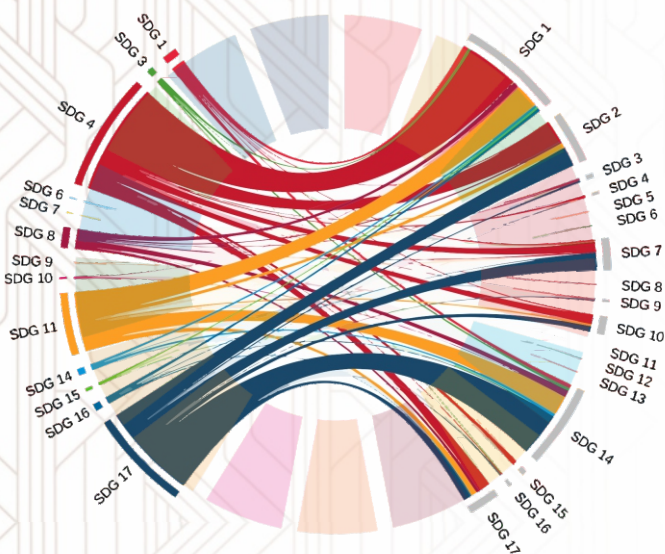


**ELISA Kit**  
**Detection for SARS CoV-2**



**Biofam**  
**Safe Eco-Friendly Packaging**

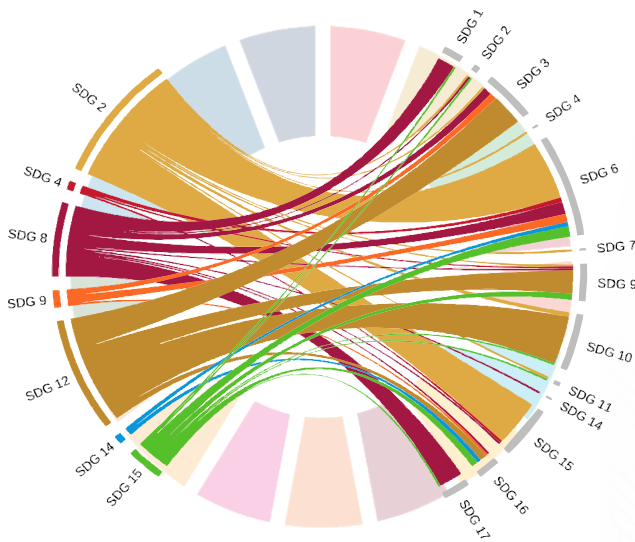
# Community Service Activities by SDGs



Community Service Activities consist of **Students Volunteering or KKN and Lecturers' Community Empowerment programs**. In 2021, there is 485 KKN activities and 48 Lecturers' Community Empowerment programs.

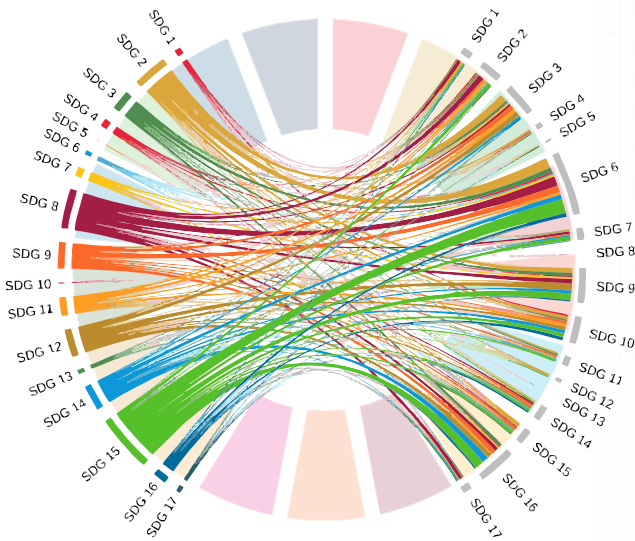
Community Service Activities by SDGs in 2021 are mostly related to **SDGs 4 (Quality Education), SDGs 17 (Partnerships for the Goals), SDGs 11 (Sustainable Cities & Communities) & SDGs 1 (No Poverty)** as many as **183, 157, 97 & 23** of the total **513** activities.

# Student Entrepreneurship by SDGs




Students Entrepreneurship by SDGs in 2021 are mostly related to **SDGs 2 (Zero Hunger)** and **SDGs 12 (Responsible Consumption and Production)** as many as **29 & 26** of the total **88**.

# Student Final Project by SDGs



Student Final Project by SDGs in 2021 are mostly related to **SDGs 15 (Life on Land)**, **SDGs 8 (Decent Work & Economic Growth)**, **SDGs 2 (Zero Hunger)**, **SDGs 12 (Responsible Consumption & Production)** & **SDGs 14 (Life Below Water)** as many as **986, 684, 599, 482 & 443** of the total **5,224**.

# Student Achievement by SDGs



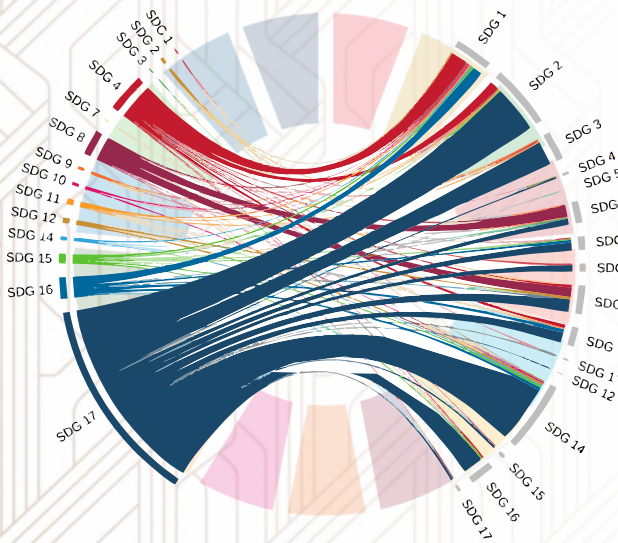
**1,128**  
Number of total Student Achievement

Student achievement by SDGs in 2021 are related to **SDGs 12, SDGs 17, SDGs 4, SDGs 9 & SDGs 8** as many as **543, 156, 147, 69 & 62** of the total **1,128**.



"Student achievement at national and international levels"

# Partnership Activities by SDGs



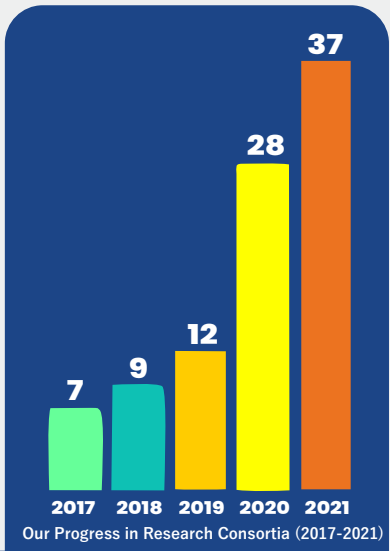
Partnership activities by SDGs in 2021 are mostly related to **SDGs 17 (Partnerships for the Goals)** as many as **667** of the total **1063** partnership activities that are circularly related to SDGs 2, SDGs 3, SDGs 14, and SDGs 16.

## International Consortia in 2021

In 2021, We involved in 37 international consortia such as UK-CIS, UKRI-CGRF, TraUniverdeHub, SPIN ANGIN, UC Searca, INREF, NUFFIC NESO-TVET, UZH Orang Utan research, and NERC (RISTEKDIKTI Newton FUND).

## International Consortia (Active)

**37 Active Consortia**



## New Consortia in 2021





# 1 NO POVERTY



## End Poverty in all its forms everywhere



### Learning Programs

#### Course on Poverty

Several courses that strongly relate to poverty elimination are developed in departments under the Faculty of Economics and Management (FEM) and Faculty of Human Ecology (FEMA), which enhance students' understanding of the economic situation in Indonesia, particularly in rural areas. Almost all courses in FEM are related with poverty eradication. The Department of Family and Consumer Science (IKK) in the Faculty of Human Ecology provides courses on family economic, family resource management (bachelor), and family resource development (master). We also provides a course on Nutrition, Poverty and Justice. This course offers students a chance to address the cause of poverty, food injustice, the impact of poverty, food insecurity, poor nutrition on health. FEMA also has a Agricultural and Rural Development graduate program (Master and Phd) which concern on poverty alleviation, namely Agricultural and Rural Development.

### Student Activities

#### Financial Aid for Society

Students from the Faculty of Veterinary Medicine (FKH) (known now as School of Veterinary and Biomedical) managed to raise IDR 52.5 Million for community service activities (Abdimas) in 2021. This fundraising is a collaboration between several Student Organizations (Ormawa) in FKH IPB University. They are the BEM (Student Executive Board) FKH, Himpro (professional association) Ruminansia, Himpro HKSA, DKM An Nahl FKH and IMAKAHI. We distributed these funds at 6 (six) locations. Namely, RSHP (Educational Veterinary Hospital) IPB University, District of Dramaga, Village of Pamijahan, Haryono Mukana Foundation, Clow and Dee Catzhouse Shelter.

#### Rural Development

The rural development program is a kind of education for students through direct experiences in the community. Students live together with the community to identify potential and deal with society's problems. The location for the implementation (3 months since November 2021) of the rural development program is in Bubulak Village, Bogor Regency, where students collaborate with KWT (Farmer Women's Group) and KSM (Non-governmental Groups). The goals to be achieved in the village building program include advancing MSMEs and maximizing the use of existing raw materials and increasing their economic value.

**The development of scholarships and tuition assistance at IPB (2018-2021)\***

	2018	2019	2020	2021
<b>Donor (Institution)</b>	<b>57</b>	<b>56</b>	<b>60</b>	<b>63</b>
<b>Recipient (Student)</b>	<b>9,364</b>	<b>9,356</b>	<b>9,972</b>	<b>12,602</b>
<b>Fund (Rp Billion)</b>	<b>81.6</b>	<b>89.6</b>	<b>102.5</b>	<b>117.5</b>

\*Percentage of IPB Scholarship Recipients (Vocational and Undergraduate) 12,602/25,590 \* 100 = 49.25% ➡ in 2 students



## Research, Innovation and Business

### Merdesa Super Apps

Efforts to build a village can be done through the community welfare feature in the Merdesa Super Apps which was developed by one of the lecturers of IPB University, Sofyan Sjaf. Through the Merdesa Super Apps, the advantages of Precision Village Data (DDP) are increasing. Precision Village data as a basis for community empowerment can be done using the Drone Participatory Mapping (DPM) approach, spatial synthesis, participatory, and census. Merdesa Super Apps has many features including Merdesa Census, Merdesa Bansos, and Merdesa Maps. The provision of digitally accessible data facilitates decision-making in community empowerment programs.

### Waqf for Poverty Eradication

As a result of the COVID-19 pandemic and the global economic recession, there has been an increase in poverty rates. Waqf become one mode to eradicate poverty. Waqf also known as hubous or mortmain property is an inalienable charitable endowment under Islamic law. The potential for waqf in Indonesia is IDR 2.188 trillion/year, but the realization of waqf collection is only IDR 850 billion. BPRS (Sharia People's Financing Bank) Botani and CIBEST (Center of Islamic Business and Economic Studies) IPB University see the potential of the waqf to be used as an instrument of poverty alleviation, an instrument of income and wealth distribution, and an instrument of equitable economic growth. The initial discussion of the potential of waqf management for poverty alleviation is set out in a webinar which is expected to provide more in-depth information about waqf to the public, especially Nazhir and the Islamic Financial Institution Recipient of Cash Waqf (LKSPWU) as a bridge between wakif and beneficiaries.

### Research in Number

 **91** citation impact in 2017-2021

 **65** publication in 2017-2021

 **354** citation count in 2017-2021

**4.64%** of all Indonesian citation

**3.36%** of all Indonesian publication

### Spatial Poverty Modelling

Problems related to poverty, disease, and the environment in Indonesia are always related to the amount and how it is distributed in the territory of Indonesia, as well as the factors that are thought to be the cause. The search for causal factors, the number of events, the pattern of distribution, and the alleged occurrence (poverty, disease, and environmental pollution) will be more powerful when using a spatial statistical estimation model or called Merdesa Super Apps. This approach was developed by Prof. Nur Aidi, one of the professors of the Faculty of Mathematics and Natural Sciences through research results on poverty data in the form of points, areas (lattice data), and continuous spaces.



## Community Engagement

### Poverty Eradication in Coastal

This program is a consortium program between the Center for Transdisciplinary and Sustainability Sciences (CTSS) IPB University and Yapeka (a non-profit organization specializing in Nature Conservation and Community Empowerment) which was carried out in the buffer village of Way Kambas National Park. Way Kambas National Park (TNWK) is an important area as a tropical rain forest and is recorded as a habitat for 50 species of mammals and other species of fauna and flora. On the other hand, there are 40 villages directly adjacent to TNWK. The main livelihoods of the people in the TNWK buffer zone are farmers or planters. While the main types of agricultural business are rice fields, dry land agriculture, and agriculture plantations, with the main commodities are rice, cassava, corn, cocoa, and other crops such as bananas and coconuts. This program aims to improve the livelihoods of the people around TNWK as AHP (ASEAN Heritage Park) specifically in the two main villages, namely Labuhan Ratu IX and Braja Harjosari. This program responds to the challenges in TNWK by improving the livelihood systems of the communities around TNWK by adopting sustainable practices and at the same time reducing threats to biodiversity and its ecosystem.

## One Village One CEO (OVOC)

OVOC is a rural business ecosystem development program based on bumdes empowerment. Until 2021, this program has targeted 3 provinces, 22 regencies, and 119 villages with the assistance of funds that have been distributed around Rp. 3.4 Billion. Sukanagalih Village, Cipanas District, Cianjur Regency, West Java, became one of the villages targeted for the OVOC program. Sukanagalih village is really able to take advantage of the local potential of natural resources in the area. From the productive hands of the people, various products are produced. These products have penetrated the export market to 11 countries. Namely Malaysia, Thailand, Vietnam, Myanmar, Singapore, South Korea, Taiwan, Japan, United Arab Emirates, Saudi Arabia and Turkey.



## Improve Livelihood System

This program is a consortium program between the Center for Transdisciplinary and Sustainability Sciences (CTSS) IPB University and Yapeka which was carried out in the buffer village of Way Kambas National Park. Way Kambas National Park (TNWK) is an important area as a tropical rain forest and is recorded as a habitat for 50 species of mammals and other species of fauna and flora. On the other hand, there are 40 villages directly adjacent to TNWK. The main livelihoods of the people in the TNWK buffer zone are farmers or planters. While the main types of agricultural business are rice fields, dry land agriculture, and agriculture plantations, with the main commodities being rice, cassava, corn, cocoa and other crops such as bananas and coconuts. The presence of this program aims to improve the livelihoods of the people around TNWK as AHP specifically in the two main villages, namely Labuhan Ratu IX and Braja Harjosari. This program will help answer the challenges in TNWK by improving the livelihood systems of the communities around TNWK by adopting sustainable practices and at the same time reducing threats to biodiversity and its ecosystem.

## Develop Local Commodities

Our Students use pedada fruit to improve community welfare in Betara Kanan Village, Jambi. With the guidance of IPB University lecturer, Hana Indriana, the four students managed to get funding in the Student Creativity Program in Community Service (PKM-PM). The program is funded by the Ministry of Education, Culture, Research and Technology (Kemendikbudristek). The idea arose from his concern that the pedada fruit was not being used optimally by the community. In fact, pedada fruit can be processed into processed products that have economic value.

## Small Enterprises Empowerment

LPPM-IPB (Research and Community Service Institution) held a Lecturer's community service program. Annually, lecturers provide solutions regarding community issues. One example of a lecturer program serving in 2021 is training on digital financial recording for Micro, Small, and Medium Enterprises (MSME's). The Warung Buku used as an MSME bookkeeping application that was created with the aim of making it easier for business owners to record their business books. Carrying out financial records on a regular basis will make business continuity more secure and it will be easier to know the financial condition of the business being run.

## Campus Operation

### Scholarship for Low Income

IPB is committed on poverty eradication and has a commitment to continuously improve access to higher education for the community. In 2021, the development of scholarship collaborations shows an increase number of donors. Sixty three donor partners with a total managed fund of IDR 117 billion and the number of scholarship recipients recorded is almost 12,604 students. About 1 out of 2 IPB students received scholarship from various donors.

## CEO School (Entrepreneurship)

The CEO School or entrepreneurship school is a program to increase capacity and foster a business spirit in entrepreneurship while supporting the independence of the nation through campuses. CEO School aims to provide opportunities for students, new alumni, the younger generation and village-owned enterprises (BUMDes) administrators to gain knowledge in terms of management and leading an organization, business and business planning, as well as expertise to assist BUMDes. The CEO School also continue to facilitate students in preparing graduate careers and facilitating access to recruitment with various corporate partners. In addition, IPB also facilitates students who are interested in participating in an internship for six months and is integrated with freedom of learning (Merdeka Belajar-Kampus Merdeka/MBKM) in various IPB partners. In 2021, there are 98 partners and 383 students participating in the MBKM internship.



1 NO POVERTY



## 2 ZERO HUNGER



### End Hunger, achieve food security and improved nutrition and promote sustainable agriculture



#### Learning Programs

##### Food and Bio-Sciences

We applied a major-minor curriculum that offers more than 500 combinations of competencies in agriculture, marine, and tropical biosciences. A total of 22 study programs are directly related to efforts in provide solutions to end hunger and achieve food security. The competence of IPB University graduates is not limited to on-farm agricultural activities, but also includes off-farm activities which include agribusiness, agro-industry, agro services, and agro-tourism (agro-maritime). Several courses related to achieve zero hunger are Innovative Agriculture (IPB10C), Food and Agriculture Economics (ESL21A), Food Consumption (GIZ22B), Nutrition and Food Ecology (GIZ241), Nutrition and Food Data Analysis (GIZ344), Food Economics and Nutrition (GIZ346), Nutrition and Food Planning (GIZ347), Food and Nutrition Intervention (GIZ348).

##### Courses on Food Security

A course entitled "Capacity building in management and utilization of genetic resources for improved food security in Indonesia" was held for a month in September 2021. It was a collaboration between Wageningen University and Research (WUR)-Plant Breeding and IPB University-Department of Agronomy and Horticulture, funded by Orange Knowledge Programme (OKP) Nuffic, Netherlands. There were two modules were delivered: Module 1 'Ex situ plant genetic resources (PGR) management' by Dr. Chris Kik; and Module 2 'Use of genetic resources in plant breeding' by Dr. Sjaak van Heusden.

##### Inclusive and Sustainable Agribusiness

IPB held a Summer Course with the theme of Inclusive and Sustainable Agribusiness on August 23 – September 7, 2021. This summer course activity was carried out online with 50 students from four countries, such as Bangladesh, Philippines, Japan, and England. This 7th summer course invited 13 speakers. There were two speakers from abroad, Prof. Edward Buckingham (Monash University, Australia) and Hirotaka Matsuda, PhD (Tokyo University of Agriculture, Japan). In addition, there were nine speakers from Universities in Indonesia (IPB University, USU, and ITB) and practitioner (AsianAgri, Apical, TaniHub, Crowde, Okiagaru Farm and Roundtable Sustainable Palm Oil).



#### Student Activities

##### Rural Development

The rural development program is a kind of education for students through direct experiences in the community. Students live together with the community to identify potential and deal with society's problems. The location for the implementation (3 months since November 2021) of the rural development program is in Bubulak Village, Bogor Regency, where students collaborate with KWT (Farmer Women's Group) and KSM (Non-governmental Groups). The goals to be achieved in the village building program include advancing MSMEs and maximizing the use of existing raw materials and increasing their economic value.

## Research, Innovation and Business

### Precision Agriculture

The productivity of farmer rice plantation that yields in 5 tons of milled rice has stagnated since the last 10 years. This was partly due to the sub-optimal excessive use of synthetic fertilizers and pesticides from year-to-year. These conditions result in the poor conditions of soil. By conducting precision agriculture, the needs of fertilizer and pesticides and the frequency of fertilization for a defined plantation area can be precisely calculated.

### Cassava Plasm Plantation

IPB University's Science Techno-Park (LKST) received the Innovative-Productive Research Funding Program (Rispro) from the LPDP of The Ministry of Finance. This research is about healthy food based on cassava through IPB Prima cultivation technology, healthy food technology and healthy food business. At the initial stage, cassava germplasm seeds were cultivated which consisted of 27 varieties, from a planned 50 varieties, which were collected from all over Indonesia. These seeds were planted on area of 11 ha in IPB Jabar Innovation Valey, Jonggol-Bogor. The planting of germplasm seeds is intended as a "cassava variety bank" that can be bred and produced and downstreamed. In other words, the planting of cassava germplasm seeds is a blueprint for the development of cassava-based healthy food in which, in the long-run, IPB University will build food self-sufficiency.

### IPB 3S, High Yield Rice Variety

Rice fields in the Blanakan sub-district, Subang Regency are coastal rice fields. These rice fields on the coast of the North Coast of West Java are often inundated, frequently exposed to pests, and in some places also subject to saltwater runoff/rob. To overcome this and future challenges, multi-stakeholder cooperation is needed, including technology from universities. Thursday, August 5, 2021. Dean of the Faculty of Agriculture, IPB University, Dr. Sugiyanta, accompanied by the Deputy Dean, Dr Suryo Wiyono made a visit to discuss with the farmers, PPL and UPTD of the Blanakan District Agriculture Service, H Mad Anwar, SP, and the Head of Rawameneng Village, Blanakan District, on leveraging rice productivity. Various problems in rice cultivation in the area were discussed, namely borer, salinity and lack of water in certain plantation periods. In the Blanakan Sub-district, IPB University supported the farmers to cultivate IPB 3S rice variety which is a product from IPB University. The Blanakan farmers seemed enthusiastic, because the performance of IPB 3S rice was better than other varieties.

### Hybrid Maize (Adaptive to Flood)

Dr. Willy Bayuardi (Department of Agronomy and Horticulture) as a team of corn breeders collaborated with the Cereal Research Center to create a hybrid corn variety JHG 02 which is adaptive to inundative environments. This hybrid is the result of a cross-breeding between IPB L15 line as the female parent and the Balitcereal Mr14 line as the male parent. Based on the results of the adaptation test, the yield potential of this variety was 12.41 ton/ha; the average yield under normal conditions was 11.19 ton/ha; and average yield in inundative conditions of 7.22 ton/ha at 15% moisture content. The JHG 02 variety shows resistancy to downy mildew and leaf rust.

## Research in Number related to good health & well being\*

**91** citation impact in 2017-2021

**65** publication in 2017-2021

**354** citation count in 2017-2021

**3.36%** of all Indonesian publication

**4.64%** of all Indonesian citation



## Community Engagement

### Multy-Canopy Rice Tech

Prospective rice cultivation technology for increasing land productivity is urgently needed to meet the needs of increasing national rice consumption. One of the new technological breakthroughs developed (21/12) by IPB University in collaboration with the Center for Rice Plants (BB Padi) is the Multi-canopy Cultivation Technology. Multi-canopy technology was tested by the IPB Research Team with research partners BB Padi and BPTP Central Kalimantan in Dramaga, Bogor Regency, Sukamandi, Subang Regency, and the food estate Belanti Siam, Pulang Pisau Regency, Central Kalimantan. This research was supported by the National Research Priority (PRN) scheme from the National Research and Innovation Agency (BRIN).

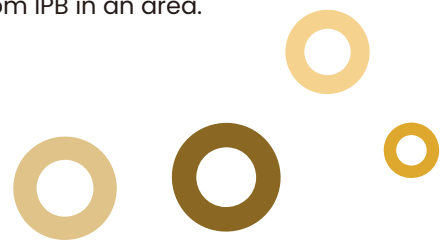


### Board of Professor in IPB Formulate Governance of Rice

The problem of rice starting from its production and management has not been properly decomposed. Therefore, the Board of Professors (DGB) of IPB University held a consultation and discussion to establish critical solutions. There are more than 90% of the staple food of the Indonesian people is rice. There are more than 13 million farming households also work in the food crops sub-sector that produce rice. So, if there is a turmoil in grain, rice and rice can trigger a national upheaval. Until now, rice has also become a political commodity that has a strategic role in Indonesia and even the world. The rice problem will not be finished yet, especially the strategy and management. Therefore, DGB IPB University as a child of the nation participates in solving the nation's problems, especially in the field of Food, one of which is by deliberation and discussion to determine the appropriate National Rice strategy and management carried out by stakeholders and the Government.

### Rice Field Development

In general, rice farming is still the backbone of the household and rural economy. IPB University signed an MoU of cooperation related to the IPB Innovation Village in Subang with the Subang Regency Government in Kiarasari Village, Comprang District, (24/09). Dean of Faperta IPB Dr. Ir. Sugiyanta said that in the future the innovation village of IPB - Subang will require around 100 ha, where the empowerment of agricultural land will be carried out by applying modern technology, so that the birth of the innovation village of IPB - Subang will increase precision and smart agricultural products with farmer corporations. IPB Innovation Village is an effort to develop agriculture and society by applying the innovations from IPB in an area.







## Campus Operation

### Food Aid

The implementation of health protocol rules and large-scale social restrictions (PSBB) in a number of areas to reduce the spread of COVID-19 has had a major impact on the community. The application of this rule in the campus environment, including the IPB Campus, has an impact on reducing the economic activity of the community around the campus. IPB University through the Ditmawa-PK initiated the fruit and milk distribution program during 2020-2021. This program has distributed 10,547 aid packages in 2021 which are equivalent to IDR 200 million. About 1900 packages in 2020 and 8647 packages in 2021 were distributed. The distribution channels were through faculties, schools, and student organizations (BEM KM).



### Greenhouse Learning Center

A modern greenhouse at Sadifa Farm, Dramaga Campus - Bogor has been established in July 2021. The establishment of this greenhouse was the result of a collaboration between Faperta, IPB University and the Food Security Agency, Ministry of Agriculture. The greenhouse with a capacity of 8,000 holes for hydroponics is used for research activities, student field activities and internships. The presence of this greenhouse is considered as an innovation to facilitate the invention of various agricultural innovations in the future that support food security.

**“Greenhouse Learning Center, Collaboration between IPB University and the Food Security Agency, Ministry of Agriculture”**

2 ZERO HUNGER



## 3 GOOD HEALTH AND WELL-BEING



To ensure healthy lives and promote well-being for all at all ages



### Learning Programs

#### One Health In Study

One Health is a collaborative, multisectoral, and transdisciplinary concept or approach that aims to achieve optimal health outcomes by recognizing the interconnections between human, animal, plant, and environmental health. We incorporated the One Health concept as teaching material in five study programs to provide understanding to the students for a healthier earth. A total of 20 courses (60 credits) were spread over the five study programs. The study programs included Bachelor of Veterinary Medicine, Bachelor of Community Nutrition, Bachelor of Food Technology, Bachelor of Computer Science, Bachelor of Biology, and Master's degree of Environmental Resource Management.

#### Mental Health Webinar

IPB University students experience the psychological disorders related to careers and mental health. Based on a survey by BEM KM IPB, 45% of students experienced mental disorders because of social distancing during pandemic. Anticipating this, there were various learning programs related to mental health in 2021. On these activities, students received a complete explanation regarding the Corona Virus and mental health and know-how to live a healthy lifestyle during a pandemic and to stay productive.



### Student Activities

#### Blood Donation

BEM FPIK IPB held a blood donation socialization for IPB students through videos on social media. Convalescent blood plasma from healthy blood donors is urgently needed by COVID-19 patients with severe symptoms as one of the important healing efforts that requires blood donations every day considering the increasing number of cases of Covid-19 sufferers. This series of activities were carried out with the aim of providing an understanding of how important blood donation is during a pandemic and triggering courage, humanity, and a sense of caring for others to donate blood.

#### Forest Mental Healing

Students from the Department of Computer Science, Faculty of Mathematics and Natural Sciences (FMIPA) and the team created alternative mental health therapies through forest natural resources based on internet of things (IoT) technology. Forest healing is the latest research in the use of forest resources for health and increasing the value of forest ecosystems. Forest healing is a new alternative in Indonesia for physical and mental health interventions that can help reduce stress in the community. This innovation won the Grand Award and The Most Outstanding Pitch at the 2021 Kryative Innovation Award.

## Anti-microbial Resistance and SARS-COV-2 Co-infection

Students from FKH and FMIPA IPB University found a biomedical invention in the form of a candidate for Covid 19 anti-coinfection drugs based on maggot extract (*Hermetia illucens*; Black Soldier Fly). This could be considered as a substitute for conventional antibiotics. Sars-CoV-2 coinfection could inhibit the host immune system, increased intolerance to antibacterial therapy, and worsened prognosis. The main co-infectious agents in Covid-19 are respiratory bacterial infections, especially *S. pneumoniae* and *H. influenzae*.

## Research, Innovation and Business

### Inventpro - Innovation for COVID

Researcher from the Primate Animal Study Center - Institute of Research and Community Service (PSSP) IPB University, cooperates with business partner of PT Biomedical Technology Indonesia (PT BMTI). They have succeeded in developing the inventpro® Reverse Transcriptase (RT) enzyme for molecular purposes. The RT inventpro enzyme is a useful product for synthesizing deoxyribonucleic acid (DNA) strands from ribonucleic acid (RNA).

### Stunting Prevention

The torbangun leaf-based food innovation product called Tortea was developed by IPB lecturer, Prof. Muhammad Rizal Martua Damanik with the Torbangun Herb Team for stunting prevention through stimulation of breast milk (ASI). Optimizing exclusive breastfeeding can be the first step to reduce the risk of stunting. This activity has been carried out through various media in several region in Indonesia.

## OxiL - Oxygen Concentrator

IPB University together with the Instrumentation Development Center, National Research, and Innovation Agency (BPI-BRIN) succeeded in creating OxiL, an oxygen concentrator product with a local product molecular sieve as a solution to the oxygen shortage crisis that occurred during the COVID-19 pandemic. This innovation was initiated by Dr. Zaenal Abidin, an expert on clay and zeolite chemistry from the Department of Chemistry, Faculty of Mathematics and Natural Sciences (FMIPA) IPB University.

## ELISA Kits - Innovation for COVID

Researchers from the Primate Animal Study Center (PSSP) of the Institute for Research and Community Service (LPPM) IPB University succeeded in making an ELISA (enzyme-linked immunosorbent assay)-based COVID-19 antibody kit. The antibody kit was known as "IPB ELISA Kit, COVID-19 Antibody". Biological components of the two viral components, Protein N and Recombinant Protein N Antigen (nucleocapsid) and Recombinant Protein RBD (receptor-binding domain) of the SARS-CoV-2 virus. The development of an ELISA-based COVID-19 antibody kit prototype was then carried out by drh. Huda S Darusman, PhD and the Research Team of PSSP IPB University.

## Bio-Informatics for Cancer

Bioscience is supported by chemical analysis, and thereby increasing the diversity of data into big data for IPB University researchers. The results of the research are useful for making the systematic flow meaningful and useful for the community. Various diseases that previously have not been completely cured such as cancer are also a challenge for researchers. Cancer treatment is often problematic because it requires precision and even personalization.

## Research in Number

 **65** citation impact in 2017-2021

 **469** publication in 2017-2021

 **1,645** citation count in 2017-2021

**2.24%** of all Indonesian publication

**1.29%** of all Indonesian citation



## Community Engagement

### Rabies Prevention and Control

Faculty of Veterinary Medicine, IPB University held a World Rabies Day (WRD) which was supported by Nutricell Pacific, Agrianita, PT Romindo, and IPB University Animal Hospital (RSHP) with the aim of supporting the control and prevention of rabies as well as providing education about the transmission of rabies to animals and providing benefits to the community. This event consisted of 4 series of hybrid events, educational talkshows, free rabies vaccination program (150 registered animals), delivery of cat and dog food assistance to animal shelters.



### COVID 19 Vaccination

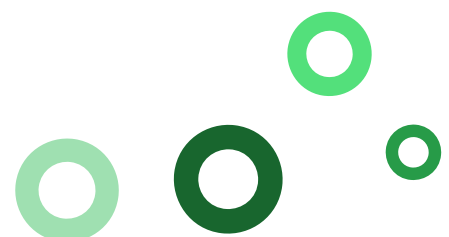
IPB University is committed to support the national vaccination program by conducting mass Covid-19 vaccinations in two locations. The first location was the IPB International Convention Center for 1,600 people including lecturers, education staff, elementary, junior high, high school teachers, as well as communities around the city of Bogor. This was a collaborative activity between IPB University and Bogor City Health Office, hospitals, and local health centers. The second location was at the Graha Widya Wisuda (GWW) Building, for 1,600 people, including lecturers, education staff, students, and the community around Dramaga, Bogor Regency. General participants who were not from Bogor could join this program according to the available vaccination quota. Participants who have been vaccinated but feel unwell were encouraged to immediately visit the IPB University Polyclinic to get immediate action.

### Nutrition Examination Software

In 2020, World Health Organization (WHO) estimated that there was an increase in the number of stunting sufferers by 15% during the Covid-19 pandemic. The stunting rate in Indonesia was 30%, far above the reasonable limit set by WHO, which was 20%. Responding to this problem, IPB University together with Pergizi Pangan Indonesia created an Online Nutrition Status Check Application that can be used to assess an individual nutritional status.

### Climate Adaptation in Health

Two representatives of IPB University explained the adaptation plans of climate change in the health sector at a workshop held by the World Health Organization (WHO) Southeast Asia Region, (17-25/8). Experts and facilitators from Blue Cairn facilitated this series of workshops.



## Campus Operation

### Awards in COVID Handling

We received an award from the National Disaster Management Agency (BNPB) as a university that is actively involved, consistent and innovative in disaster management. The award was given at the 2021 National Coordination Meeting for Disaster Management, in Jakarta. BNPB regularly gives awards to local governments, media, business, community and universities that are contributing in giving solutions to national disasters.

### Hospital for COVID-19 Isolation

The high number of COVID-19 patients in Bogor has urged IPB University taking part in overcoming the shortage of hospital beds by providing 94 rooms and 188 beds since July 5 2021 in the A5 campus dormitory for the isolation of confirmed COVID-19 patients without symptoms to mild symptoms. In addition, the IPB International Dormitory (44 rooms) also functioned as a Field Hospital or Emergency Hospital for Covid-19 patients with moderate symptoms.

### First Antivirus Test Laboratory

The Testing and Certification Services Laboratory Unit of IPB University together with Wings Group Indonesia inaugurated the Microbiology Laboratory, 27/12 at Baranangsiang Campus, Bogor. This laboratory is the first in Indonesia to be able to perform virus testing on Household Health Supplies (PKRT) products. This laboratory was developed to support the regulation of the Ministry of Health, where in Indonesia there is no testing facility for PKRT products that can kill viruses or antiviruses.



**“IPB University contributions against Covid-19”**

**3 GOOD HEALTH AND WELL-BEING**



# 4 QUALITY EDUCATION



**To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**



## Learning Programs

### K-2020 Implementation

Since 2018, IPB University has conducted an evaluation and Reorientation/Restructuring of the 2014/2015 Curriculum became the basis for constructing the 2020 Curriculum (K2020) to achieve the educational goals of IPB 4.0. K-2020 IPB University integrates academic and non-academic activities. These include changes in mindset, attitudes and behavior, skills, literacy, and new ways/practices. IPB University created the K2020 curriculum to produce powerful, agile learners and adapt to change. So that mindset and skill sets are components that IPB must strengthen, which is the outcome of this new curriculum. In 2021, K-2020 has been applied to first and second year students (class of 2020 and 2021). One of the characteristics of the 2020 curriculum is the Freedom of Learning Independence Campus (MBKM) program which is realized by the freedom of students to enroll credits outside the study program. Some examples of activities are taking lectures at other campuses, research, field projects, or internships in industry.

### Entrepreneurship Teaching Center

Vocational School IPB University with PT Charoen Pokphand Indonesia held an entrepreneurship teaching centre orientation program (22-6/2). This activity followed by 20 students who passed the internship selection at Prima Freshmart Market. Agustinus Suhardi as a trainer of Prima Freshmart, during his speech, explained that the Entrepreneurship Teaching Center (ETC) Program is a form of entrepreneurship facilitating students' internship in the working world to make the students have direct experience in the field.

### Rural Government School

The Center for Agricultural and Rural Development Studies (PSP3) IPB University held a Public Lecture on the Village Government School (SPD). The Village Government School (SPD) is a process of transferring knowledge from universities to village government officials. Especially in delivering the application of innovations originate from the campus that can be realized in the village. This is one of the processes of accelerating village transformation, with many innovations that exist at IPB University. One of the innovations is the Precision Village Data (DDP) that must be well absorbed by the village government and be able to become a provider in the planning and development process in the village.



# 40

**Number of village government involved**



## Research, Innovation and Business

### Immersive Learning

Directorate of Educational Technology and Program Development (DPPTP) is currently designing a future learning innovation model with a mix reality-based Immersive Learning Platform. This model was created from a collaboration between IPB University, Microsoft Indonesia and Garuda Solusi Kreatif. This platform is part of the learning innovation process at IPB University. Mix reality itself is a combination of augmented reality (AR) and virtual reality (VR) technology. With this technology, we can enjoy a real digital object.

### Training for School Teacher

To reduce the knowledge gap between regional and central schools, IPB University held a virtual training "Portable DNA Sequencer Application to Support Basic Science Learning". This activity was held between the Leading Research Laboratory Unit and the International Program Directorate of IPB University. This activity was attended by high school teachers from various regions and several researchers from all over Indonesia.

### Research in Number related to water and sanitation\*



40

publication in 2017-2021

2.24%

of all Indonesian publication



173

citation count in 2017-2021

0.36%

of all Indonesian citation



81

citation impact in 2017-2021



## Student Activities

### Student Creativity Program

A total of 244 Student Creativity Program (PKM) teams from IPB University passed to be funded by the Directorate General of Higher Education (Dikti), Ministry of Education, Culture, Research and Technology (Kemendikbud Ristek) in 2021. IPB University is in third place with the most project funded by Dikti. This year, the IPB University team succeeded in sending 66 teams to the 2021 National Student Scientific Week (Pimnas) which was held at the University of North Sumatra. Some of the student activities bring the message of SDGs.

### Internet Literacy in Village

IPB University Thematic Field Study (KKN-T) students located in Kebumen held a Site-In: Website Training activity. This training was in collaboration with the Department of Communication and Information of Kebumen Regency. This training aims to optimize the management of village websites starting with technologically skilled human resources so that the Internet Literacy Village program in Kebumen Regency can be realized in Pejagatan Village.

### Student Leadership and Managerial Training

Hanter (Animal Husbandry Alumni Association) IPB University in collaboration with the Student Executive Board (BEM) of the Faculty of Animal Husbandry (Fapet) held a Student Leadership and Management Training (LKMM) 2021. The training entitled "Increasing Self Development Abilities to Build A Strong Leadership". become one of the steps to improve the leadership abilities of Fapet students. Participants were also given an understanding to have the moral power of social control and become agents of change.



## Community Engagement

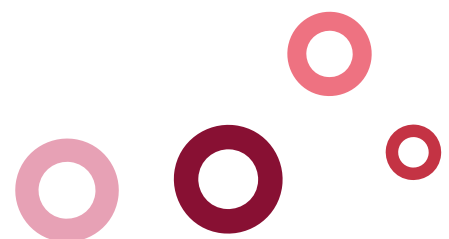
### Academic-Industry Collaboration through OVOC

IPB University has implemented the One Village One CEO (OVOC) program to encourage final year students to pursue agriculture and empower rural communities in Indonesia. In 2021, the OVOC program was implemented in 3 provinces, 22 regencies, and 119 villages. This program also integrates with the socio-preneur curriculum at IPB University. IPB has a series of socio-preneur programs, including CEO School, Start-Up School, Student Innovation Program, Young Agripreneur Camp, and Student Entrepreneurial Funding. About 1392 students have participated in this learning curriculum, and as many as 103 students, 10 expert teams, 51 innovations, and 17 practitioners have been involved in the OVOC program.



### Strengthening Links and Match Vocational Senior High School

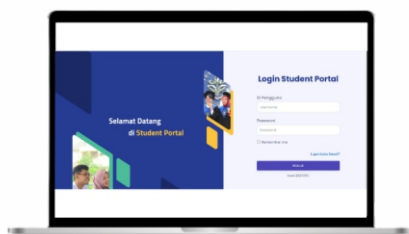
The Vocational School of IPB University received a mandate from the Directorate of Vocational High Schools (SMK), the Ministry of Education, Culture, Research and Technology (Kemendikbudristek) to provide assistance to the Center for Excellence Vocational Senior High School (SMK PK) Program. One of the vocational schools that received assistance was the Integrated Agricultural Vocational School in Pekanbaru, Riau. The workshop "Implementation of Links and Super Matches for Strengthening School Cooperation with DUDIKA (Business World, Industrial World, Work World)" was held at the Center of Excellence to strengthen the cooperation program that has been carried out between the Integrated Agricultural Vocational School and DUDIKA partners. This workshop also implemented the link and match launched by the Directorate General of Vocational Higher Education in the 8+i package.





### Student Portal Apps

Directorate Information System and Digital Transformation IPB University launched the IPB Student Portal on Saturday. The IPB Student Portal is a supper app for students that can be integrated with academics, class schedules, exam schedules, study recapitulation, attendance, final assignments, academic calendars, study programs schedule, study plans, and graduation. Other features that can also be accessed by students on the Studentportal are scholarship features, MBKM activities, competency certificates, SKPI (Certificate of Companion of Diplomas), SPP, lecture notes, chat, and notifications.



### Professional Certification Agency

Certification and Profession program that was held by Ministry of Education and Culture (Kemendikbud), Profession Certification Agency (LSP) IPB University Vocational School prepared themselves by conducting an assessment for the relicense of the right to conduct a competency test on The National Agency of Profession Certification (BNSP). The relicense of LSP IPB University Vocational School was conducted last weekend in Cilibende Building, IPB University Vocational School Campus. The existence of LSP IPB University Vocational School will strive forward, accountable, and professional. For students, IPB University Vocational School is an agency that guarantees and ensures that the vocational school graduates are competent and professional according to the SKEMA criteria in Indonesia National Qualification Framework (KKNI) that they follow.

### Best Vocational School for Online Learning Module Facilitation Program

The School of Vocational IPB University was awarded as the Best Vocational Higher Education in the 2021 for Online Learning Module Facilitation Program. This award was given by the Academic Directorate of Vocational Higher Education, the Directorate General (DG) of Vocational Education, Ministry of Education, Culture, Research, and Technology. This program is an initiation as a standard of an online learning module to be continuously developed and implemented by Vocational Higher Education throughout Indonesia. The team consists of 9 online learning modules comprise of 2 virtual reality applications, 4 augmented reality applications and 3 tutorial applications.



**4 QUALITY EDUCATION**





**Achieve gender equality and empower all women and girl**

 **Learning Programs**

**Sexual Violence Prevention**

The Faculty of Fisheries and Marine Sciences (FPIK) IPB University held education on the prevention of sexual violence and bullying. As a form of campus security, it is very important for its citizens to understand the forms of sexual violence and bullying and how to deal with them. Prevention can start with education in the community, and if violence occurs, the steps that witnesses can take to help victims of sexual violence or bullying. These steps are summarized in 5D which consists of direct, distract, delegate, delay, and document. Direct is a direct reprimand to the perpetrator with a clear and firm attitude. The distracting step is to immediately move the victim to another activity to avoid the perpetrator. The delegate's step is done by seeking help from a third party who is considered more capable of stopping the situation from occurring. Meanwhile, delay is done by waiting until the situation is more conducive and then talking to the victim about what happened to him. The last step is the document step, where the witness tries to document the incident. This documentation can be in the form of sound recordings, videos, or photos as evidence that sexual violence has occurred. In addition, educational institutions can take steps in the form of providing counselors and strict rules and laws for perpetrators of sexual violence.

**Course and Study Programs**

IPB is committed to achieving gender equality and empowering women and children (SDG5) with the existence of a Study Center, namely the Center for Gender and Child Studies (PKGA) and the Department of Family and Consumer Sciences (IKK-FEMA), with a curriculum that develops science and technology in the fields of family, child development and consumer. The goal is to improve the welfare of families in various agro-ecological areas in order to realize superior human resources. In addition, IPB has a social organization consisting of IPB's female community members (female lecturers, female educational staff, lecturers/education staff's wives, retirees, and warakawuri) and female alumni of IPB who support each other in empowering women.

**Gender in Numbers (2021)**



**2,579** female starting a degree

**2,136** first generation female starting a degree



**4,960** female graduates

**8,8 %** in health program

**12,5%** in social sciences

**78,7%** in social sciences



**233** female senior lecturer



## Research, Innovation and Business

### Gender Equality in Society Welfare

The population is the main actor and has an important role in the development and welfare process. This is because development is realized by and for all people without exception, both male and female. The Sustainable Development Goals are the commitment of countries in the world, including Indonesia, to maintaining the continuous improvement of the economic welfare of society. This study aims to analyze the effect of demographic variables and gender equality on people's welfare in Indonesia during the 2010–2019 period. The analytical method used descriptive analysis to provide an overview of demographic conditions and gender equality as well as panel data analysis to analyze the influence of demographic variables and gender equality on the public welfare in Indonesia. The results of the panel data regression estimation show that the dependency ratio, population density, GPI, and IDG are able to show obvious and significantly affect welfare through GRDP per capita. However, the estimation results of the model show that the variable population growth rate has no effect on GRDP per capita.

### Gender Equality Perception in Social Media

Gender equality is one of the goals in the Sustainable Development Goals. However, until now Indonesia is still having difficulties in achieving this goal. According to the United Nations Development Program (UNDP) data, Indonesia's Gender Inequality Index (GII) is ranked 107 out of 189 countries. In addition, according to The Global Gender Gap Index 2021 data by the World Economic Forum (WEF), Indonesia is ranked 105th out of 153 countries. This shows that Indonesia is still lagging behind in terms of gender equality. Therefore, this study aims to analyze the sentiments of Indonesian twitter netizens regarding gender equality in 2018–2021 and its accuracy. Data were collected from primary data, scraping Twitter data with the keywords #kesetaraan and #gender in Indonesian. The method applied Lexicon-based Sentiment Analysis with AFINN-111 dictionary translated into Indonesian. The results showed that the percentage of positive sentiments tends to decrease from year to year except for 2021. On the contrary, the negative sentiments on Twitter tended to increase. This is due to controversial articles in RKUHP (Draft Criminal Code), RUU (Draft of Law) Cipta Kerja, the Covid-19 pandemic, and online gender-based violence. This shows that gender equality in Indonesia is still minimal and needs to be improved.

#### Research in Number related to water and sanitation\*

 13

publication in 2017–2021

0.85%

of all Indonesian publication

 58

citation count in 2017–2021

0.61%

of all Indonesian citation

 99

citation impact in 2017–2021



## Community Engagement

### Agrianita Crafts and Food Festival

Agrianita IPB University and Alumni IPB University Batch 32 collaborated to hold a talk show entitled "Answering Challenges to Survive and Develop" as part of Agrianita's Craft & Food Festival (ACFF) 2021. The talkshow hosted by Shahnaz Haque invited three speakers, namely Arto Biantoro, who is a brand activist, Frida Nursanti, who is the owner of Frida Aulia, and the owner of the Que Que House, Chairu Fariandini. In the current pandemic situation, Micro, Small and Medium Enterprises (MSMEs) are one of the cornerstones for Indonesia's economic revival.

### Gender Mainstreaming in Bogor Development

PKGA (Center for Gender and Child Studies) IPB University collaborates with the Bogor city government to commemorate Kartini Day by holding a webinar through Empowering Our Economic Efforts to Realize Women's Independence. National and global sustainable development, one of the points is gender equality. No one should be left behind in development, especially women. In human development indicators, the Gender Development Index (IPG) and the Gender Empowerment Index (IDG) are indicators of achievement that must be prioritized. So that special attention is needed in encouraging the achievement of gender justice and equality. Gender Responsive Planning and Budgeting is the obligation of both central and local governments in preparing gender responsive development budgets. Bogor City will be able to increase development from a gender perspective.

### Women Empowerment - Entrepreneurship and Digital Training

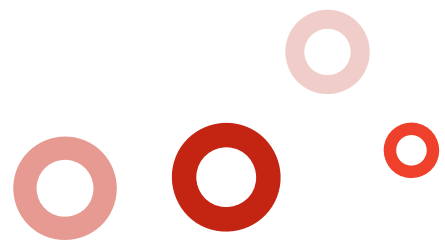
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### Training for Kindergarten Teachers in Indonesia

Early Childhood Education (PAUD) teachers in Indonesia participated in the Training to Improve the Competence of Early Childhood Care Education and Parenting Educators (Dwiasas Characters, Polite and Diligent) conducted by the Southeast Asian Ministers of Education Organization Center of Early Childhood Care Education and Parenting (SEAMEO CECCEP) in collaboration with Department of Family and Consumer Science (IKK), Faculty of Human Ecology (Fema) IPB University. The training, which was held for 4 days, 23 -26 February 2021, was attended by 44 active participants from various regions in Indonesia.



## "Gender Mainstreaming in Bogor Development"





## Student Activities

### Celebrate Women's Day

IPB University Lecturer from the Department of Family and Consumer Science (IKK), Faculty of Human Ecology (Fema) when presenting material related to the Role of Women in the World of Education at the "Webinar Talking Asa: The Role of Women in the Public Domain". Participants should play role as alpha women, a women who can exist in the public sphere to accompany men in supporting national development.

### Gender Justice for All

The issue of gender equality is not only seen from the side of women but also men. This issue was conveyed by Nur Hasyim, MA, a trainer and researcher in the Softskill Improvement Webinar Living In Present (LIPS) with the topic "Gender Equality: Equality in Indonesia". This webinar discuss about the situation of gender-neutral/ gender blind, gender equity, and gender justice. Gender inequality arises from the social structure of society. To reach justice, this structure needs to be changed.



## Campus Operation

### Girl Leadership Dorm

IPB University is committed to promote women in leadership and furthering women's education. IPB established the Girls Leadership Dorm (GLD), a talent pool to develop leadership skills and to create great female leaders in the future. This program is part of Leadership Dorm which includes male and female participants with a relatively balanced proportion within both groups of participants. GLD is focused on supporting women to grow, learn and thrive in today's challenges. This program is also intended to respond to several important issues, such as lack of leadership, lack of integrity, radicalism and the decline in the interest of the young generation in agriculture as well as gender imbalance in leadership.

### "Gender Equality in IPB University"

5 GENDER EQUALITY



# 6 CLEAN WATER AND SANITATION



**Ensure availability and sustainable management of water and sanitation for all.**



## Learning Programs

### Course on Water and Sanitation

We have 7 (seven) study programs that include chapters on clean water and proper sanitation in their courses. A total of 47 courses (120 credits) are spread over the seven study programs. The study programs include the Bachelor of Civil and Environmental Engineering, Master of Civil and Environmental Engineering, Bachelor of Forest Management, Bachelor of Geophysics and Meteorology, Bachelor of Aquatic Resources Management (providing minor in water resources conservation and management of water pollution), Master of aquatic resource management, and Master of watershed management.



## Research, Innovation and Business

### Award on Infiltration Well's

We received an award from the West Java Provincial government as a form of academic support in the Hansip Cai (Water Security Guard) Program by creating the Biber Infiltration Well Innovation design using low value plastics. In addition to IPB University, the award was also given to PT Danone Indonesia, as a business actor who participated in the infiltration well development program. The award, which was given in conjunction with the inauguration of the West Java Provincial Government's Hansip Cai Program, was held at the Ex Office of the Government and Development Coordinating Board (BKPP) Bogor City (02/12).

## Water Research Collaboration

IPB University's Center for Environmental Research (PPLH), The Norwegian Institute for Water Research (NIVA) and The Center for Southeast Asian Studies (CSEAS) monitored plastic waste in the Citarum River tributaries. This research was part of the ASEAN-Norwegian Cooperation Project on Local Capacity Building for Reducing Plastic Pollution in the ASEAN region (ASEANO). This ASEANO program involved several institutions in carrying out research on plastic waste.

## Our improvement on water conservation during 2020-2021

### 1. Inspiration Lake \*

Designed for water conservation, some of the run-off water channeled as produce clean water. This Lake also become object of visit and recreation.

### 2. Leutik Lake \*\*

This lake is the first aquatic ecosystem (1.1 ha) that consisting of two lake bodies, namely LSI Lake and Fishery Lake. The two lakes are separated by the LSI building. Dramaga campus is surrounded by three rivers, Cisadane River, Cihideung River and Ciapus River.

### 3. FKH Lake \*

The area of this lake is about 1000 m2 with an optimal 3 meter discharge and can be used for microhydro.

### 4. FPIK DAM \*

Water discharge from LSI lake (about 2 m) and can be used for microhydro.



Note : Documentation about our improvement on water conservation during 2020-2021

## IPB Training on Water and Sanitation

We have a training business institute that focuses on training related to water and waste management, which is delivered by lecturers whom are experts in these fields. The topics given in the training include the principles and characteristics of liquid waste, car waste treatment, advanced wastewater treatment, optimization of sedimentation and filtration units, phytoremediation and constructed wet land, sludge treatment, Monitoring and Evaluation on Wastewater Treatment Plant. In 2021, IPB University hosted a webinar in collaboration with the World Mining Organization on Acid Mine Water Management with Hydrological Modeling. Acid Mining Water (AAT) is an environmental issue that can lead to a decrease in water quality.

### Student Activities

#### Water Festival

The Water Resources Management Student Association (Himasper), Department of Aquatic Resources Management, Faculty of Fisheries and Marine Sciences, IPB University held a 2021 Water Festival Webinar with the theme "Management of Indonesian Water Conservation Areas in Support of SDGs 2030" (17/10). This activity emphasized the importance of managing conservation areas, especially aquatic ecosystems to realize sustainable aquatic resources.

#### Research in Number related to water and sanitation\*



## Water Spring Security Guard

IPB University students initiated the Student Creativity Program in Community Service (PKM-PM) SMAJA: Water springs security guard Campaka, Bandung (watering 3000 peoples) using the Kaizen Method. The SMAJA program was driven by the concern on the number of springs in Indonesia that continues to decline every year. In fact, according to the Ministry of Environment and Forestry (KLHK), the decline could reach 40 percent in the last 10 years.

### Community Engagement

#### Water Crisis Campaign

Our alumnus from the Applied Climatology Study Program (KLI Study Program), Department of Geophysics and Meteorology, Faculty of Mathematics and Natural Sciences (FMIPA), Meriana Ina Kii invites the younger generation to care about the water crisis that occurred on Sumba Island, East Nusa Tenggara (NTT). This was conveyed in a September talk show entitled "Greeting the Country". Meriana was directly involved in overcoming the water crisis in the management of agricultural land. Meriana also shared her experience in regulating the flow of water from rivers as optimally as possible just to keep the soil moisture in the rice fields so that they continue to be productive.

#### Clean Water Package

Independent Volunteer Action (ARM) IPB University Alumni Association (HA) in collaboration with the Regional Leadership Council (DPD) HA South Kalimantan distributed 160 jerry cans of drinking water with a capacity of 18 liters (total 2,880 liters). The aid was distributed in humanitarian action, (20-22/2). We reached out to Hantakan and Batu Benawa sub-districts in Hulu Sungai Tengah district to hand over six units of fiber water reservoirs (toren) with a capacity of 650 liters per reservoir to help nearly 600 families in three villages. Clean water for the community is an urgent matter to be addressed. Therefore, we took the initiative to donate six water tendons with a capacity of 650 liters each. IPB University wanted to ensure that residents have a container to store the availability of clean water that is adequate for their daily needs.



## Campus Operation

### Water Conservation

Biodiversity Park and Inspiration Lake is a water conservation program implemented by IPB University within the campus area. This program aims to sustainably manage freshwater resources and prevent water pollution in nearby lakes, rivers, and local watersheds in the IPB University environment. IPB University has a clean water treatment unit with natural water sources from rivers around campus with very high turbidity levels. In 2021, three artificial lakes (DAM) were built within the IPB University. These programs were supported by IPB partners from private sectors, such as PT Nutricia Indonesia Sejahtera by Danone Indonesia. It is hoped that with the construction of this DAM, it can become a source of clean water to supply water needs, such as in field laboratories that require untreated water. In addition, it is expected that these lakes will become one of IPB's programs in the development of micro-hydro renewable energy sources. The total water consumed at IPB during 2021 was 1,488,297 m<sup>3</sup> (69% decrease compared to 2019 due to the pandemic), with sources originating from the water treatment process (74.2%), lakes (17.6%), and local water companies (8.2%). IPB University developed three new lakes during the 2020-2021 period, namely the Inspiration Lake, the Lake at the Faculty of Veterinary Medicine (FKH), and the Small DAM at the Faculty of Fisheries and Marine Affairs. Inspiration Lake (Telaga Inspirasi) is not only a place for water conservation but also channelled as raw water for clean water. The Inspiration Lake was built in 2020 and has become an open space for the public. FKH Lake is a new lake built-in 2021, with an approximately 1000 m<sup>2</sup> of water discharge that can be used as a micro-hydro generator. The FPIK dam, which was built in 2021, is located at the end of the lake water discharge from the library building, the resulting water discharge is more than 2 meters, so it has the potential as an alternative raw material for clean water and micro hydropower plants.





## Clean water capacity improvement program (2020–2021)

1. Draining the Ground Water Tank (GWT) and the intake Water Treatment Process (WTP) Ciapus and Cihideung.
2. Pipe revitalization PAU–Fateta Building (175 m).
3. Clean and Hygiene water quality test (18 spot sample).
4. Water meter replacement (10 unit)



## Water Station (Waqaf)

IPB University developed a trust fund system based on charity (waqaf). This fund has been used to support many educational, health and welfare improvement programs. One of the programs is the installation of water stations in many sites within the campus area to provide ready-to-drink water for civitas academica. This program was driven by IPB University's concern to increase health and welfare as well as to promote the reduction of plastic use at the university. Few years back, four water fountains were built which a state-owned company funded. IPB University aims to increase the number of the water fountains by using a trust fund through a waqf program. The existence of a water station is expected to assist the academic community in meeting the need for free healthy drinking water. It also reduces spending on drinking water consumption, which is particularly beneficial for students. The existence of this water station can reduce plastic waste left over from bottled drinking water. This program contributes to the achievement of IPB's Green Campus and, eventually SDGs.

6 CLEAN WATER AND SANITATION



# 7 AFFORDABLE AND CLEAN ENERGY



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



## Learning Programs

### Course on Renewable Energy


One of the study programs that concerns on energy available at IPB University is Mechanical and Biosystem Engineering with a minor in Renewable Energy Engineering. The debriefing of students regarding energy converting, new energy, energy efficiency, and sustainable energy is carried out in theory and practice to support the realization of sustainable energy use. This study program also provides a brief review of energy concepts and principles of energy conversion technology in the marine science and technology study program. Potential and distribution of marine energy. Several forms of ocean energy can be currents, tides, waves, osmotic forces, ocean thermal energy.

### Bio-energy conference

The international conference held by SBRC on September in collaboration with the International Society of Biomass and Bioenergy (ISBB) and the Palm Oil Plantation Fund Management Agency (BPDPKS) to discuss "Challenges in Biomass, Bioenergy, and Biomaterials Research and Development. The output of this annual conference was the solution offered by researchers for the development of energy technology. SBRC also held webinar series (start from February 27) that raised the topic of research and implementation of biogas and bio-CNG that play an important role in achieving the renewable energy mix target of 23% by 2025 and supports the law on New and Renewable Energy (RUU EBT). As a form of implementing research results to the public, SBRC also held a workshop on the Prospects of the Development of the Palm Oleochemical Industry in Indonesia and its Market Potential (March 20).

### Our work to preserve affordable energy in 2021

 **44,687 Giga Joule** - decrease 34% compare to 2019  
Total energy use

 **92.02 Giga Joule** - increase 111% compare to 2019  
Total renewable energy use (solar, biomass, hydropower, and geothermal)

#### Electric enhancement program in 2021

1. Increase 2 unit stabilizer
2. Repairment on 30 solar street lighting (PJU)
3. Increase 17 solar street lighting - cikabayan
4. Repairment on 23 electric panel
5. Maintenance on trafo and cubicle on 11 substation
6. Genset
  - 180 KVA (1 unit)
  - 10 KVA (12 unit)
  - 1000 KVA (1 unit)



## Student Activities

### Bio-diesel from Cooked Oil

Used of cooking oil from kitchen waste must exist in the community. The amount of waste inspired IPB University students to develop biofuel energy from a business point of view. This innovation participated in the National Student Competition Competition in the Field of Business, Management and Finance (KBMK) from the Renewable and Affordable Clean Energy Aspect.

## Energy Savings Campaign

Globally, earth hour is a movement to turn off electricity for the good of the environment. Together with the Indonesia Green Action Forum (IGAF), IPB University held a talk show to support the Earth Hour movement. This talk show carries the theme "Healing, Soothing, and Saving Our Earth in One Hour" with the aim of educating participants about the Earth Hour movement, energy saving, and climate change.



### Research, Innovation and Business

#### Energy Efficiency in Drying Agri Product

Drying of agricultural products is usually performed by sun drying or using mechanical dryer with fuel oil or agricultural waste as energy sources. 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. In order to guarantee the quality of GHE dryers, a number of GHE dryers were evaluated in 2021. The evaluation results showed that the developed GHE drying machines can be used for drying agricultural commodities with good quality results.

#### Research in number related to affordable and clean energy\*



**235** publication in 2017-2021

**2.18%**

of all Indonesian publication



**884** citation count in 2017-2021

**2.04%**

of all Indonesian citation



**99** citation impact in 2017-2021

## Bio-additives for Diesel

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 reduced water content and fuel particulates (B0, B30, and B100) and reducing the rate of fuel consumption, improving fuel performance in diesel engines, and emissions. These activities include: Optimization of bioadditive formula, P2 testing in the relevant environment, DED process technology scale 1,500 L/day.

#### Smart Algae Pond

Smart Algae Pond, a research that develops precision agriculture systems in the production of microalgae biomass using advanced digital technology, namely sensor applications, Internet of Things (IoT), and Cellular Automata Machine (CAM) modelling and automation microalgae cultivation operations to increase precision and yield significantly so that the productivity of microalgae biomass is more effective and efficient. This research was to increase the productivity and feasibility of the microalgae biomass production system. Microalgae is one of the potential sources of biomass as an alternative to sustainable food, high-value products, and 3rd generation bio-fuel commodities. Prof. Dr. Yandra Arkeman carried out the development of this system with the team through RISTEK-BRIN funding.



### Community Engagement

#### Briquettes Energy Counselling

Lecturer's dissemination is one of the programs to implement research results so that they can be useful to the wider community. Briquette as a result of research on renewable energy could be a substitute for stove fuel that comes from waste. Extension activities were carried out to socialize briquette stoves, how to use them, and the advantages and disadvantages of briquette fuel as household fuel.



### Geothermal Energy Development

In the last three years, 2019–2021, PPLH IPB University has partnered with the contractor company PT Pertamina Geothermal Energy (PGE). SEGS (Star Energy Geothermal Salak, Ltd.) and SEGDI (Star Energy Geothermal Darajat II, Limited) in terms of obtaining environmental permits (currently environmental approvals) for geothermal. The intended environmental approval was 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 was done as an effort to maintain steam supply, stability and 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/OT/2010). has carried out its role in the preparation of environmental documents for environmental management and assisted SEGS and SEGDI in obtaining environmental approvals for the planned activities.

### Campus Operation

#### Surfactant Mini Plant

Methyl ester sulfonate (MES) surfactant is a palm oil-based green surfactant produced as a joint research product between 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 was one of the forms and roles together in building the nation’s independence to support the crude oil production target of one million barrels per day (bpd) in 2030 which was launched by the government through SKK Migas.

## Our Commitment on Affordable and Clean Energy

### 1. Policy on Development Clean Energy

Implementation of Green Development in IPB University stated in Green Campus Academic Paper 2019-2023. This academic paper contain energy efficiency standard (chapter 5.5: p. 82-26) and Infrastructure and green buildingg (chapter 5.6: p. 87-89).



Eco Energy

### 2. Carbon Management and Reduce Emissions

Since 2019, we conducted Carbon Footprint (CFP) study as an effort to reduce carbon dioxide emissions. The result of this study is used as one of important consideration in carbon management in campus operation. Emission reduction implemented through green campus element program (green transportation, green movement, green energy, and green building). We have transportation policy to promote green public transportation and reduce motorized vehicle.

### 3. Evaluate and Upgrade Building

We planned to evaluate and upgrade the existing buildings to higher energy efficiency (Green Campus Academic Paper Chapter 6.4-6.5: p 115-120). In order to achieve the targets (especially related to green building and energy efficiency), we cooperates with Green Building Council Indonesia (GBCI) through the signing Memorandum of Understanding (MoU). By this cooperation, we ensure the fullfilment of energy efficiency standards in new building and infrastructure.

## Electric Vehicles

The central campus of IPB University Dramaga, which covers an area of 267 hectares, is one of the reasons for the need for on-campus transportation. The use of environmentally friendly fuels is promoted by the presence of gas-fuelled buses and electric cars. This non-fossil fuel transportation can reduce carbon emissions produced by motor vehicles. The provided bus and electric car routes are accessible through our websites and software.

## 7 AFFORDABLE AND CLEAN ENERGY



# 8 DECENT WORK AND ECONOMIC GROWTH



**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**



## Learning Programs

### Course on Economic

Learning activities regarding economics in detail are centered in the Faculty of Economics and Management. However, all IPB students get economics courses that must be taken in the first year. The development of knowledge about the economic cycle and entrepreneurial mindset is also introduced to students. We have study programs like economics, development economics, natural and environmental economics, agriculture economics, and ocean economics.

### Career Development

In 2021 we have held career training in as many as 123 types of activities and were attended by 14,252 students. Career preparation training includes tips and tricks in achieving a dream career, curriculum vitae and motivation letter counseling, and introduction to the working environment in various industries (agriculture, FMCG/Fast Moving Consumer Good, banking, etc.).

## Our Work in Career Development Program 2021

### User

**25,071** membership in 2021  
(increase 6.3% from 2020)

Career Development and Assessment (CDA IPB) is a sub-unit under the Directorate of Student Affairs and Career Development whose mission is to reduce unemployment in Indonesia. (see more: [www.cda.ipb.ac.id](http://www.cda.ipb.ac.id))

### Career Consultation

**15,042** participant  
(increase 58.6% from 2020)

Career Consultation is a program to facilitate our alumni to have a skill that needed in professional career. This program was founded in 2019 delivered by 9 career coach and 44 coaches.

### Industrial Insight

**135** industrial insight training  
(increase 95% from 2020)

Industrial Insight is a program to deliver knowledge about work and culture in specific industry (Agriculture, FMCG, Bank and Finance, etc).

### Enrichment Career

**71%** participant get a job  
in 6 month after join enrichment program

Enrichment career is a program strengthen alumni career to get a job after graduate in 6 month. This program is delivered by 4 experienced trainer in career development.

## Number of Job Recruitment Services in IPB University (2019-2021)

	2019	2020	2021
Campus Hiring	41	17	5
Job Fair	87	74	75
Job Information	165	94	132
Exclusive Pathway	3	3	5



## Student Activities

### Start Up Competition

Ideation is an annual BEM Business School activity that consists of several series of events, one of which is a startup competition and talk show. Ideation is implemented as the embodiment of the motto of the Business School, namely creating new entrepreneurs & new ventures. The goals of this activity are to produce young entrepreneurs who have creative ideas and the courage to execute these ideas in real steps so that they are expected to create new jobs and reduce unemployment in the future.

## Networking and Business

Real business conditions that are currently happening are needed to support the readiness of prospective young entrepreneurs in developing their businesses. There is a sharing session with participants about problems in their business. The theme carried out is Communication, Collaboration, Problem solving, Curiosity, and technology so that it can improve business networking between participants and resource persons.



### Research, Innovation and Business

## Impact on Electricity Investment

During 2015 to 2020, PT PLN (Persero) has obtained additional National Capital Investment in cash amounting to IDR 40.06 trillion which is used to finance the construction of power plant, transmission, and distribution projects including the implementation of the Village Electricity Program for NRE Power Plant that supporting the LISDES Program. Based on these things, to measure the level of effectiveness of National Capital Investment grants, a study is needed to calculate the social and economic impacts of the implementation of electricity projects that have been implemented by PT PLN (Persero).

### Research in Number Related to Decent Work and Economic Growth\*



**295** publication in 2017-2021

**4.24%**

of all Indonesian publication



**1,254** citation count in 2017-2021

**5.43%**

of all Indonesian citation



**98** citation impact in 2017-2021

## Multiplier Effect of Housing to Economy

As one of the state banks that specifically distributes housing finance, through the One Million Houses program, Bank Tabungan Negara (BTN) has a strategic role in the growth of the housing sector in Indonesia. Bank BTN together with the International Center for Applied Finance and Economics (InterCAFE) IPB jointly conducted a study on model development to analyze the impact of multiplier effect of the housing sector and housing finance on the economy and other economic sectors as well as on social aspects as well as knowing which economic sectors feel the impact of the development of the housing sector and how the housing sector relates to various other economic sectors.

## Effect of Special Export Assignments

PT Wijaya Karya and PT Dirgantara Indonesia plan to apply for buyer's credit facilities to Indonesia Eximbank through the National Interest Account (NIA) scheme. Therefore, measuring the developmental impact (economic and social aspects) of the NIA facility is important to know so that the capabilities and functionalities of Indonesia Eximbank in supporting the implementation of its vision and mission to develop Indonesian exports, especially in terms of exports services in the construction sector can be further improved.

## Boost Rural Economic Growth

The economic recession faced by the world which was previously expected to occur in 2021 has become more immediate due to the COVID-19 pandemic. The pandemic shows the need for agricultural sectors located in rural areas to be revitalized. Furthermore, it is necessary to change the paradigm of rural economic development where the countryside has a dual role as a provider of raw material inputs that have high competitiveness and the countryside is able to produce agricultural derivative products that have high added value. The book entitled Generating Indonesia's Economic Growth from the Village is a collaboration between IPB and the Ministry of Rural Affairs in order to answer the needs of policy strategies.



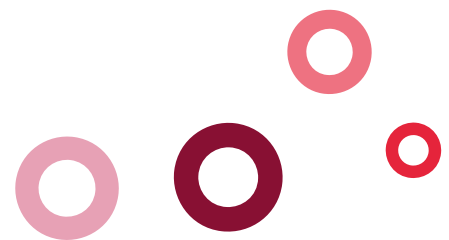
## Community Engagement

### Farmer Assistance to Export Leading Commodities

Initiated in 2019, The OVOC program has been able to improve the welfare of the community. By introducing innovations to the farmers, the program has contributed to the increase in productivity and added value creation. It also has linked farmers with conventional and e-market and it has promoted product sales of the farmers. Sukanagalih Village, Cianjur Regency, West Java, is one of the villages where the OVOC was implemented. By participating in the program, villagers have become more productive and been able to utilize local resources to produce various added-value products, such as planting media, potteries made from coconut fiber and moss, organic fertilizers, various ornamental plants, and other processed foods from ginger, strawberries, shredded fish, and chips. These products have penetrated the export market to 11 countries, including Malaysia, Thailand, Vietnam, Myanmar, Singapore, South Korea, Taiwan, Japan, United Arab Emirates, Saudi Arabia, and Turkey.

### Digital Skills Collaboration

IPB University has agreed to collaborate with PT Microsoft Indonesia. The text of the memorandum of understanding (MoU) was signed directly by the Rector of IPB University, Prof. Arif Satria, and President Director of PT Microsoft Indonesia, Mohamed Haris Bin Izmee in Jakarta, (9/2). The scope of the memorandum of understanding includes the development of a center of excellence in the Agro-Maritime 4.0 field, programs to strengthen student skills about Microsoft technology and increase the ability of digital skills platforms, developing strategic partnerships for the application of Agro-Maritime 4.0, and modernizing infrastructure and applications. Microsoft is also working with the Ministry of Agriculture the Republic of Indonesia to accelerate the digital ecosystem in the agricultural sector and empower farmers with technology.

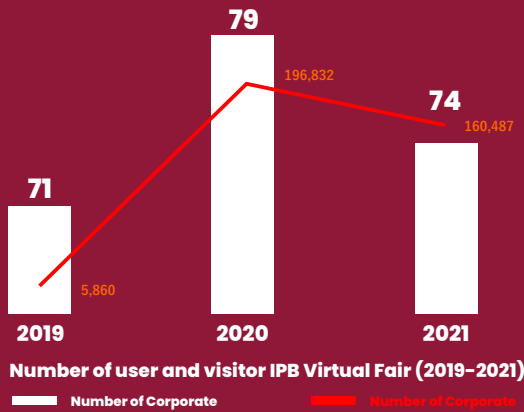




## Our Program related to Decent Work and Economic Growth

### 1. Job Fair and Virtual Fair

Job Fair is a program that accommodates companies to meet professional job seekers. During the pandemic, we transform job fair into virtual fair that can be accessed in <https://jobfair.ipb.ac.id/>



### 2. Internship Program

A learning activity in the field that aims to introduce and develop student skills in the professional. This program provide industry or competence certificates.



### 3. Career Talkshow

we strive to provide training and career talk shows for students and graduates. Career training and talk shows are conducted so that students develop themselves and have professional career knowledge.



## Campus Operation

### Virtual Education and Job Fair 2021

The IPB Virtual Fair was held to send graduates to have a career according to their passion and skills. This activity is usually held offline. Since the pandemic, we've been transforming online. The hope is that it can be a means to find an industry that suits the wishes and needs of graduates," he said at the opening of the IPB Virtual Fair 2021, (16/10). This year's IPB Virtual Fair is titled "Closer Pathways for Your Career" which will be held from October 16 to November 20, 2021. Several series of activities for the 4th IPB Virtual Fair include IVF Academy, Career Expo, Internship Expo, Scholarship Expo, Entrepreneurship Expo, Webinar Series, and Online Meeting and Chatting With companies.

### Start Up Assistance in Export

One of the tenants of the IPB University Science Techno Park (STP) Business Incubator, PT Sugeng Jaya Group (SJG) has succeeded in developing King Worm, a Dried Flour Caterpillar. King Worm is present as an alternative protein source that utilizes insects because it is more economical, environmentally friendly and has an important role in nature. In 2019, PT SJF joined as a Tenant Inwall Business Incubator for STP IPB University. During the incubation period, PT SJF has received technical facilitation and assistance in production and business management. Such as providing inwall business space facilities in Leuwikopo, training, coaching/mentoring, expo, and business matching, as well as getting the Ministry of Research and Technology's Technology-Based Startup Company (PPBT) incentive program in 2019. STP IPB University is committed to developing startups from the community based on the development of prospective innovations.

8 DECENT WORK AND ECONOMIC GROWTH



# 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



**Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation**



## Learning Programs

### Course on Innovation

We have around 45 courses that support the competence to innovate in various study programs. Some of these courses include Entrepreneurship and Innovation, Agriculture Innovation, feed product innovation, conservation and innovation, creativity and innovation, environmental service technology innovation, valuation and commercialization of technology, etc.

### Diagnostic Imagin Learning Center

Diagnostic Imaging Center (DIC) is a type of telemedicine service available at the Teaching Animal Hospital (RSHP), Faculty of Veterinary Medicine (FKH) IPB University. This service is in the form of consulting services for interpreting images from radiographic images, electrocardiography, or ultrasound. The development of science and medical equipment which is now able to provide a non-invasive picture of the animal's body without anesthesia or surgery on animals has become the driving force for the emergence of this service innovation. The results of the images obtained need to be interpreted to determine the diagnosis of the disease. Through DIC services, distance and time can be shortened. Clinics or practice places outside Jakarta or Java Island can submit their images for interpretation through this platform.



## Student Activities

### Engineering and Innovation Training

The Agricultural Engineering Student Association (HIMATETA) of IPB organized a national training program entitled Agricultural Engineering and Innovation Training, the Himateta work program which improved several students' engineering skills in Solid Work, Drone Mapping, and IOT Control systems. The material in the first session of the training was an introduction to UAVs/drones for general and agricultural purposes. Furthermore, training on image capture techniques with drones was carried out starting from planning (pre-flight), stitching images, and doing layouts using Quantum GIS (QGIS). In addition to QGIS, IPB University also subscribes to an ArcGIS license which can be used to process images obtained from UAV/drones.

### Our Progress in Business Incubator 2021

#### Startup Development

**28** participant (2021) **27.8** billion (Rp)

Science Techno Park (STP IPB) provides a start-up company program based on technology (PBBT). By 2021, this program assisted 28 companies and provide financial assistance of Rp. 27.8 billion.

#### Industrial Partnership

**10** tenant (2021) **38** industry (2021)

STP IPB is committed to downstreaming innovation products based on university research cooperate with professional industry partners. In 2021, we establish 48 cooperation with industrial partners.

#### Revenue

**2.6** billion (Rp) **17.1** billion (Rp)

The services provided by STP include consulting services, management innovation, business incubator, and supporting facilities (laboratory, makloon, and MICE). In 2021, STP IPB will receive a turnover of Rp 17.1 billion and a profit of Rp 2.6 billion.



## Research, Innovation and Business

### Bio-material Innovations

Substitution of material use from non-renewable resources to biomaterial is a vital innovation aspect of the Sustainable Development Goals (SDGs) Agenda. IPB University, as a research-based university, is committed to developing various innovations from biomaterials, such as Fiber Helmet and Bulletproof Crash-resistant Empty Palm Oil Bunch. IPB University processed the empty palm fruit bunches into natural fiber that can be used as the raw material to produce the bulletproof vest and helmet. The natural fiber from the empty palm bunches has several advantages compared to synthetic fiber, namely its abundant availability in Indonesia, sustainable, renewable, and biodegradable, cheap price, can be processed with simple technology and has good mechanical and thermal properties. The palm oil empty fruit bunches are also potential for making bio-composite for the production of helmets, polyester, bio-plastics, bio-oil/biogas, and dimethyl-ether (DME) for substitution of LPG. The palm tree trunks can be used as raw material to produce plywood, starch glucose, and lactic acid. Innovative products from IPB University resulting from the palm oil waste research include organic hand sanitizer, helmets, clothes, and others.

#### Research in Number Related to Industry, Innovation, and Infrastructure\*



222

publication in 2017-2021

4.24%

of all Indonesian publication



1,167

citation count in 2017-2021

4.41%

of all Indonesian citation



114

citation impact in 2017-2021

### Technology Innovation in Agriculture and Technology park (ATP)



ATP IPB University implements technology applications which include 5 units of Automatic Feeder E-Fishery at Greenhouse (GH) fish hatchery and 1 unit in Aquaponik, fish egg incubator, 17 units of nano bubble technology, drip irrigation installation at GH Melon as many as 750 emitters and in the GH innovation plant as many as 440 emitters, NFT hydroponic installations with a total of 3,300 holes.

### Enzymatic Membrane Reactor

Lecturers of the Department of Food Science and Technology IPB University developed an enzymatic membrane reactor that can be operated continuously and automatically so that it can overcome obstacles in enzymatic reactions on a laboratory scale. The reactor developed with this innovation can be used in the process of producing bioactive peptides and concentrating proteins continuously without having to immobilize the enzymes. This innovation is expected to be adopted by various research laboratories in the life sciences field.

### Edible Coating from Chitosan

PT Berkah Innovation Kreatif Indonesia (PT BIKI), one of the tenants of the Science Techno Park (STP) Business Incubator of IPB University created various innovative edible coating products or thin layers based on chitosan from shrimp shell waste that can be consumed as well as functioning as a preservative. Shrimp shell waste is an option because shrimp is one of the largest export commodities of Indonesian fishery products but the utilization of the shell waste is not optimal. There are 2 brands of chitosan-based products belonging to PT. BIKI together with STP IPB, namely Chitasil and Kitobe.



## Community Engagement

### **Precision Village Data**

Weak data accuracy and the magnitude of data errors produced by certain institutions such as differences in data on population, number of poor people, number of children dropping out of school, etc. have caused the failure of rural development policies so that the Institute for Research and Community Service (LPPM) of IPB University implemented the Data program. Precision Village (DDP). DDP is an implementation of the Precision Village Data (2021) book as thick as 132 pages as a trigger for critical awareness of all parties, including academics, government, private sector, social activists, and villagers about the importance of DDP in rural development with 3 important elements in viewing village development issues in Indonesia today, namely efficiency, effectiveness, and level of data accuracy. This program has been socialized by IPB University in 20 villages in Subang Regency, Cianjur Regency, and 8 other regencies throughout West Java Province. The socialization explained DDP, the reasons villages need high data accuracy, introduced the Drone Participatory Mapping (DPM) methodology and Village Census Guidelines and introduced guidelines for using the Merdesa Application which would be used by enumerators for the census.

### **Introduce Innovations to Society (Superior Rice Seeds)**

IPB University students who are running the Thematic Real Work Lecture (KKN-T) in Pejagatan Village, Kebumen Regency took the initiative to hold an Organic Agriculture Socialization (4/8). Activities by cooperating with young farmers who are members of the Association of Farmers Groups (Gapoktan) and BUMDes. The activity was held at the Official Village Hall and received an enthusiastic welcome from the farmers and BUMDes administrators who were present. In addition to the socialization of organic fertilizers, students also introduced IPB University innovations that were useful for increasing agricultural productivity. The innovation is PGPR (Plant Growth Promoting Rhizobacteria), the work of Dr. Widodo, Lecturer at IPB University. PGPR is useful for increasing plant resistance to pests and diseases. In addition, PGPR can also increase plant growth and is very easy to apply to various food crops, horticulture, and forestry. The socialization also introduced the innovation of superior rice seeds of IPB 3S for irrigated rice fields and IPB 9G rice seeds for rainfed rice fields. It is hoped that by introducing this rice seed, in the future it can be developed in Kebumen.

## Our Progress related to Industry, Innovation, and Infrastructure

### 1. New Business Partnership

We established 3 new business units, namely Botani Bakery, MSTPreneur (Horticulture Reseller), and Aquatic Business Center. We carried out 12 new business partnerships throughout 2021.

### 2. Industrial Partnership

#### a. Development of Functional Food



#### b. Number of Partnership

##### Product Development (Matching Fund)



##### Technology License



#### c. Makloon Services

### 3. Preparation of Quality Manual

Quality Management System Manual:  
 - ISO 9001:2015  
 - HACCP Pilot Plant

### 4. Human Resources Improvement

### 5. Science Techno Park Development Cooperation



## Campus Operation

### Innovation Matching Fund

IPB University through the Regional Institute of Science and Technology (LKST) carried out the Matching Fund Program Evaluation 2021, 10/12. On that occasion, Dr Paristiyanti Nurwardani, Secretary of the Directorate General of Higher Education, Research and Technology said, IPB University was trusted by the Ministry of Education, Culture, Research and Technology (Kemendikbudristek) to be the management team for Kedai Reka's 2022 Matching Fund Management.

### Industry Gathering

IPB University through the Regional Institute of Science and Technology (LKST) in collaboration with the Association of Indonesian Food and Beverage Entrepreneurs (GAPMMI) held an Industry Gathering 2021 at Science Techno Park Taman Kencana. This activity was held to bring together IPB University innovators with actors/business/industry communities as potential users of innovation. This activity is also supported by the National Research and Innovation Agency (BRIN) through the 2021 Science and Technology Area Institutional Strengthening program and Bank BNI for its financing support. There were 15 inventors, 60 GAPMMI member industrial partners as well as the holding company PT BLST and its subsidiaries who attended this event. This activity presented the Chair of GAPMMI, Adhi S Lukman, and Prof. Purwiyatno Hariyadi, Professor of the Faculty of Agricultural Technology IPB University as resource persons.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



# 10 REDUCED INEQUALITIES



**End Poverty in all its forms everywhere**

## Learning Programs

### Program and Courses

Faculty of Human Ecology, IPB University has two study programs, namely community development communication, and rural sociology which offer courses related to efforts to reduce social inequality. The course contains material on agricultural extension, agrarian studies, participation techniques, social anthropology, gender and development, and intercultural communication management.

### Promote Woman Participation

In order to commemorate international women's day every March 8, the Family and Consumer Science Student Association (Himaiko) of the Family and Consumer Sciences Department (IKK), Faculty of Human Ecology (FEMA) held an Asa Talk Webinar with the theme of the role of women in the public sphere. This activity was attended by various university students in Indonesia. This activity is expected to increase women's empowerment and reduce inequality in roles in the public sphere. So, women can exist to accompany men in supporting the development of the nation.

## Student Activities

### Sign Language Class for Disability

The Student Executive Board (BEM) of the Faculty of Human Ecology (FEMA) held a Sign Language class with the theme of being proud to be a friend with disabilities. This activity was held online through video conference which was conducted to increase general knowledge about deaf and speech impaired friends as well as sign language training to the general public. This activity was held for three on 16-23 September 2021, attended by 116 participants. This activity aims to increase public awareness of disability, increase respect and respect for friends with disabilities, and increase knowledge about sign language.



**“We need to fight inequality and poverty - and not in 15 years but now”**

Isabel Cecilia Saint Malo De Alvarado  
Vice-President of Panama



### **Inequality of Land Tenure**

The issue of inequality in land tenure and ownership, especially for agricultural land, has always been raised, because it is related to the welfare of farmers. The first step that needs to be done at this time is to conduct a study to get the number of land inequality in Indonesia which can later become a reference and source of information for the Ministry of Agrarian and Spatial Planning/National Land Agency (ATR/BPN) in suppressing inequality in land tenure in Indonesia by formulating optimal policies. INTERCAFE IPB's research shows that the Government-BPN/ATR policies, be it Land Redistribution and Legalization during 2015-2021, are effective in reducing land ownership inequality in Indonesia.

### **Research and Study on Synchronization of Additional Service Benefits (Manfaat Layanan Tambahan/ MLT) with the BPTAPERA Program**

The International Center for Applied Finance and Economics (INTERCAFE) IPB University facilitates the community's access to decent housing. It studies the synchronization of MLT (Additional Service Benefits) Housing with the benefits of the People's Housing Savings Management Agency (Badan Pengelola Tabungan Perumahan Rakyat/ BPTAPERA) program. This study was conducted as a form of support for the Government's program in terms of providing housing that is livable and accessible to the people of Indonesia. MLT Housing is an optional housing financing program for participants in the Old Age Security Program (Jaminan Hari Tua/JHT) from BPJS Ketenagakerjaan. Meanwhile, BPTAPERA is a housing savings management body whose target benefits are not only for civil servants but also non-civil servants from both the formal and informal sectors.



#### **Research in Number**

**80** citation impact in 2017-2021

**50** publication in 2017-2021

**208** citation count in 2017-2021

**1.74%** of all Indonesian citation

**1.67%** of all Indonesian publication



## Community Engagement

### Precision Humanitarian Charity

Social inequality can be reduced by caring for others, one of which is for orphans who need help. The Precision Village Unit (UDP) of the Institute for Research and Community Service (LPPM) of IPB University carried out Precision Humanitarian Actions in 17 Lingkar Villages, IPB University Campus. The UDP LPPM IPB University team is tasked with ensuring that donations are received directly by orphans with the right target or precision as evidenced by the existence of an Orphan Identity card. On the card there is an ID number, a photo of the orphan in question, the name of the village and the Quick Response (QR) code. This new approach to donations for orphans is application-based so that donors can see the faces of the children they are helping and see evidence in the form of photos that the child has received compensation.

### Speak Up on Sexual Harassment

The Communication Science and Community Development Student Association (Himasiera) IPB University held SPACE 1.0 with the theme Speak Up to Sexual Harassment. This activity is motivated by the number of mental health cases in the community. This activity can increase knowledge and awareness about mental health, especially in dealing with sexual violence. In addition, Himasiera IPB University also made the #HandsOff movement and succeeded in raising funds of Rp. 4,168. 385 which was distributed to the Lentera Sintas Indonesia Foundation.



## Campus Operation

### Anti Discrimination Policy

IPB University has policies that guarantee open access without discrimination on ethnicity, religion, disability, and gender, as stated in Academic Senate Regulation No. 10/SA-IPB/P/2016 concerning Academic Norms of IPB University. Article 4(a) emphasizes that Academic Policy in IPB University must be inclusive and non-discriminatory. IPB University also has rector regulation No. 13/13/KM/2015 concerning the Campus Life Rules of IPB University. Article 12 (g) emphasizes that all IPB University community members are prohibited from doing verbal violence (bullying). It intended hurt another person or group of people directly or indirectly through print or electronic media. "IPB University Statute, in article 74 (3) also stated that " every member be non discriminatory in providing services".

### Disability Facilities

Every citizen has the same rights in enjoying public facilities. Every citizen has the same rights in enjoying public facilities. The city of Bogor has stated that it has developed a series of policies towards a disability-friendly city. IPB University welcomed this policy by building disability facilities on campus. Some of the facilities that have been built on campus include pedestrians with disabilities (guiding blocks), disabilities toilets, elevators, and special transportation.

### "Disability Facilities in IPB University"





## IPB is comfortable for people with disabilities



10 REDUCED INEQUALITIES





## Make cities and human settlements inclusive, safe, resilient, and sustainable



### Learning Programs

#### Programs and Courses

We have study programs in the faculty of human ecology, namely community development communication, and rural sociology. Several courses in the study program are related to sustainable development. The courses contain an agricultural extension, community development, social anthropology, agrarian studies, participatory techniques, and development communication management.



#### School of Rural Government

IPB University in collaboration with the Bogor Regency Government created a program intended for village officials in order to improve skills and village governance in the digital era. This activity was launched on Monday (13/9) with the hope of increasing the capacity of the human resources (HR) of the village apparatus in village governance. The village government school material is emphasized educating the sensitivity of problems and potentials that exist in the village as well as increasing the ability to operate tools and technology. This program is expected to support the success of developing village programs in Bogor Regency to be more targeted and effective.

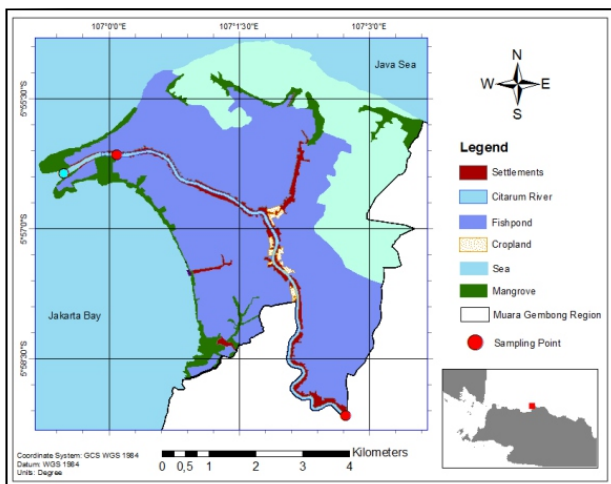




## Research, Innovation and Business

### Research on Plastic Waste in Citarum

The Center for Environmental Research (PPLH) IPB University, The Norwegian Institute for Water Research (NIVA) and The Center for Southeast Asian Studies (CSEAS) examined plastic waste in the Citarum River tributaries. This research is part of the ASEAN-Norwegian Cooperation Project on Local Capacity Building for Reducing Plastic Pollution in the ASEAN region (ASEANO). This ASEANO program involves several institutions in on researching plastic waste. Such as IPB University, University of Indonesia, Padjadjaran University, and the Indonesian Institute of Sciences (LIPI) Limnology. The results of the study are expected to build the capacity to tackle plastic pollution from major sources in the ASEAN region through increasing knowledge about the sources, releases, transportation, and pollution of plastics.



### Digital Platform on Museum

IPB University students in the Student Creativity Program in the field of Community Service (PKM-PM) developed Responsibility.id. which is a museum preservation program through community empowerment and digitization. In this activity, the PKM-PM Responsibility.id team collaborated with the Talaga Manggung Simbarkencana Foundation which is the administrator and manager of the Talaga Manggung Museum. This activity takes place from June to September 2021. In its implementation, Gio and his team created a website as an information center and preservation media for the museum that can be accessed by the entire community. Then, they invited the museum manager to upload content about the museum so that it could be digitized.

## Research in Number

**84** citation impact in 2017-2021

**269** publication in 2017-2021

**670** citation count in 2017-2021

**2.67%** of all Indonesian citation

**2.73%** of all Indonesian publication

### Kasepuhan Citorek Cultural Tourism

The Research Team of the Department of Forest Resources Conservation and Ecotourism, Faculty of Forestry and Environment, IPB University, encourages the development of Kasepuhan Citorek culture-based tourism in Lebak, Banten. This research will encourage the development of sustainable tourism in Citorek Kidul Village, Cibeber District, Lbak Regency, Banten through a partnership with the Mount Halimun Salak National Park Office. Local wisdom owned by the community plays an important role in sustainability. Local wisdom can be in the form of ideas, thoughts, works, tools, or concepts in managing biodiversity and the environment.



## Community Engagement

### Distribution of Semeru Disaster Aid

IPB University's Center for Disaster Studies was appointed to be the Coordinator of the Mount Semeru Eruption Action at IPB University. IPB University's Center for Disaster Studies handed over aid packages to affected communities and a team of disaster management volunteers to three location points spread across Lumajang Regency and Malang Regency, East Java.



### Aid Packages for Flood Disaster

The Action of Independent Volunteers from the IPB University Alumni Association (ARM HA) distributed aid packages to 150 families (approximately 600 people) affected by floods in Bima Regency, West Nusa Tenggara (NTB) Province. The assistance was distributed through the humanitarian action of ARM HA-IPB University (17/4) in Tonda Village, Madapangga Sub-district, one of the areas that were severely affected by floods since early April. RM HA IPB University Helped Flood Affected Residents in Tonda Bima.



### Greenhouse for Residents of Cihideung Udik Village, Bogor

Community service is an obligation for a student. The form of service can be implemented in various ways, one of which is by managing the assisted villages. The Village Development and Empowerment Holistic Program Team (PHP2D) Student Family Student Executive Board (BEM KM) IPB University carried out service by managing the assisted villages in Cihideung Udik Village, Ciampea District, Bogor Regency. One of the forms of service that is carried out is the construction of a greenhouse. The use of a greenhouse is intended to protect plants from air temperatures that are too low in winter. The greenhouse in Cihideung Udik Village is expected to help farmers to access plant seeds.



### Ecobricking Training

Research Center for Conflict Resolution (Care) Institute for Research and Community Service (LPPM) IPB University and PT Bumi Resources trained residents of Kebalen, Babelan, Bekasi, West Java to make ecobricks from inorganic waste. Ecobricks are useful for reducing waste generation. Ecobricks can also be formed into tables, chairs, gates or into walls. This training is part of the socialization of the waste school program.



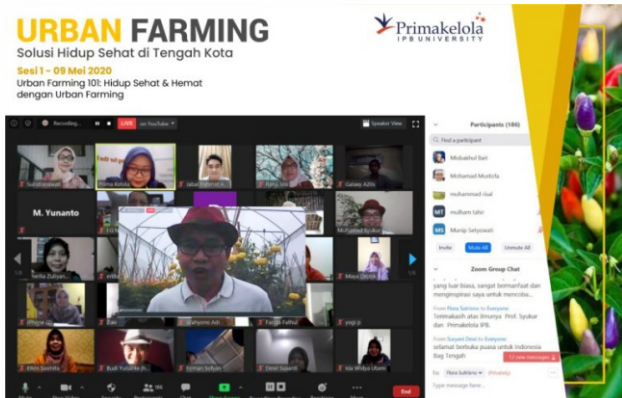
**Jakarta Park Design**

IPB University students from the Department of Landscape Architecture, Faculty of Agriculture Cindy Rezeki Zain, Embun Azura, and Margaretha Yvandhini, won the Garden Design Competition at Jakarta Green: Student Design Competition. The design is inspired by the concept of buildings that existed in Ancient Greece. The building is named 'Agora' or an open space in the city center close to the government building. The concept of Water-Sensitive Urban Design (WSUD) with the implementation of Sustainable Urban Drainage Systems (SUDS) is the main strength of Cindy and the team's design. The concept is a water management technique that can improve the quality of groundwater and the amount of its availability. The concept is very fitting for the Jakarta City area with a relatively narrow area but high population density.



**Urban Farming Training**

The Professional Association of Resources Environmental Economics Student Association (REESA) of the Faculty of Economics and Management (FEM) carries out fieldwork activities in fostering a village sustainably by applying resource and environmental economics knowledge. This activity was held on April 11 - October 17, 2021, with 156 participants participating. This activity produces outputs, namely the formation of a simple compost house as support for urban farming in Cibanteng Village.



**11 SUSTAINABLE CITIES AND COMMUNITIES**



# 12 RESPONSIBLE CONSUMPTION AND PRODUCTION



## Ensure sustainable consumption and product patterns



### Learning Programs

#### Program and Courses

Education activities on responsible and sustainable consumption and production are spread across several study programs at IPB University. These include study programs related to upstream agricultural production, livestock, forestry, and sustainable fisheries. In the downstream sector, IPB University has several study programs that handle food processing processes in the Faculty of Agricultural Engineering and Technology. The science of consumer behavior is offered in family and consumer science program.

#### Food Safety and Packaging

Coordinator of the Program for Strengthening Small and Medium Business Units for Agroindustrial Products (PPUKM) IPB University stated that packaging must meet consumer expectations for the food produced. This is based on the packaging roles that ensure that food is free from microbiological, chemical and physical hazards. IPB University initiated a Webinar and Bimtek Propaktani entitled "Packaging Techniques and Processed Food Products", with a collaborator from the Directorate General of Food Crops, Ministry of Agriculture, on December 23.



### Student Activities

#### Waste Management Training

The Environmental Economics Student Association (REESA) of the Faculty of Economics and Management (FEM) carried out training activities related to household waste management in order to reduce the amount of household waste for housewives. This activity was carried out on July 28-August 2, 2021, which aims to increase public awareness in sorting and managing household waste, increasing the community's ability to sort and manage household waste.

#### Low Carbon Diet Campaign

IPB University students trying to campaign for climate change management through a low carbon diet. This effort was carried out through the Student Creativity Program (PKM) in the field of Social Humanities Research. This PKM program received funding from the Ministry of Education, Culture, Research and Technology. This program was attended by dozens of respondents who participated in nutrition education interventions related to low carbon diets through Focus Group Discussions (FGD).

### Research in Number

 **104** citation impact in 2017-2021

 **370** publication in 2017-2021

 **1,815** citation count in 2017-2021

**4.91%** of all Indonesian publication

**6.87%** of all Indonesian citation



## Training on Waste Disposal

The Center for Environmental Research (PPLH), Institute for Research and Community Service (LPPM) IPB University held the second series of webinars with the theme "Pain Completely Disposal and Utilization of Wastewater" on September 4. This webinar discussed the Technical Approval (Pertek) and Operational Feasibility Letter (SLO) for waste water disposal and utilization activities as stipulated in the Minister of Environment and Forestry Regulation (Permen LHK) No. 5 of 2021. PP No. 22 of 2021 Article 162 paragraph b mandates provision of facilities and infrastructure, procedures for waste water disposal and utilization. In terms of efforts to conserve water resources, the existence of this wastewater technology shows a stronger commitment from the Ministry of Environment and Forestry to maintain the health of aquatic ecosystems. Viewed from the perspective of business actors/activities, this wastewater treatment industry triggers industrialists to also be strongly committed to the business process, and make it part of the business cycle that must be planned in detail.

## Processing the Waste

Professor of IPB University developed an odorless waste treatment process. From the very unpleasant to very favorable scale in the range of -4 to +4, the odor produced from the Composting Tub belonging to Arief Sabdo Yuwono, Professor at the Faculty of Agricultural Technology, is on a scale of -0.1. The technology developed by Arief was aimed at speeding up the composting process of organic waste with the biodegradation agent it uses, which is different from the usual composting tank that uses a consortium of bacteria. The SABDO (BakPo SABDO) method--the name of Arief's composting basin--is called using BSF larvae or black soldier fly as a decomposing agent.

## Infiltration Well from Garbage

Infiltration wells are one alternative to overcome flooding, however, their effectiveness cannot be measured. IPB in collaboration with Danone Indonesia innovates to make infiltration wells that are no longer conventional and are now being used during the Hold and Save as Water Reserve (HANSIP-CAI) program at the ex-BKPP Bogor Office. Made from 150 kg of non-economical plastic waste, this infiltration well is able to absorb 16,000 liters of water. The infiltration wells were physically, microplastic, and material tested through a certified laboratory.

## Halal Science Center Affiliate Research Program

Halal Science Center (HSC), Institute of Research and Community Service (LPPM) IPB University collaborated with Graduate School IPB University to hold a webinar titled "Peluang Riset di Bidang Halal untuk Mahasiswa Pascasarjana IPB University. As the Pioneer of the first Halal Research Center in an Indonesian University, HSC IPB University wants to introduce research regarding halal studies for students. Especially with government attention and the status of halal products, as well as the increasing the people's understanding regarding halal. HSC has created three Kampus Merdeka programs for 2021 dedicated for graduate and vocational students. The three programs were HSC Affiliated Student Research Program, Certified Internship Program and Halal Thesis Prize 2021. For students interested in halal based research, this is the best opportunity to experience the facilities of HSC including training. The result of the research will be inscribed in the halal research directory of IPB University. Topics also relate to halal research including natural sciences and social sciences and humanities



## Community Engagement

### Garbage Bank and Composter

One group of IPB University students participating in the Thematic Real Work Lecture (KKN-T) and took the initiative to create a 'Waste Bank and Composter' work program in Dramaga Village. In this activity, the group, named Bogorkab28b, promoted garbage bank, also disseminated information on controlling COVID-19, as well as the importance of vaccination.



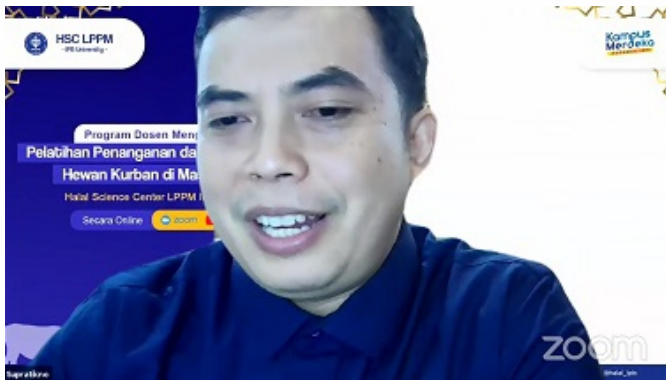


**Animal Slaughter Socialization during Eid Adha**

In order to provide knowledge to the public regarding the implementation of qurbani during the pandemic, the Directorate of Veterinary Public Health, the Directorate General of Livestock and Animal Health, and the Ministry of Agriculture of the Republic of Indonesia held a National Webinar with the topic "Implementing Sacrifice Activities in a COVID-19 Pandemic Situation" which was attended by veterinarians, students, and the general public. Drh Supratikno, IPB University Lecturer from the Faculty of Veterinary Medicine stated that there are three main keys to slaughter, namely the environment in which the slaughter is carried out, the competence of the officers, and the appropriate equipment. In addition, the slaughter must also be based on five principles in animal welfare in addition to Islamic sharia. This should be remembered because stress management on the sacrificial animal will affect the quality of the meat produced. During the pandemic, the number of committee members is advised not to exceed five people to reduce the risk of transmission and contamination of bacteria to meat, wear goggles, comfortable masks, protective cloth gloves and not wear clothes with flashy colors.

**Eco-Incinerator**

IPB University has used the Eco Incinerator to process domestic waste since 2020. This tool had two combustion furnaces, specifically for destroying plastic and paper waste with no economic value, such as styrofoam. The ash from the combustion was made into new products (such as paving blocks). The combustion capability of one furnace is about 3-4 m3 per hour in dry conditions. Even though it is burned, this instrument will not pollute the environment because it is equipped with a sprayer that can bind the inhaled carbon particles into small particles such as ash.



**12 RESPONSIBLE CONSUMPTION AND PRODUCTION**





## Take urgent action to combat climate change and its impacts



### Learning Programs

#### Program and Courses

Our university has long delivered learning programs related to climate change and its related impacts, adaptation, and mitigations. This program was held through regular teaching activities within various study programs and non-regular training involving research centres and faculties. Undergraduate and graduate (master and doctoral) study programs in Applied Meteorology and Climatology are the study programs that provide many learning programs related to weather and climate and its applications in many aspects of life. With more than 80 students enrolled every year, many of its students and alumni have participated in climate related activities, especially related to climate change issues at national and international levels.

Meteorology and Climatology Study Program has developed the scholarly in the realm of atmosphere and hydrosphere related with natural phenomena of weather, climate and hydrological cycle and its application including for planning the agriculture in the broad meaning and the management of Natural Resource, disaster and environment. This Study Program has broad network of cooperation both at national and international levels and with its scientific competency plays a big role and can make a real contribution in policy formulation on regards of the impact of climate change.



### Student Activities

#### Climatalks: National Conference on Climate

Climatalks is a national conference on climate change which was held by the Association of Agrometeorology Student (Himagreto), Faculty of Mathematics and Natural Sciences - IPB University in collaboration with the Red Universitaria de Cambio Climatico (REDUCC), National Autonomous University of Mexico (UNAM). In Indonesia, climate change has various impacts in all sectors. According to the Nationally Determined Contribution (NDC), the largest emitter of carbon dioxide in Indonesia is deforestation which was produced around 63 percent of carbon dioxide. This emissions causes impacts such as sea level rise which results in the loss of small islands, and the loss of marine biodiversity ecosystems and so on. This forum is important to discuss the solutions from various perspectives from various countries.

### Research in Number

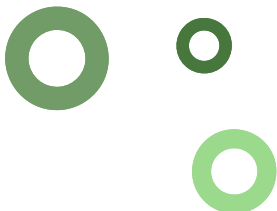
**145** citation impact in 2017-2021

**278** publication in 2017-2021

**3,103** citation count in 2017-2021

**12.78%** of all Indonesian citation

**6.71%** of all Indonesian publication



## RIL-C to Reduce Carbon

IPB University in collaboration with the Journal of Tropical Forest Management, IUFRO (International Union of Forest Research Organization) and Universiti Putra Malaysia (UPM) held an international webinar "Forest Operation and Climate Change: The RIL-C Approach", (21/07). The webinar was held to provide a common understanding of the main role of the RIL-C (Reduced-Impact Logging for Climate) logging method to reduce the negative impacts of logging and reduce carbon emissions. Prof. Elias, Professor from the Department of Forest Management - IPB University explained the role of implementing RIL-C in the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) program. RIL-C is low carbon impact logging. He said that unlike other conventional logging methods, the RIL-C method was more systematic by following the criteria for sustainable forest management.

## Environment Action

The Student Executive Board (BEM) from Faculty of Mathematics and Natural Sciences (FMIPA) IPB University organize the webinar series with the theme "Climate Apocalypse and Making Eco-enzymes". This webinar aims to address various environmental issues such as ecological footprint, environmental declination, impact of climate crisis etc. Every participants were also invited to create eco-enzymes as an action to combat the climate change. Eco-enzyme itself is an environmentally friendly product that is easily made from fermented organic kitchen waste such as fruit pulp, vegetables and sugar. Through the making of eco-enzyme and the materials presented by the speakers, it is hoped that it can add insight and motivation for all of us to continue to care for the environment.





## Research, Innovation and Business

### Mainstream Loss and Damage in Climate Risk

In order to support the climate risk mitigation efforts, the Center for Disaster Studies of IPB University invites several institutions to collaborate. The inauguration of the collaboration between PSB with SEAMEO Biotrop and CV PIAREA (15/7) was carried out in the event of "Mainstreaming the Concept of Loss and Damage in the Framework of Climate Risk Management and Biodiversity in the ASEAN Region". This collaboration between the three parties will consist of various series of activities that carried out in August 2021. These activities include Development of Loss and Damage Portal, National Competition for Loss and Damage in Tropical Biodiversity, Community Literacy Survey related to Loss and Damage issues, Podcast "Cara Pemuda Understanding Climate Change", International Workshop "Mainstreaming Loss and Damage among ASEAN Countries" and Business Training in order to increase the Capacity of Disaster-Prone Areas.



## Adaptation to Climate Change's Impacts

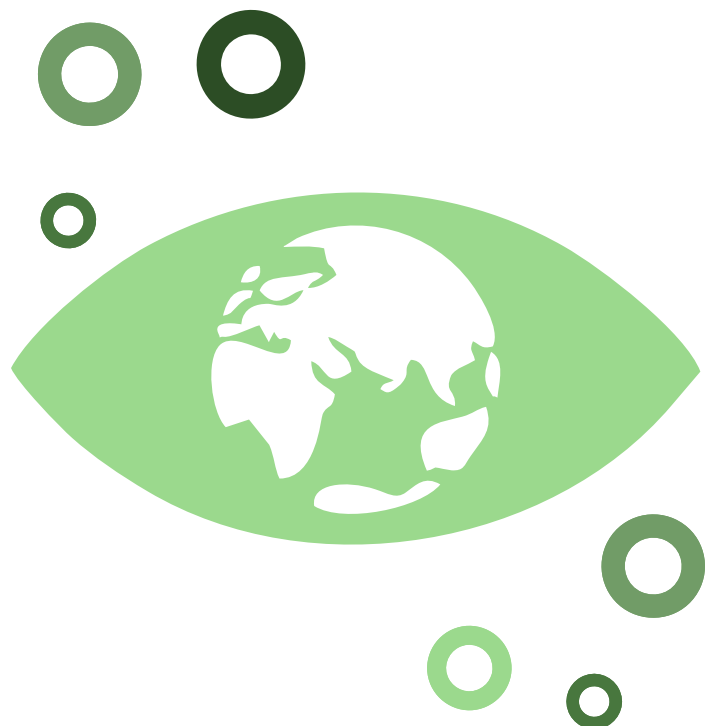
Researcher from the Center for the Climate Risk and Opportunity Management in Southeast Asia and Pacific (CCROM-SEAP) IPB University found that climate change has increase the rain fall. The maximum dry day series of dry season period without rain is projected to increase to more than 30 days compared to current conditions. Thus, an adaptation strategy is needed, especially with regard to dealing with climate change.



## Community Engagement

### Climate Crisis Education

A team of IPB University students who are running the Student-Community Service Program (KKN-T) in the Selayar Islands Regency, South Sulawesi, was delivered a Climate Class to children. This activity was attended by elementary school (SD) to junior high school (SMP) students. On this occasion, Nurul Hidayatil, a student from the Department of Geophysics and Meteorology, IPB University, together with the team introduced the material on weather and climate, global warming, the water cycle, and zero waste to the students. According to him, climate crisis education to children is very important because children are tomorrow's leaders who can be the key in reducing the impact of climate change.





### Silau Iklim - Climate Introduction

Our Students who are conducting a student – community services (KKN-T) in Tuwel Village, Bojong District, Tegal Regency, Central Java held a Climate Learning webinar, (22/7). In addition to being attended by elementary school children (SD) in the village, elementary school children from Bali and Indonesian students were also present at Adnoc School Ruwais, UAE (United Arab Emirates). In addition, several Early Childhood Education Teacher Education (PG PAUD) and PGSD students also attended the event. This webinar presents Maya Ayu Ariyanti, a student of Geophysics and Meteorology at IPB University as a speaker on weather, climate and water, Neki Maretsa Asriaji, a graduate student of the Special Education Study Program, Sebelas Maret University and her little friend Cimot as storytellers in the webinar.



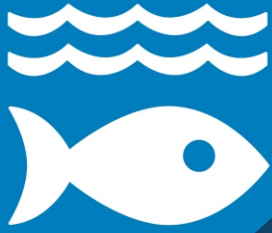
### Excellent Climate Research Laboratory

IPB University's Leading Research Laboratory Unit in collaboration with the Department of Computer Science and the Department of Geophysics and Meteorologists, Faculty of Mathematics and Science (FMIPA) IPB University again held the HPC (High Performance Computing) training series. According to Dr Ahmad Faqih, HPC can be applied to the Ocean and Climate. Not only can predict the weather in the next few days, HPC can even project climate for hundreds of years into the future. The simulation results, termed as Numerical Weather Prediction (NWP), can provide information for hundreds of variables or elements of weather and climate at various locations, times, and altitudes. HPC is one solution as a supercomputer to overcome the low resolution of the climate model. Several years earlier research and research on climate modelling using HPC at IPB University had also been carried out. Another research is a computational tool for the Regional Climate Model (RCM) simulation for Indonesia Third National Communication. Currently, the IPB Weather Climate Team is trying to form a cluster facility with workstations for weather prediction operations for the next 10 days.

13 CLIMATE ACTION



# 14 LIFE BELOW WATER



## Conserve and Sustainably Use the Oceans, Seas, and Marine Resources for Sustainable Development



### Learning Programs

#### Program and Courses

IPB is committed to achieving SDG 14, supported by the existence of the Center for Coastal and Marine Resources Studies (CCMRS) and the Faculty of Fisheries and Marine Sciences which have a primary concern in the conservation and sustainable use of marine, oceanic and maritime resources for sustainable development. We have 5 undergraduate program and 14 graduate program.

#### Fisheries Cyber Center

Faculty of Fisheries and Marine Sciences (FPIK) IPB University has collaborated with the Indonesia Telecommunication and Digital Research Institute to build the Fisheries Cyber Center (FCC). The FCC is a data digitalization program for Indonesian Fisheries and Marine Science which is done through the concept of co-creation. The program aims to prepare students for technological change and global competition within the field. The FCC also has a function to facilitate the collaboration between users and practitioners of the Indonesian field of Fisheries and Marine Science.



### Student Activities

#### Zooxanthellae Expedition in Sebesi Island

Fisheries Diving Club (FDC) - a student diving club- launched the Zooxanthellae XVI Expedition Team, in Sebesi Island, West Lampung, 7-13 September 2021. This expedition aimed to gain deeper understanding about the community, especially in the study of aquatic ecology and socio-economics in the area. Ecological data consist of data on hard coral, soft coral, reef fish, macrobenthos, rugosity, coral disease, tourism suitability index, and aquaculture suitability index. Meanwhile, the socio-economic data consist of tourism and fishery economy on Sebesi Island. This expedition made a direct contribution to the community, especially in the study of aquatic ecology and socio-economics in the area.

### Research in Number

 **0.96** citation impact in 2017-2021

 **70** publication in 2017-2021

 **303** citation count in 2017-2021

**1.87%** of all Indonesian citation

**1.16%** of all Indonesian publication

## Coral Reef Research in Manangin Island

Students from Faculty of Fisheries and Marine Sciences IPB University achieved 1st placed in youth innovation competition as APRI Youth Best Team Webinar 3rd that was held by APRI in February 2021. The team with Iryal Ardiansah, Silki Anisa Hdayat, Dzikra Fauzia M., Dewi Mindo C.B.S., and M. Rizky Firdaus as members wins the competition with their research about 'The Impact of Crabs Fishery in Manangin Island'. The research was held from November 2020 under the guidance from Beginer Subhan, S.Pi, M.Si. Their focus was researching coral reefs health because Mandangin Island has high fisheries activities.



## Potential of Betta Fish

The Aquaculture Student Association of the Faculty of Fisheries and Marine Sciences (FPIK) IPB University successfully conducted an online Ornamental Fish Talk Show (8/5). This talk show was part of Collaboration 2021. The theme of the talk show was "Development of Potential and Management of Betta Fish in the Covid-19 Pandemic." This talk show event presented Fandi Sumardie as CEO of Betta University. He delivered material related to the development strategy and business potential of Betta fish.

## Combating Marine Pollution in Small Island

IPB University students conducted research on the waste supply chain in Seribu Islands. The program was funded by the Indonesian Ministry of Education, Culture, Research and Technology. Based on an interview with the Seribu Islands Environment Agency, around 75 percent of households on Tidung Island have carried out the waste sorting process independently. The supply chain starts with household waste, coastal waste, and retribution waste. The waste, then, collected by the Environment Department of Independent Service Providers (PJLP LH). The process of sorting and processing waste is carried out using various technologies. This events provides students both the knowledge and tools they need to make an immediate and lasting impact in the fight against plastic pollution.





### Digitalization of Sustainable Fisheries

As a maritime country, Indonesia's potential as one of the largest fishery producers in the world is unquestionable. Even so, national fisheries governance still needs a lot of improvement, one of which is the aspect of data collection to support scientific-based fisheries management design. Based on this reality, the Record Archipelago Foundation and the Department of Fisheries Resources Utilization (PSP), the Faculty of Fisheries and Marine Sciences (FPIK) IPB University took the initiative to make a breakthrough by building the Fisheries Resource Center of Indonesia (FRCI), a unit that aims to develop innovative data collection systems, and integrated fisheries research.

### Monitoring for Marine Ecosystem Rehabilitation

The Research Center for Coastal and Ocean Resources (PKSPL) IPB University monitors the coastal ecosystem rehabilitation program in Yensawai Village, North Batanta District, Raja Ampat Regency. This monitoring was carried out by a team from PKSPL IPB University. This monitoring activity is part of the Integrated Coastal Zone Management Design program in Supporting the Acceleration of the Implementation of the Zoning Plan for Coastal Zone and Small Islands (RZWP-3-K) in the Province of West Papua.



### Partnership with MTCRC in Marine and Ocean Research

Strengthening cooperation between MTCRC (Marine Technology Corporation Research Center-Korean) with the Center for Coastal and Ocean Resources Studies (PKSPL) and the Faculty of Fisheries and Marine Sciences (FPIK) IPB University. This was also facilitated by the Coordinating Ministry for Maritime Affairs and Investment. This effort is part of the expansion of the MTCRC partnership in Indonesia from what has been running so far. This collaboration is expected to meet the needs of Indonesia's maritime, coastal and marine development with Korea.



### Strengthening of CTI-CFF in Southeast Asia Region

The role of Indonesia's marine and coastal areas covers 77 percent of the total land area and plays an important role in national development. This has also been mandated in the National Medium-Term Development Plan (RPJMN) 2020-2024 regarding the climate change and disaster agenda. One of the efforts that are also encouraged is optimizing the function and role of the CTI (Coral Triangle Initiative) which is the largest portion of Indonesia. Namely in encouraging the Coral Triangle Initiative for Coral Reefs, Fisheries, and Food Security (CTI-CFF) which is aimed at addressing threats to marine, coastal and small island ecosystems in the region. The Center for the Study of Coastal and Marine Resources (PKSPL) and the Center for Disaster Studies (PSB), the Institute for Research and Community Service (LPPM) together with the Ministry of Environment and Forestry (KLHK) are pushing to formulate a profile of the level of vulnerability and ecosystem-based adaptation in the CTI area.





## Community Engagement

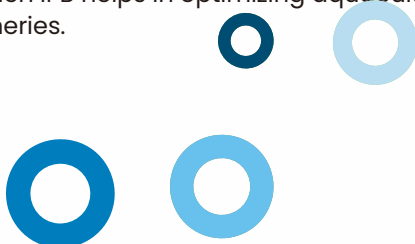
### Supervise Mangrove Labor Intensive

Strengthening cooperation between MTCRC (Marine Technology Corporation Research Center-Korean) with the Center for Coastal and Ocean Resources Studies (PKSPL) and the Faculty of Fisheries and Marine Sciences (FPIK) IPB University. This was also facilitated by the Coordinating Ministry for Maritime Affairs and Investment. This effort is part of the expansion of the MTCRC partnership in Indonesia from what has been running so far. This collaboration is expected to meet the needs of Indonesia's maritime, coastal and marine development with Korea. On this occasion, it was agreed to follow up the cooperation by visiting each other's work areas and the patterns of cooperation needs as well as the points that will be collaborated both for PKSPL and other units that participate in developing coastal, marine and maritime programs at IPB University.



### Shrimp Hatchery Development

IPB University signed a cooperation agreement with the Mayor of Dumai (20/5). In this collaboration, both parties agreed to support each other's research, education and community service programs to advance the agriculture, fishery and livestock sectors in Dumai City, Riau Province. IPB helps agricultural development in Dumai urban area by building the concept of urban farming, assisting in the preparation of the Dumai City food estate program, increasing human resources (opening ASN classes) which are sent to study at IPB University. As well as in the fisheries sector, one of which IPB helps in optimizing aquaculture hatcheries.



## Campus Operation

### Partnership in Sea Farming

Sea Farming is an integrated fishery development program initiated by the Center for the Study of Coastal and Ocean Resources (PKSPL), Institute for Research and Community Service (LPPM), IPB University. Sea Farming has aquaculture, hatchery, restocking, marine conservation, capture fisheries, marine tourism and community economic empowerment. The Sea Farming program is also a vehicle for education and research for students as well as community service. PKSPL IPB University visited PT Gani Arta Dwitunggal (owner of Aqua Tec products) to conduct discussions and establish cooperation. This collaboration is to support the Independent Learning Campus Merdeka (MBKM), Sea Farming developed the ABGC (academician, businessman, government and community) scheme, with the aim that the academic world, the business world of industry (DUDI) and the world of work can collaborate together in the development of science and technology. Namely by synergizing the four in a measurable mechanism that is supported by government policies.



14 LIFE BELOW WATER



# 15 LIFE ON LAND



## TAMAN KONSERVASI

**Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**



### Learning Programs

#### Program and Courses

IPB has several study programs that cover Life on Land topics, such as forestry, soil science, and biodiversity conservation. The study program consists of 58 study programs related to terrestrial ecosystems (8 undergraduate and 50 graduate programs), 15 study programs in sustainable forestry (4 undergraduate and 11 postgraduate programs), 11 study programs related to soil and land resources sciences (2 undergraduate and 9 postgraduate programs), and 10 study programs related to biodiversity conservation (1 undergraduate and 9 postgraduate programs).

#### Summer Course on Forestry

The Faculty of Forestry and Environment, IPB University held an International Summer Course with the theme of Innovation and Rainforest Ecosystem Management. The summer course was held on 21-29/8 virtually. This activity is in collaboration with the 3rd International Tropical Silviculture Conference (ICTS 2021) which was held by the Department of Silviculture and the International Forestry Students Association Local Committee (IFSA LC) IPB University. There were 106 participants from various universities in Indonesia, Malaysia, Brunei Darussalam, Timor Leste, Philippines, Myanmar, China, Japan, Pakistan and India.

#### Internship Programs in SEAMEO BIOTROP

The Department of Silviculture, Faculty of Forestry and Environment IPB University collaborated with the Southeast Asian Ministers of Education Organization, The Regional Center for Tropical Biology (SEAMEO BIOTROP) (22/09). The signing of the cooperation script is intended to increase student capacity and human resources in general. With a policy of 20 Semester Credit Units (SKS) or five months of internship, the Silviculture Department must formulate courses that intersect with topics at SEAMEO BIOTROP. In this activity, cooperation partners such as LIPI (Indonesian Institute of Sciences) and several stakeholders were also present.

### Research in Number

**1.04** citation impact in 2017-2021

**707** publication in 2017-2021

**4,227** citation count in 2017-2021

**15.8%** of all Indonesian citation

**13.5%** of all Indonesian publication

## Student Activities

### Wildlife and Biodiversity

Fauna Conservation Union (UKF) IPB University initiated to develop an inventory of wildlife with 6 (six) campus student organizations in Indonesia in the field of conservation. The campuses includes Hassanudin University, General Sudirman University, Airlangga University, Tadulako University, Udayana University, and Mulawarman University.



### Ecotone for Sustainable Forestry

Three students of the Department of Landscape Architecture succeeded in making the concept of a resilient ecotone. The students were Anisa Muplihah, Nafidzah Qisthina, Ai' Sukma Wisiking Gusti with the guidance of Dr Kaswanto. Resilient Ecotone is a resistance area planning concept through a social, economic, and ecological-based landscape ecology approach as a supporter of forest sustainability. The students hopes that his efforts can provide positive energy for all parties in dealing with forest fires.

## Campus Operation

### Campus Forest Park

The Head of the Department of Forest Resources Conservation and Ecotourism, Faculty of Forestry and Environment, IPB University initiated the construction of the Campus Forest Park. Campus Forest Park is located in the Cikabayan block, Dramaga Campus of IPB, Bogor. This Campus Forest Park has an area of approximately 20 hectares. The construction of this park will be divided into several blocks for the entrance gate, play area, and flora and fauna conservation including a conservation gallery.

### Termites on Terrestrial Ecosystem

Siska Anggiriani, a student of the Master of Science and Technology program in Forest Products, presented her research on "The Role of Soil Termites in Microplastic Transport in Terrestrial Ecosystems" at The 5th Asia Research Symposium Node (ARN). This symposium was organized by the Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Japan. Siska's presentation attracted special attention from the symposium participants and was announced as the 3rd best oral presenter. This research is part of a research collaboration between IPB University, the LIPI Biomaterials Research Center and RISH-Kyoto University.

### Wildlife Inventory using Drone

Dr. Dede Aulia Rahman, researcher from the Department of Forest Resources Conservation and Ecotourism, revealed the challenges of Indonesia's tropical rainforests. Traditional survey methods in wildlife inventories are elusive and ambiguous. This causes the ecological data in Indonesia to be very limited. Through the support of the Ministry of Research and Technology/National Research and Innovation Agency of the Republic of Indonesia, under the Higher Education Basic Research (PDUPT) scheme, in his latest study, Dr Dede conducted data collection and monitoring of wildlife by utilizing camera trap technology and thermal drones.

### Portable Sequencer Technology

The Forest Plant Genome Research Team from IPB University led by Professor Iskandar Z Siregar was invited by the Asia-Pacific Region Office Nanopore. Prof. Iskandar and colleagues were invited to present their research results using a portable sequencer. The forum also featured speakers from other ASEAN countries, including from Mahidol University Thailand, Institut Pasteur du Cambodge Cambodia, Worldfish Malaysia, and Nanyang Technological University Singapore.



### Training on Environmental Restoration

IPB has a training and certification enterprise (ipbtraining.com) which focuses on training related to the environmental field (life on land) which is filled by lecturers with expertise. Several types of training provided are (1) Soil Quality Improvement Techniques in Post-Mineral and Coal Mining Land; (2) Revegetation Technology on Post-Mining Land; (3) Forest Plant Seedling Techniques for Post-Mining Land Rehabilitation; (4) Biodiversity Flora and Fauna High Conservation Value (HCV).

### Landscape Assessment CRC 990

Researchers who are members of the CRC Research 990-EFForTS took part in the Kick Off Landscape Assessment (25/05). The Landscape Assessment (LA) aims to scale up in an integrative way to assess the dynamics of ecological and socio-economic functions in Jambi. This LA includes a variety of land uses such as natural forest, shrubs, rubber plantations, and oil palm plantations on a wider scale (landscape).

The Landscape Assessment research plot is a collaboration with oil palm and rubber farmers, as well as institutions and companies. The plots are distributed in several areas in Jambi Province. The Kick Off Landscape Assessment activity was attended by researchers, field assistants, counterparts, members of the Joint Management Board (JMB) and coordinating office staff from Goettingen University, IPB University, Jambi University, and Tadulako University.





## Community Engagement

### Identification of Changes in Vegetation Cover

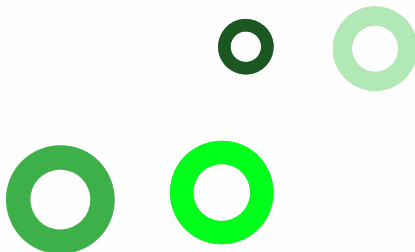
Researchers from IPB University, National Institute of Aeronautics and Space (LAPAN), Ministry of Agriculture, Ministry of Environment and Forestry (KLHK) and United Nation Development Program (UNDP) held a Workshop and Training on Land Cover Monitoring Based on Ecosystem Devegetation Data, (15-16/ 6). The results of the study in this workshop are expected to help researchers and users from local governments to share experiences and knowledge when using the EcoSystem and Ina-Alert.

### Award on Forest and Land Fire Control

Prof. Bambang Hero Saharjo, Professor of IPB University received an award certificate for Forest and Land Fire Control. The award was given based on the Decree of the Coordinating Minister for Political, Legal and Security Affairs (Menkopolhukam) of the Republic of Indonesia No. 40 of 2021 dated April 5, 2021 regarding the Determination of Recipients of the Year Forest and Land Fire Control Award. Previously in 2019, the John Maddox Prize was given to him for his persistent defense of his opinion based on scientific facts obtained in the case of forest fires. In this prestigious event, Bambang succeeded in eliminating 206 selected candidates from 38 countries.

### 10 Thousand Tree Seeds Donation

The Governor of West Java has launched the Movement to Plant 50 Million Trees. To support the movement, in the inauguration of the new management of the Regional Alumni Association of the Faculty of Forestry and Environment (HA-E) IPB University West Java for the period of 2021-2024, they gave 10 thousand tree seedlings to the West Java Provincial Government. In this inauguration activity, 200 tree seedlings were planted.



### Updates on Biodiversity Campus

IPB University is a biodiversity campus that has several ecosystems that are suitable for various kinds of animals. Our location has lake ecosystems, bamboo ecosystems, open land ecosystems such as plantations and yards, as well as forest ecosystems with dense vegetation. In the period of May and June 2021, the Fauna Conservation Union (UKF) of IPB University succeeded in detecting the presence of the Brontok Eagle (*Nisaetus cirrhatus*) and the Iron Woodpecker (*Dinopium javanense*) on the Dramaga Campus of IPB. Based on previous I-naturalist data, the Brontok Eagle was found in 2017 and based on unofficial records from the UKF, the Iron Woodpecker was found in 2019. Also previously (13/03), our Campus has been visited by several migratory birds such as the Eurasian Kangkok (*Cuculus canorus*), Malay Kowak (*Gorsachius melanolophus*), Golden Brush (*Ficedula zanthopygia*), Dark Side Brush (*Muscicapa sibirica*), and Bubik Brush (*Muscicapa sibirica*). *Muscicapa dauurica*).



15 LIFE ON LAND



# 16 PEACE, JUSTICE AND STRONG INSTITUTIONS



**Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective accountable and inclusive institutions at all levels**

## Learning Programs

### Natural Resources, Justice, and Peace

This course focuses on the contribution of environmental issues to violent conflict and its potential as avenues for cooperation and conflict resolution. Environmental factors are rarely the sole cause of violent conflict. However, exploitation of natural resources and associated environmental stressors can be involved in all stages of the conflict cycle, from contributing to the initiation and continuation of violence to weakening prospects for peace. This course addresses environmental and natural resource issues in peacebuilding and conflict prevention interventions. This course equips students with knowledge and understanding of natural resources for peace.

### Institutional Economics

This course discusses the history of the development of economic thought, the definition of institutions, and the urgency of institutional economics. It also discussed the transaction costs, types of institutions (formal and informal), institutional enforcement; the theory of institutional change and its impact on economic activity; institutional systems and social arrangements, property rights, property rights regimes, contracts, collective action and social capital; all in the context of environmental and resource management.

### Sexual Violence Prevention Education

IPB University held an education on the prevention of sexual violence and bullying. As a campus security, it is very important for its citizens to understand the forms of sexual violence and bullying and how to deal with them. In academic activities, it is necessary to build a safe and conducive interaction system. The potential that leads to deviations in the interaction process should be avoided as much as possible. Sexual harassment can be in the form of speech, gestures, physical, visual, psychological, and mental acts. The perpetrator can be anyone and to anyone. Sexual violence that occurs in the community can be caused by a lack of public education and awareness. Therefore, education related to the prevention of violence and sexual harassment is needed.

## Research in Number

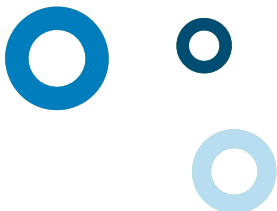
**0.96** citation impact in 2017-2021

**70** publication in 2017-2021

**303** citation count in 2017-2021

**1.87%** of all Indonesian citation

**1.16%** of all Indonesian publication





## Student Activities

### Legislation Talks (Agreement)

An online seminar activity organized by DPM SB IPB to provide insight to the target participants about the world of legislation and efforts to run a healthy democracy within the scope of the campus. This activity was organized by the Business School Student Representative Council (DPM SB) which was held on June 5, 2021, attended by 78 participants. This activity aims to provide insight to participants about the world of legislation and efforts to run a healthy democracy within the campus.

### Student General Election 2021

The IPB Student Family General Election (PEMIRA KM) 2021 was held by the Student Family Representative Council (DPM KM) IPB on 1-2 October 2021, followed by 13746 students. PEMIRA Central Executive aims to elect the President and Vice President of KM IPB Students. PEMIRA Central Legislature is a General Election to elect members of DPM KM IPB. This activity aims to train students in democracy and the election of Presma (Student President) and Wapresma (Vice Student President) as well as new members of DPM KM (Student Representative Council of Students Family).





## Research, Innovation and Business

### Software for Assistance to Victims of Sexual Violence

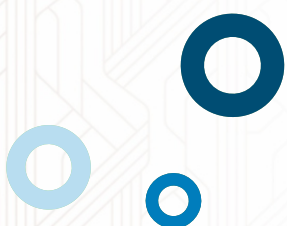
IPB University students develop software called "TTM" which aims to provide assistance to victims of sexual violence with ease of reporting. This software was developed and included in the Yogyakarta State University IT Competition 2021. The team developed the TTM against the background of cases of sexual violence against women in Indonesia that never ended, both in the personal and community realms. In addition, there are stereotypes that caused case handling biased and case handling discontinued. TTM features are divided into three, namely reporting, consultation, and panic buttons. This software will make it easier for users to report acts of sexual violence that occur so that it is hoped that acts of



## Community Engagement

### Expert Advice to All Levels of Government

IPB University provides advice through experts to all levels of government, local government, regional and national. At the regional and national levels, IPB University faculties are also invited to act as advisors for national policy-making, invited to be a resource for joint training and capacity building for internal and external stakeholders. These activities include public lectures for government and NGOs, panel discussions, and multi-stakeholder collaboration.





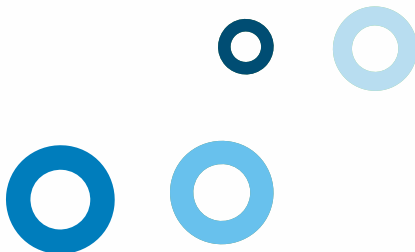


### Academic Freedom

The Regulation of the Academic Senate no. 28/SA-IPB/P/2018 guarantees academic freedom, and scientific autonomy. According to this regulation, academic freedom is the freedom of the academic community in higher education to explore and develop science and technology responsibly. IPB University also supports the Independent Learning Campus policy which is programmed by the Ministry of Education, Culture, Research, and Technology. This is implemented into a change in the curriculum structure with an enrichment course or program which is a component in the curriculum structure that includes multiple activities in the form of courses or programs. activity. The Enrichment Course (EC) can be chosen by taking courses from other study programs either within IPB University or from other study programs of other universities (domestic & overseas). Meanwhile, the form of Activities based Enrichment Course can be carried out through competition activities, summer courses, conferences/seminars, entrepreneurial activities, community service, talent interest activities, internships, competency certification, leadership and organization as well as other forms of activities that can be equivalent to credits and is recognized as a course.

### Commitment on Anti-Corruption

IPB University has principles and commitments in eradicating corruption, bribery, and the management of civil servants. This is in line with the Regulation of the Minister of Research, Technology and Higher Education Number 57 of 2016 concerning Regional Development, with integrity to be a clean and bureaucratic zone. bureaucratic district. In addition, we also follow the Regulation of the Minister of Research, Technology and Higher Education (Kemenristekdikti) of the Republic of Indonesia Number 57 of 2016 concerning Guidelines for Implementing Regional Development with Integrity Towards Corruption-Free Regions and a Clean Environment, as well as service-oriented bureaucracy. IPB University views it as important to develop the character of the entire academic community of IPB University so that they have a common vision of eradicating corruption in Indonesia. The formation of this character is important because it shows that success begins with honesty and high discipline. The inclusion of anti-corruption courses in the curriculum encourages honesty between students and lecturers so as to prevent corrupt behavior.



**16** PEACE, JUSTICE AND STRONG INSTITUTIONS





## Strengthen the means of implementation and revitalize the global partnership for sustainable development



### Our Partnership

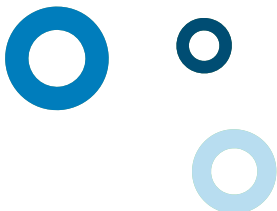
IPB University participate in global, national and regional partnerships to improve our impact in sustainable development goals. We initiate collaboration in the field of agriculture, forestry, fisheries, bio-sains, health, engineering, and economics. We actively engages numerous well-established collaborations with overseas partners. We have developed active collaborations with more than 200 universities and institutions around the World. Various networking activities have been conducted such as: joint degree, double degree, students/teaching staffs/academic staffs exchange, short course (summer/winter), joint research/supervision/publication, joint seminars, general lecture (including "The IPB Talk on Sustainability and Complexity Sciences" series), training, and other areas. The collaborations are formally documented through the fabrication of a Memorandum of Understanding (MoU) and Memorandum of Agreement (MoA).

#### Global

At Global Level, we've partnered with academic, government, industry, and NGO partners. We collaborate with institutions (enterprises, non governmental organisation, and university) in the 5 Cluster. In 2021, We have a partnership with 32 institutions in America; 80 partnerships in ASEAN, Australia, and New Zealand; 56 partnerships in Asia, Africa, and Middle East; 104 partnerships in Europe; and 98 partnerships with Japan. We also have collaboration with 19 universities in the Top 100 Rank universities worldwide.

#### National

At the National Level, we've partnered with 398 institutions (ministry level, non-ministerial government agencies, and research institutions). We have made 77 partnership agreements with ministerial level including the Ministry of Research and Technology, National Research and Innovation Agency (BRIN), Ministry of Forestry and Environment, Ministry of National Development Planning/National Development Planning Agency (PPN/Bappenas), Ministry of Transportation, Ministry of Agriculture, Ministry of Trade, Ministry of Social Affairs, Ministry of Villages, Development of Disadvantaged Regions and Transmigration, Ministry of Finance, Ministry of Marine Affairs and Fisheries, Ministry of Religion, Ministry of Health, and Ministry of Energy and Mineral Resources. We also made 100 partnership agreements with non-ministerial government agencies including the Central Bank of Indonesia, National Sharia Finance Committee (KNEKS), Corruption Eradication Commission (KPK), Palm Oil Plantation Fund Management Agency, Wildlife Police Directorate, Center for Animal Quarantine and Animal Biosafety, Animal Quarantine Agency, Pre-Employment Card Program Implementation Management, 4 National Park Center, Central Bureau of Statistics, Geospatial Information Agency, National Narcotics Agency, INDONESIA WAKAF AGENCY, Watershed Management Center and Protected Forest, National Zakat Amil Agency, National Agency of Drug and Food Control, Natural Resources Conservation Center, Presidential Palace, Indonesian National Army - Navy, Indonesian Palm Oil Farmers Association (APKASINDO), Financial Services Authority. We also have 221 partnership agreements with research and training institutions.



## Regional

At Regional Level, we've partnered with 169 institutions (provincial and district level). We have made 25 partnership agreements with provincial government including East Kalimantan, DKI Jakarta, East Java, Jambi, Bali, West Sumatra, Bangka-Belitung Island, South Sulawesi, Central Sulawesi, and West Kalimantan. We also made 144 partnership agreements with district government.

## Non Governmental Organization

We also collaborate with 147 non-governmental organizations (foundations, associations, organizations, and NGOs) at global, national, and local levels. The collaboration includes scholarships, research, education, and training, as well as the preparation of policy briefs. The global level institutions that we work with are the Indonesia Climate Changes Trust Fund (ICCTF), Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), The World Food Program (WFP), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Education, Audiovisual and Culture Executive Agency (EACEA), Sustainable Development Solutions Network (SDSN) Association, Food, and Agriculture Organization of the United States (FAO), World Health Organization (WHO), Japan Association for Techno innovation in Agriculture, Forestry and Fisheries (JATAFF), Mercy Corps Indonesia Foundation (YMCI). Meanwhile, the national institutions that work with us include the Biodiversity Foundation (KEHATI), the Bhakti Tanoto Foundation, Cendekia Baznas, Pertamina Foundation, the Indonesian Engineers Association, the Indonesian Palm Oil Council (DMSI), the Indonesian Palm Oil Association (GAPKI), the Scout Movement, and the IPB Alumni Association.

## Educational Institutions in Indonesia

We also collaborate with 50 educational institutions (State Universities, Private Universities, and Vocational High Schools) in Indonesia. The collaboration includes research, education and training. These institutions include 27 State Universities (PTN), 22 Private Universities (PTS), and 1 Vocational High School.

## Campus Operation

### IPB SDGs Network (ISN)

We consider the importance of collaboration and partnership to achieve the Sustainable Development Goals. On January 25, 2019, IPB established IPB SDGs Network (ISN) to develop SDG programs and activities. ISN is the hub of all SDG activities within IPB University, covering the four main pillars of SDGs: economic, legal, environmental, and social.

## UN - SDG Accord

Rector of IPB University, Prof Arif Satria, has signed an accord committing to the UN Sustainable Development Goals. The Accord calls upon universities and colleges to embed the SDGs into everything we do - our education, research, leadership, operations, administration, and activities. By signing the SDG Accord, we commit to involving students, academic, professional staff, local communities, and external stakeholders to help achieve the SDGs. It includes collaborating with other institutions and sharing our learning with local and global communities. By signing the Accord, IPB University also reports annually on how it contributes to the SDGs (<https://www.sustainabilityexchange.ac.uk/sdgaccord/>). In 2021, Our progress in quality education selected as a case example in SDG accord report 2021. We continue to innovate the education & curriculum by developing the K-2020 IPB. A Curriculum to reorient learning process by integrating hard skills and soft skills. The implementation of K-2020 promoted a digital transformation in the learning system by implementing virtual learning methods, online attendance, and online learning materials. It also supports digital academic services, including graduation ceremony and student recruitment.





**IPB University**  
— Bogor Indonesia —