IPB University conducts regular energy reviews to identify areas of high energy wastage and improve overall efficiency. Since 2019, IPB has implemented **Carbon Footprint (CFP)** assessments with the most recent cycle covering 2022–2024 to evaluate energy consumption patterns across campus operations. These reviews measure emissions from electricity, transportation, water use, and waste management to pinpoint major inefficiency sources.

The results inform IPB's energy management strategies, guiding targeted actions such as retrofitting buildings with energy-saving systems, expanding solar panel installations (which generated **20.650.000 kWh in 2024**), and optimizing AI-based energy monitoring within smart greenhouses and electric vehicle charging systems. The assessments also support IPB's progress toward carbon neutrality by 2030, ensuring that mitigation measures are data-driven and continuously monitored.

Through these systematic reviews and follow-up interventions, IPB University strengthens its institutional capacity to minimize energy wastage and advance its **Green Campus Masterplan,** aligning with national low-carbon development policies

IPB University
Bogor Indonesia

CARBON FOOTPRINT
IPB UNIVERSITY

Presented by :
Direktorat Kajian Strategis dan Reputasi Akademik
IPB University

RECTOR'S MASSAGE

IPB University (Institut Pertanian Bogor) is strongly committed to reducing its carbon emissions. Here is a consolidated statement regarding the Rector's commitment and the university's efforts:

Prof Arif Satria - (IPB University Rector)

"IPB University is deeply committed to tackling climate change and realizing a sustainable future. As a leading institution in agriculture and life sciences, we recognize our crucial role in not only innovating for the nation but also in pioneering environmental stewardship."

CARBON FOOTPRINT CALCULATOR (INSTRUCTION)

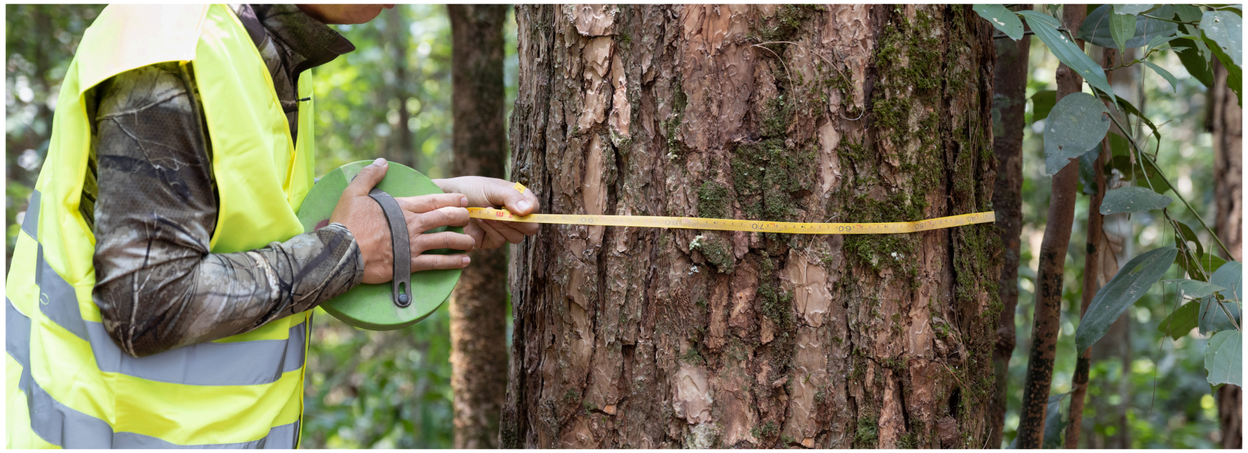
>> Calculator Design and Scope

- This calculator is a tool to help calculate the Carbon Footprint of an organization.
- It must be used in connection with the "Carbon Footprinting 101" Resource Sheet.

>> Procedure

- Step 1: Refer to the "Carbon Footprinting 101 Resource Sheet" for a background on Carbon Footprinting and internationally recognized standards.
- Step 2 (Scope 1 Emissions): Enter Activity Data for Scope 1 Emissions for all years from the base year forward.
- Step 3 (Scope 2 Emissions): Enter Activity Data for Scope 2 Emissions for all years from the base year forward.
- Step 4 (Scope 3 Emissions): Enter Activity Data for Scope 3 Emissions for all years from the base year forward.
- Step 5: Modify the calculator (If Necessary) spreadsheets as needed based on specific requirements.

QUANTIFIED SCOPE



Based on "Carbon Footprinting 101" Resource There's 3 Scope To Quantified For Total Carbon Emission:

SCOPE 1:
COMMUTING

SCOPE 2:
ELECTRICITY

SCOPE 3:
WASTE

SCOPE 1

Transportation per Year (motorcycle)			
Parameter	2022	2023	2024
Jumlah motor masuk	5.547	12.114	14.002
Jarak tempuh per	3,59	3,59	3,59
Carbon	1040,12	2271,54	1690,42

Transportation per Year (car)			
Parameter	2022	2023	2024
Jumlah mobil masuk	2.054	2.930	4.316
Jarak tempuh per	3,59	3,59	3,59
Carbon	770,30	1098,71	1042,17

Transportation per Year (shuttle)			
Parameter	2022	2023	2024
Jumlah Shuttle bus	11	11	11
Total trip per hari	10	10	10
Jarak tempuh per	3,59	3,59	3,59
Carbon	12,78	12,56	12,51

Methodology Explanation:

- Motorcycles and Cars: The carbon emission figures are determined by measuring the annual number of motorcycles and cars entering and exiting the campus gate (*'Jumlah motor/mobil masuk'*). This count is then multiplied by the average distance traveled per vehicle (*'Jarak tempuh per'*) to estimate total mileage and calculate the resulting carbon emissions.
- Shuttle Buses: For campus shuttle buses, the calculation utilizes the fixed number of buses (*'Jumlah Shuttle bus'*), the total trips per day (*'Total trip per hari'*), and the distance traveled per trip (*'Jarak tempuh per'*) to determine the total annual mileage, which is then used to quantify the carbon footprint of the public transport service.

TOTAL SCOPE 1 EMISSION: 2475,1 Ton CO_2

CARBON EMISSION REDUCTION

UNIVERSITY REPUTATION

SUSTAINABILITY ENHANCEMENT

SCOPE 2

Electricity Usage per Year			
Parameter	2022	2023	2024
PLN (kWh)	16.656.000	20.902.000	20.650.000
Carbon	13.991	17.558	17.346

Electricity usage per year

The CO2 emission from electricity = (Electricity usage per year (kWh)/$_{1000}$ × Emissions factor

Methodology Explanation:

The CO2 emission from electricity is calculated by taking the Electricity usage per year (measured in kWh), dividing it by 1000 (to convert kWh into megawatt-hours or to adjust the kWh unit to match the emission factor), and then multiplying the result by the Emissions factor.

TOTAL SCOPE 2 EMISSION:
17,346 Ton CO2

- CARBON EMISSION REDUCTION
- UNIVERSITY REPUTATION
- SUSTAINABILITY ENHANCEMENT

SCOPE 3

Emisi CO2e	=	Berat sampah (ton)	x	faktor emisi	(tCO2e/ton)
Faktor emisi berdasarkan IPC dan DEFRA					
- Landfill	=	0,5		9,94 ton	Berat Sampah (Data Timbulan Sampah IPB Tahun 2022-2024)
- Pembakaran	=	0,8		0 ton	
- Daur Ulang	=	0,1 ->		881,23 ton	
- Pengomposan	=	0,25 ->		387,82 ton	
Emisi karbon	=	emisi landfill + emisi daur ulang + emisi kompos			
	=	(9.94 x 0.5) + (881.23 x 0.1) + (387.82 x 0.25)			
	=	190,048			
2024					
Faktor emisi berdasarkan IPC dan DEFRA					
- Landfill	=	0,5		373,2 ton	
- Pembakaran	=	0,8		0 ton	
- Daur Ulang	=	0,1 ->		28,1 ton	
- Pengomposan	=	0,25 ->		65,2 ton	
emisi		205,71			

Methodology Explanation:
The methodology uses emission factors based on international standards (likely IPCC—Intergovernmental Panel on Climate Change—and DEFRA—UK Department for Environment, Food & Rural Affairs).
The percentages listed represent the Waste Fraction (fraction of total waste handled by that method):

TOTAL SCOPE 3 EMISSION: 205,71 Ton CO2

- CARBON EMISSION REDUCTION
- UNIVERSITY REPUTATION
- SUSTAINABILITY ENHANCEMENT

IPB CARBON EMISSION 2024

IPB university's total annual carbon footprint by adding up emissions from three main sources, following standard reporting categories (Scopes):

01 SCOPE 1: COMMUTING

2475,1 Ton CO_2

+

02 SCOPE 2: ELECTRICITY

17,346 Ton CO_2

+

03 SCOPE 3: WASTE

205,71 Ton CO_2

TOTAL EMISSION : 2968,156 TON CO_2

THANK YOU

COMMITMENT FROM IPB TO A SUSTAINABLE FUTURE!