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Carbon Emission Report

Universitas Muhammadiyah Semarang



Carbon Emission Assessment and Reduction Initiatives

The carbon footprint assessment was conducted based on the UIGM Questionnaire and Guidelines, which are updated annually in alignment with Unimus's ongoing participation in UIGM initiatives. In 2025, Unimus recorded total carbon emissions of 4,159.23 metric tons, with the predominant contribution arising from electricity consumption, accounting for 3,725.03 metric tons. In response, Unimus continues to intensify its efforts to mitigate its carbon footprint. Strategies to reduce emissions from electricity use include expanding the adoption of renewable energy sources, with the institution currently generating approximately 552,000 kWh of renewable energy annually. Furthermore, campus-wide energy conservation campaigns have been systematically implemented to promote more efficient energy use.

Table 1. Scope 1 Carbon Emissions from Transportation Sources at Universitas Muhammadiyah Semarang

Emission Source	Number of Vehicles	Distance (km)	Trips per Day	Days per Year	Emission Factor	Total Emissions
University Cars	25	1	2	240	0.02	2.4
Motorcycles	3,025	1	2	200	0.01	121
Cars (Lecturers)	435	1	2	200	0.02	34.8
Total						158.2

Table 2. Scope 2 Carbon Emissions from Electricity Consumption at Universitas Muhammadiyah Semarang

Emission Source	Electricity Consumption	Emission Factor (kg CO ₂ /kWh)	Total Emissions (kg CO ₂)	Total Emissions (tCO ₂ e)
Electricity Usage	4,434,563	0.84	3,725,032	3,725.03
Generator (Biosolar)	552,000	0.5	276,000	276
Total				4,001.03

Table 3. Summary of Total Carbon Emissions by Scope at Universitas Muhammadiyah Semarang

Scope	Total Emissions (tCO ₂ e)
Scope 1	158.2
Scope 2	4,001.03
Total	4,159.23

Institutional Carbon Emissions

Unimus has demonstrated diligence in reporting our emissions following the guidelines of the GHG protocol. However, Unimus currently only reports on carbon dioxide emissions, overlooking the other six GHG indicators: methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and nitrogen trifluoride. In spite of this, Unimus manages to achieve a comprehensive analysis of our environmental impact through UIGM. This framework provides a broad perspective on Unimus's carbon footprint and supports targeted measures in moving towards sustainability. It reflects Unimus's commitment to developing effective strategies for reducing emissions and advancing sustainability efforts.

Both the UI Green Metric and the GHG Protocol are crucial tools in evaluating the university's impact on the environment. While they differ in their approaches, these frameworks collectively contribute to a thorough understanding of Unimus's ecological footprint. This combined assessment helps guide strategic initiatives for emission reduction and highlights Unimus's dedication to achieving sustainable development and a greener future.

In 2025, Universitas Muhammadiyah Semarang (Unimus) reported a total carbon emission of 4159,23 metric tons, with electrical energy consumption accounting for the largest share at 3725,03 metric tons. As of this publication, Unimus's latest carbon footprint calculations are of 2025 while 206 data is still being processed. Unimus remains dedicated to reducing its carbon footprint by actively increasing the usage of renewable energy on campus. A comprehensive calculation of Unimus's carbon footprint can be accessed through the Directorate of Operations, Facility Maintenance, and Asset Management's website in the following link: [Unimus's Total Carbon Footprint in 2025](#)

Total Renewable Energy = 552,000 kWh

Renewable Energy Sources in Campus

Strategies to reduce emissions from electricity use include expanding the adoption of renewable energy sources, with the institution currently generating approximately 552,000 kWh of renewable energy annually. Furthermore, campus-wide energy conservation campaigns have been systematically implemented to promote more efficient energy use.

Unimus is actively advancing the provision of renewable energy as an alternative energy source through the utilization of biodiesel-fueled generators. In the forthcoming year, the university plans to further enhance its renewable energy capacity by expanding the deployment of solar panels and exploring the integration of wind turbine systems.



Total Carbon Footprint in Unimus

The carbon footprint assessment was conducted based on the UIGM Questionnaire and Guidelines, which are updated annually in alignment with Unimus's ongoing participation in UIGM initiatives. In 2025, Unimus recorded total carbon emissions of 4,159.23 metric tons, with the predominant contribution arising from electricity consumption, accounting for 3,725.03 metric tons. In response, Unimus continues to intensify its efforts to mitigate its carbon footprint. Strategies to reduce emissions from electricity use include expanding the adoption of renewable energy sources, with the institution currently generating approximately 552,000 kWh of renewable energy annually. Furthermore, campus-wide energy conservation campaigns have been systematically implemented to promote more efficient energy use.

