- Please provide the total Scope 1 and 2 carbon emissions in tCO2e (tonnes (t) of carbon dioxide (CO2) equivalent (e). Please see instructions

Solar Generation & Carbon Emission		
Month	**Generation in KWH**	**Carbon Emission in tonnes**
Jan'24	23474	1.9
Fab'24	33877	2.8
Mar'24	44234	3.7
Apr'24	44350	3.7
May'24	44677	3.7
Jun'24	37618	3.1
Jul'24	32841	2.7
Aug'24	31339	2.6
Sep'24	29771	2.5
Oct'24	35202	2.9
Nov'24	27699	2.3
Dec'24	27755	2.3
Total	**412836**	**34.3**

- Scopes 1 emissions are direct emissions occur from sources that are owned or controlled by the organization.
- Scope 2 are indirect emissions due to electricity import.
- Scope 3 covers other indirect emissions that are a consequence of the activities of the organization, but occur from sources not owned or controlled by it.

However, because of data limitations and the lack of a consistent standard for measuring Scope 3 emissions, this report is solely based on Scope 1 and scope 2 emissions.

4.2.1 Scope 1 Emissions

i. Diesel Generators

The institute is equipped with seven diesel generators for the electricity backup.

Electricity Produced (kWh)	Diesel Consumed (litres)	Annual Emissions (Tonnes)*
2,58,218	86,877	232.83

*Diesel produces 2.68 kgs of CO_2 per litre burnt.

ii. Transportation

From the observation, two categories of vehicles that ply at the roads of the institute are: sedans and motorcycles. Data collection and subsequent analysis were done based on these categories. Due to unavailability of outside vehicle data, only vehicles domiciled on the campus, were considered in this report.

The following assumptions were made while estimating carbon emissions from the vehicles.

- All vehicles entering the campus use the main entrance gate.
- The average distance covered by each vehicle is 2.0 kilometres: this is the measured to and from distance between the main gate to the hostel/admin Buildings.

S. N	Vehicle Type	Nos	Emission Factor	Annual Emission
1	Motorcycles	279	0.12761kgCO_2e/km (WRI, 2008)	25.99-ton CO_2e
2	Sedans	108	0.23398kgCO_2e/km (IPCC, 2006)	18.44-ton CO_2e
			Total Emissions	44.43 tonnes

iii. LPG Consumption

LPG is used in the hostel mess and canteen for cooking purposes. The mess contractors use 19kg commercial cylinders for this purpose. The contractors generally do not maintain accounts for LPG consumption data, but based on the interaction, an average annual LPG consumption in the institute is presented below:

Sr. No	Particulars	Observed Value	Unit
1	Annual LPG Consumption	45,600	kgs
2	LPG Emission Factor	2.983	--
3	Emissions	136.02	tonnes

4.2.2 Scope 2 Emissions: Electricity Import

The institute relies heavily on electricity as its primary energy source. Since grid electricity is primarily generated from fossil fuels, it has a significant carbon footprint. The carbon emissions from electricity import are as follows:

Sr. No	Particulars	Observed Value	Unit
1	Electricity Import from grid	27,76,186	kWh
2	GHG Emission Factor for 2023 (India)	0.71*	kgCO2 per kWh
3	Annual emissions	1,971.09	ton CO2e

Source: Central Electricity Authority of India

4.3 Carbon Sequestration from Trees

Estimating the amount of carbon sequestered by a single tree in one year is quite a complex process because it can vary depending on various factors such as the species of the tree, its age, size, and growing conditions. However, according to the Arbor Day Foundation, a mature tree can absorb more than 48 pounds (21.8 kg) of carbon dioxide (CO2) per year through photosynthesis. Some other sources suggest that it can go up to 50 kg per year. For our estimation, we have taken an average of 25 kg of carbon dioxide absorbed by each tree in one year, irrespective of their size, age, and species. The campus has over 9,765 native trees and 4,592 planted trees, with the potential to sequester approximately 358.93 tonnes of CO2 per year.

4.4 Carbon Avoidance from Solar Power Plant

The institute is equipped with a 307-kW grid-connected solar plant, the solar power generation data for year 2024 is estimated to be 3,85,082 kWh. The carbon avoidance solar power plant is presented below.

S. N	Particulars	Observed Value	Unit
1	Total Solar Power Generation in year	3,85,082*	kWh
2	GHGs emission factor	0.71	kgCO2 per kWh
3	**Carbon Avoidance (ton CO2e)**	273.40	tonnes

4.5 Gross and net carbon emissions of an Institute (Year: 2024)

Particulars	Sources/Sink	Value	Unit
A. Scope 1 Emissions	DG Sets	232.83	ton CO2e
	Transportation	44.43	ton CO2e
	LPG	136.02	ton CO2e
	Total A	**413.28**	**ton CO2e**
B. Scope 2 Emissions	Net Electricity Import from grid	1,971.09	ton CO2e
C. Carbon Sequestration	Sequestration from Trees	358.93	ton CO2e
D. Carbon Avoidance	Solar Power Generation	273.40	ton CO2e
	Gross Emissions (A+B)	**2,384.37**	ton CO2e
	Net Emissions (A+B-C)	**2,025.44**	ton CO2e
	Total Carbon Mitigation (C+D)	**631.40**	ton CO2e

4.6 Carbon Intensity

In 2024, the total student strength was 1,834 resulting in an annual carbon intensity of 1.10 tons CO2e per student per year.

Source: Energy Audit Report, 2023-24, Amity University Madhya Pradesh, executed by Enviraj Consultant Private Limited, An ISO 14001:2015 and 5001: 2018 Certified Company.

AMITY UNIVERSITY
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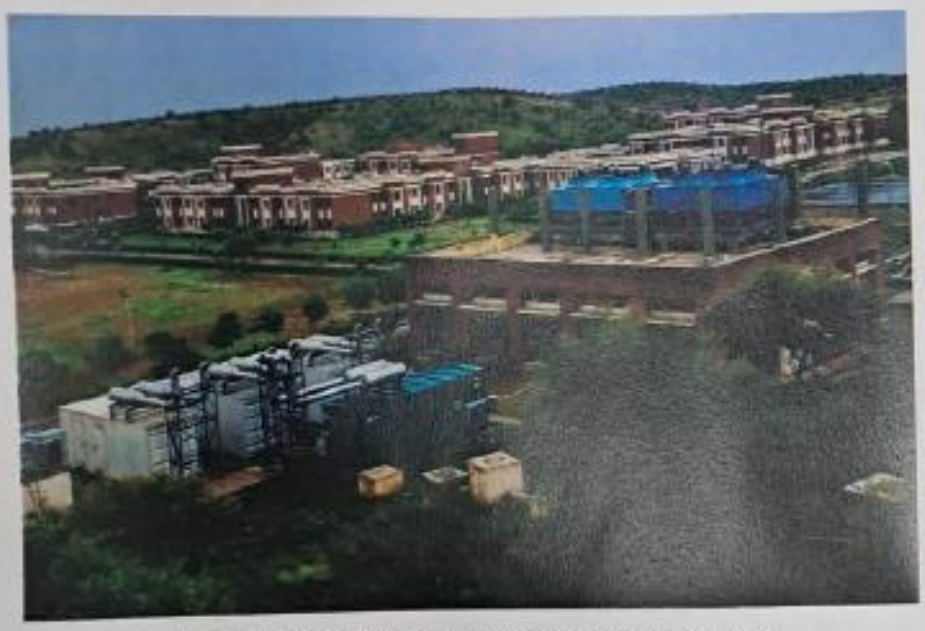
ENERGY AUDIT REPORT (2023-24)



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Registrar
Amity University Madhya Pradesh
Gwalior

AUMP

ENERGY AUDIT REPORT

(2024)

AMITY UNIVERSITY
MADHYA PRADESH
Established vide Government of Madhya Pradesh Act No. 27 of 2010

Amity University
Madhya Pradesh, Gwalior

Submitted by:

enviraj
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Enviraj Consulting Private Limited
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January, 2025

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This is to certify that

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