Central University of Himachal Pradesh

हिमाचल प्रदेश केंद्रीय विश्वविद्यालय

(NAAC-Accredited: A+ with CGPA of 3.42)

Internal Quality Assurance Cell

आन्तरिक गुणवत्ता आश्वासन प्रकोष्ठ

धर्मशाला, ज़िला काँगड़ा, हि.प्र.- 176215

Carbon Footprint Report

(Academic Session 2025 – 2026)

(May 2026)

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Terms Used

Abbreviations	Full Form
GHG	Greenhouse Gases
CO_2e	Carbon Dioxide Equivalent
Scope 1	Direct Emissions
Scope 2	Indirect Emissions
CUHP	Central University of Himachal Pradesh

Prepared By: Er Abhimanyu Sharma, JE (Civil) & Er. Vineet Kumar JE (Electrical)

Checked By: Er Rishav Sharma, SDO

Verified By: Er. Puneet Sharma, Executive Engineer

Approved By: Prof. Mohinder Singh, Director, IQAC

1. Sustainability at Central University of Himachal Pradesh

The Central University of Himachal Pradesh is progressively strengthening its commitment to sustainability by integrating environmentally responsible practices into its academic, administrative and operational framework. Situated in the ecologically sensitive Himalayan region, the University recognises its responsibility to preserve natural resources and promote sustainable development.

Building on its ongoing efforts, the University has initiated measures to reduce its environmental footprint through energy conservation, responsible resource utilisation, and the digital transformation of administrative processes. Efforts to minimise paper use, optimise electricity consumption, and promote environmentally conscious behaviour among stakeholders are key components of its sustainability approach.

The University also encourages plantation drives, green campus initiatives and awareness programmes that actively involve students, faculty, and staff. Academic engagement with sustainability is reflected in teaching and research activities that address environmental protection, biodiversity conservation, and climate-related challenges, particularly relevant to the Himalayan ecosystem.

In alignment with national priorities and global sustainability frameworks, including the United Nations Sustainable Development Goals (SDGs), the University is gradually working towards structured environmental management practices. Initial steps towards monitoring resource consumption and assessing environmental impact are being strengthened to support informed decision-making.

Central University of Himachal Pradesh aspires to transition towards a low-carbon and resource-efficient campus by enhancing sustainability practices, encouraging stakeholder participation and building institutional capacity for environmental stewardship. These efforts form the foundation for developing a comprehensive carbon footprint assessment and long-term sustainability strategy.

2. Objective of the Report

To assess the carbon footprint of CUHP for 2025–26 and identify opportunities for emission reduction.

3. Reporting Period

The reporting period covers April, 2025 to March, 2026.

4. Scope and Boundary

Scope 1: Scope 1 includes direct emissions from diesel consumption in DG sets. Scope 2: Indirect emissions from purchased electricity across campuses.

5. Methodology for Reporting Year 2025-26

The carbon footprint assessment of the Central University of Himachal Pradesh has been conducted for the reporting period **April 2025 to March 2026**, adopting a systematic, data-driven, and standards-aligned approach in accordance with established greenhouse gas (GHG) accounting practices.

The methodology is based on internationally recognised frameworks, including the Intergovernmental Panel on Climate Change (IPCC) and the World Resources Institute (WRI) guidelines, ensuring transparency, consistency, and comparability of emissions data.

For the 2025–26 reporting year, activity data have been collected from relevant university units and operational facilities. This includes:

- Electricity consumption (kWh) from purchased grid power
- Diesel consumption (litres) in DG sets at Shahpur Campus and VC Secretariat
- Other fuel-based activities, where applicable

The data has been compiled and verified using institutional records, including electricity bills, fuel logs, and administrative reports, to ensure accuracy and reliability.

Emissions have been calculated using a structured spreadsheet-based approach, in which activity data is multiplied by emission factors appropriate to the Indian context. The emission factors have been sourced from credible authorities, including the Central Electricity Authority (CEA) and IPCC guidelines.

The current assessment includes:

- **Scope 1 emissions**: Direct emissions from diesel consumption in DG sets and other on-campus fuel use
- **Scope 2 emissions**: Indirect emissions from purchased electricity consumption

Scope 3 emissions (such as commuting, waste, and procurement) have not been included in this assessment due to data availability and measurement limitations, but may be incorporated in future reporting cycles.

This assessment establishes a baseline for greenhouse gas emissions for the year 2025–26 and provides a foundation for tracking future performance, identifying emission hotspots, and supporting the University's transition towards a low-carbon campus.

6. Energy Efficiency and Emission Reduction Initiatives

The Central University of Himachal Pradesh has undertaken several measures to improve energy efficiency and reduce electricity consumption across its campuses. These initiatives directly help reduce Scope 2 emissions associated with purchased electricity.

Energy Efficiency Measures

i. Transition to Energy-Efficient Lighting

The University has undertaken a systematic transition from conventional lighting systems to energy-efficient alternatives. CFLs and other traditional lighting fixtures have been replaced with LED lighting across campus facilities. Additionally, High-Pressure Sodium Vapour (HP-SV) and Metal Halide (HP-MH) streetlights have been replaced with LED-based systems. BLDC fans have also been installed to further enhance electricity savings.

ii. Electricity-Based Energy System

The University primarily relies on electricity for its energy needs and does not use coal, firewood, or other solid fossil fuels for energy generation within campus operations. This reduces direct emissions from conventional fuel sources.

iii. Energy-Efficient Building Design

Campus infrastructure has been designed to maximise natural lighting and ventilation. This reduces dependence on artificial lighting during daytime hours and contributes to overall energy conservation.

iv. Energy Monitoring and Management

Individual electricity meters have been installed for different buildings to enable accurate monitoring of energy consumption. The University is progressively moving

towards structured energy management practices, including tracking and analysis of consumption patterns to support data-driven decision-making.

v. **Awareness and Behavioural Practices**

Regular awareness initiatives are conducted to promote energy conservation among students, faculty, and staff. Practices such as switching off lights, fans, and electronic devices when not in use are actively encouraged and widely followed.

vi. **Efficient Use of Electrical Equipment**

Electrical appliances, such as computers, laboratory equipment, lighting systems, and charging devices, are used responsibly. Users are encouraged to switch off power sources when equipment is not in use to minimise unnecessary energy consumption.

vii. **Maintenance and Equipment Optimisation**

A regular maintenance schedule is followed for DG sets, pumps, fans and IT equipment to ensure optimal performance and energy efficiency. Outdated electronic equipment is gradually replaced with energy-efficient alternatives, and appropriate operating conditions (such as ideal temperature settings) are maintained to enhance efficiency and lifespan.

7. Water Conservation and Resource Efficiency Initiatives

The Central University of Himachal Pradesh recognises the importance of responsible water management, particularly given its location in the ecologically sensitive Himalayan region. The University has undertaken several initiatives to promote water conservation and reduce overall water consumption across its campuses.

Key Initiatives

i. **Efficient Water Usage Practices**

The University promotes responsible water usage among students, faculty and staff through regular awareness initiatives. Practices such as avoiding water wastage, timely repair of leakages and mindful consumption are actively encouraged.

ii. **Infrastructure-Based Conservation Measures**

Efforts are made to optimise water usage through improved plumbing systems, controlled water flow mechanisms and periodic maintenance of water supply infrastructure to prevent losses.

iii. **Awareness and Community Engagement**

The University observes environmental events, such as World Water Day, to raise awareness of water conservation. Students and faculty are encouraged to participate in campaigns and activities that promote sustainable water practices.

iv. Integration with Sustainability Goals

Water conservation efforts are aligned with broader sustainability objectives, including resource efficiency and environmental protection. These initiatives complement the University's efforts to reduce its overall environmental footprint.

8. Future Scope

The University aims to further strengthen its water management practices by exploring:

- Installation of water-efficient fixtures (e.g., low-flow taps, aerators)
- Rainwater harvesting systems
- Monitoring and assessment of water consumption patterns

9. Computed Results– 2025–26

i. Scope 1 Emission – Diesel Consumption (DG Sets-Monthly):

Table 9.1: Monthly Diesel Consumption (Litres)

Month	Shahpur (L)	VC Secretariat (L)	Total (L)
Apr-25	272	0	272
May-25	284	70	354
Jun-25	284	70	354
Jul-25	274	70	344
Aug-25	288	0	288
Sep-25	284	0	284
Oct-25	289	70	359
Nov-25	283	0	283
Dec-25	289	0	289
Jan-26	284	70	354
Feb-26	0	0	0
Mar-26	278	70	348

Total Diesel Consumption: 3529 litres

Table 9.2: Scope 1 Emission Calculation

Activity	Source	Consumption	Unit	Emission Factor	CO_2 (tonne)
Stationary Combustion	Diesel	3529	litre	2.64	**9.32**

Total Scope 1 emissions from diesel consumption in DG sets have been estimated as **9.32 tCO_2e** for the reporting year 2025–26.

ii. Scope 2 – Electricity Consumption Monthly Electricity Consumption (kWh)

Table 9.3: Monthly Electricity Consumption (kWh)

Month	Shahpur	VC	Parisar-I	Parisar-II	Admin	Total (kWh)
Apr-25	15170	1957	242	1102	1482	19953
May-25	16810	1868	186	1125	1317	21306
Jun-25	21550	1809	138	1708	1830	27035
Jul-25	20820	1090	198	1523	1805	25436
Aug-25	21870	1168	177	1114	1849	26178
Sep-25	19520	1477	151	1354	1351	23853
Oct-25	18500	790	175	1573	1438	22476
Nov-25	13630	1308	174	941	1526	17579
Dec-25	15700	3102	134	1063	2088	22087
Jan-26	21410	3102	194	1635	3234	29575
Feb-26	12830	3585	238	1420	4051	22124
Mar-26	16040	2580	263	1453	2612	22948
Total Electricity Consumption Cost ₹6 per kWh)						Rs 16,83,300/-

Total Electricity Consumption: 280550 kWh

Table 9.4: Scope 2 Emission Calculation

Activity	Fuel Type	Consumption	Unit	Emission Factor	CO_2 (tonne)
Purchased Energy	Electricity	280550	kWh	0.82	**230.05**

Total Scope 2 emissions from purchased electricity consumption have been estimated as **230.05 tCO_2e**.

iii. Total Emission Summary – 2025–26

Emission Type	Value (tCO_2e)
Scope 1	9.32
Scope 2	230.05
Total	**239.37**

The total carbon footprint of the University for the reporting year 2025–26 is estimated at **239.37 tCO_2e**, with electricity consumption (Scope 2) being the dominant source of emissions.

A significant proportion of emissions is attributable to purchased electricity, underscoring the need for improved energy efficiency and greater adoption of renewable energy.

10. GHG Emissions Distribution (Scope 1 vs Scope 2)

i. Bar Chart: Emissions by Scope

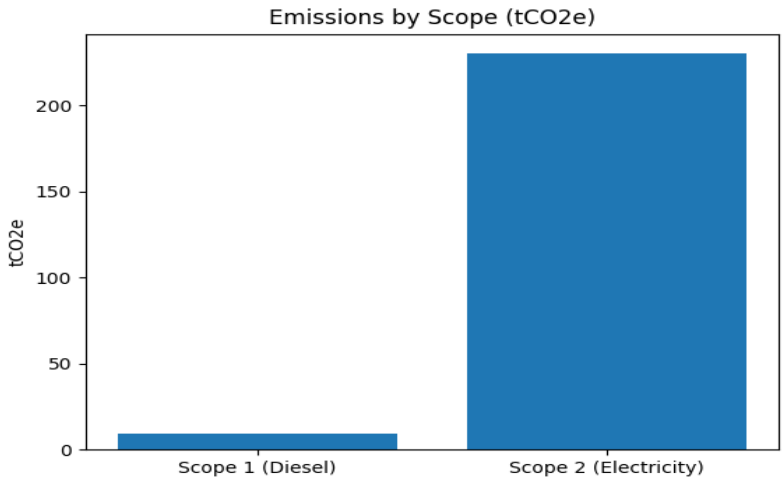

Figure 10.1: Emissions by Scope (Scope 1 and Scope 2)

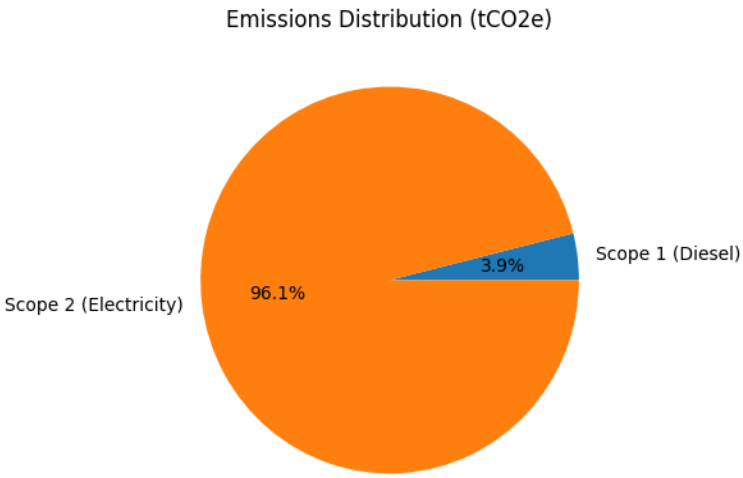

Figure 10.2: Emissions Distribution (Scope 1 vs Scope 2)

11. Limitations and Assumptions

The carbon footprint assessment for the reporting period April 2025 to March 2026 is based on data obtained from electricity bills and diesel consumption records of the Central University of Himachal Pradesh. The data is assumed to be accurate and representative of institutional operations; however, minor variations may occur due to manual recording and aggregation processes.

Electricity consumption data has been derived from meter readings and utility bills across different campuses and facilities. While these sources are considered reliable, certain limitations, such as differences in meter calibration and billing adjustments, may affect the precision of the data.

Emission factors used to calculate Scope 1 (diesel consumption) and Scope 2 (purchased electricity) emissions have been sourced from recognised authorities, including the Central Electricity Authority (CEA) and IPCC guidelines. These factors are considered appropriate for the Indian context, although slight variations may arise due to regional differences in energy mix and operational conditions.

The current assessment is limited to Scope 1 and Scope 2 emissions only. Scope 3 emissions, including transportation, waste generation, procurement, and commuting, have not been included due to limited data availability and monitoring.

This assessment represents a baseline estimation of greenhouse gas emissions for the year 2025–26 and provides a foundation for future assessments with improved data coverage and expanded scope.

12. Analysis of GHG Emissions

The analysis of greenhouse gas (GHG) emissions for the reporting period April 2025 to March 2026 indicates that total emissions are predominantly driven by purchased electricity (Scope 2), while direct emissions from diesel consumption (Scope 1) contribute a relatively smaller share.

Scope 2 emissions account for the majority of the University's carbon footprint, highlighting the significant dependence on grid-based electricity across academic, administrative, and

residential facilities. In comparison, Scope 1 emissions arising from diesel consumption in DG sets remain limited and are primarily associated with backup power requirements.

The findings suggest that improving energy efficiency and reducing electricity consumption can play a critical role in lowering overall emissions. Measures such as the adoption of LED lighting, the installation of BLDC fans, and optimised energy-use practices are expected to contribute to emissions reductions over time.

This analysis provides a clear understanding of key emission sources and serves as a basis for identifying priority areas for future carbon reduction strategies.

13. Progress and Ongoing Initiatives

The Central University of Himachal Pradesh has undertaken several initiatives to improve its environmental performance and reduce its carbon footprint. Key ongoing efforts include:

- Gradual transition towards energy-efficient technologies, including LED lighting and BLDC fans
- Periodic energy conservation practices and internal monitoring of electricity consumption
- Increasing adoption of digital processes to reduce paper usage
- Promotion of environmentally responsible practices, including plantation drives and green campus initiatives

The University aims to further strengthen these initiatives by exploring renewable energy options and structured sustainability planning in the coming years.

14. Recommendations and Strategic Focus for 2026–27

Key Aims of the Report

- To quantify Scope 1 and Scope 2 greenhouse gas emissions for the Central University of Himachal Pradesh for the reporting period April 2025 to March 2026.
- To establish a baseline carbon footprint for the University to enable future comparison and performance tracking.
- To identify key emission sources, particularly electricity consumption, and assess opportunities for efficiency improvement.
- To evaluate ongoing sustainability measures and identify gaps for further enhancement.

- To propose practical and actionable strategies for reducing emissions and improving resource efficiency.

This assessment serves as a foundation for continuous improvement and supports the University's long-term goal of developing a sustainable and low-carbon campus.

Recommendations for 2026–27

Energy Efficiency Enhancement

- Expand the use of energy-efficient technologies such as LED lighting and BLDC fans across all campuses.
- Strengthen energy conservation practices through regular monitoring and optimisation of electricity usage.

Renewable Energy Adoption

- Explore the installation of solar power systems to reduce dependence on grid electricity.
- Assess the feasibility of integrating renewable energy into campus operations in a phased manner.

Diesel Consumption Reduction

- Minimise reliance on DG sets by improving power reliability and optimising backup usage.
- Explore alternative and cleaner energy solutions for backup power in the long term.

Digitalisation and Paperless Systems

- Promote digital platforms for academic and administrative processes to reduce paper consumption.
- Strengthen e-governance practices across departments.

Green Campus and Biodiversity Initiatives

- Continue plantation drives to enhance green cover within campuses.
- Promote environmentally sustainable campus practices suited to the Himalayan ecosystem.

Water Resource Management

- Encourage efficient water usage and regular monitoring of water consumption.

- Explore rainwater harvesting and water-efficient fixtures in future infrastructure planning.

Energy Monitoring and Data Management

- Strengthen metering systems for improved tracking of electricity consumption across buildings.
- Develop a centralized data system for better analysis and reporting.

Awareness and Stakeholder Engagement

- Conduct awareness programmes on energy conservation and sustainability for students and staff.
- Encourage participation in environmental initiatives and responsible resource usage.

Environmental Audits and Reporting

- Conduct periodic energy and environmental audits to assess performance and identify improvement areas.
- Use audit findings to refine sustainability strategies and institutional policies.

Scope 3 Emissions (Future Scope)

- Initiate efforts to assess Scope 3 emissions, including transportation, waste, and procurement activities.
- Develop systems for comprehensive data collection in future reporting cycles.

निदेशक
Director
आंतरिक गुणवत्ता सुनिश्चयन प्रकोष्ठ
Internal Quality Assurance Cell
हिमाचल प्रदेश केंद्रीय विश्वविद्यालय
Central University of Himachal Pradesh
कैम्प कार्यालय, धर्मशाला, जिला कांगड़ा (हि.प्र.)–176215
Camp Office, Dharamshala, District Kangra (H.P.)-176215

2. (JE-I)

3.
सहायक अभियंता (सिविल)
Assistant Engineer (Civil)
हिमाचल प्रदेश केन्द्रीय विश्वविद्यालय
Central University of Himachal Pradesh
धर्मशाला (हि.प्र.) Dharamshala (H.P.)
पिन कोड / Pin Code-176215

4.
अधिशाषी अभियंता
Executive Engineer
हिमाचल प्रदेश केंद्रीय विश्विविद्यालय
Central University of Himachal Pardesh
धर्मशाला (हि.प्र) Dharamshala (H.P.)
पिन कोड / Pin Code-176215