CARBON FOOTPRINT REPORT

Reporting Period: FY 2023-24 (1 Apr 2023 to 31 Mar 2024)

GD GOENKA UNIVERSITY

Contents

1.0 Terms used

Abbreviations	Full Form
CFP	Carbon Footprint
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
BY	Base Year (considered 2021-22)
AY	Assessment year for reporting period (Financial year)
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel on Climate Change
Kg	Kilograms
$MTCO_2e$	Metric Tons of CO_2 Equivalent
LPG	Liquefied Petroleum gas
GDGU	GD Goenka University

2.0 INTRODUCTION

A carbon footprint report is an essential tool for universities aiming to address environmental challenges and demonstrate a commitment to sustainability. Universities are microcosms of society, often encompassing a wide range of activities that contribute to greenhouse gas (GHG) emissions, including energy consumption, transportation, construction, and waste management. By quantifying these emissions, a carbon footprint report provides a clear picture of the environmental impact of campus operations. This data allows institutions to identify areas of inefficiency and prioritize actions to reduce emissions, paving the way for more sustainable practices.

Such reports also align universities with global efforts to combat climate change, such as the United Nations' Sustainable Development Goals (SDGs) and the Paris Agreement. As centers of education and research, universities have a unique responsibility to lead by example and inspire broader societal changes. A robust carbon footprint report not only helps institutions measure progress toward their sustainability goals but also supports the development of innovative solutions that can benefit communities beyond the campus. By addressing their carbon footprint, universities can directly contribute to reducing global emissions while fostering a culture of environmental awareness among students, faculty, and staff.

The benefits of a carbon footprint report extend beyond environmental stewardship. In today's competitive landscape, sustainability is a key factor influencing decisions made by students, faculty, and funding organizations. Demonstrating a commitment to reducing emissions enhances the university's reputation, attracting environmentally conscious individuals and securing partnerships or grants aimed at promoting sustainability. Furthermore, regulatory frameworks and local or national climate policies increasingly require organizations to monitor and mitigate their environmental impact. A carbon footprint report ensures compliance with these requirements and positions the institution as a proactive leader in climate action.

Moreover, integrating findings from a carbon footprint report into educational programs and research initiatives amplifies its impact. Universities can use the data to inform curriculum design, conduct research on climate solutions, and provide students with hands-on learning opportunities in sustainability practices. This approach not only enriches the educational experience but also equips future leaders with the knowledge and skills needed to address environmental challenges. By regularly

Assessing their carbon footprint and implementing sustainable solutions, universities can create a lasting legacy of environmental responsibility while driving meaningful change on a global.

3.0 SUSTAINABILITY COMMITMENT FROM GDGU

GD Goenka University (GDGU) demonstrates a strong commitment to sustainability through various initiatives and recognitions. The university actively promotes responsible consumption and production, aligning with Sustainable Development Goal 12 (SDG 12). This involves encouraging sustainable practices across multiple sectors and fostering environmentally conscious choices among consumers.

In recognition of its sustainability efforts, GDGU has received notable accolades. The university was awarded the "Diamond Badge" by Green Ranking 2024, reflecting its dedication to responsible practices and environmental stewardship.

Additionally, GDGU has been acknowledged as a top institution for its unwavering commitment to sustainability, further underscoring its role in promoting sustainable development within the educational sector.

Through these initiatives and recognitions, GD Goenka University continues to contribute significantly to global sustainability efforts, setting a benchmark for responsible practices in higher education.

4.0 OBJECTIVES:

- Calculate the Scope 1, Scope 2, and Scope 3 carbon emissions for all activities conducted on the GDGU campus during the financial year 2023-24.
- Break down and evaluate the individual components within each emissions category.
- Compare the carbon emissions across different categories with those of the previous year or a baseline year to identify changes.
- Assess the impact of changes in carbon emissions for each scope category and determine the key factors driving these variations.
- Highlight areas for improvement to further advance GDGU's sustainability performance.
- Provide an objective overview of the university's performance during the assessment year, covering all three emission scopes, with a detailed analysis of trends and underlying causes to guide leadership decisions for enhancing the sustainability program.

5.0 **REPORTING PERIOD**: FY 2023-24 (1 Apr 2023 to 31 Mar 2024)

- Performance for the current reporting period (FY 2023 - 24) is reviewed against the values of the previous reporting year FY 2022-23 & FY 2021-22.
- Year 2021-2022, being a most close to normal operations, is considered as the base year to undertake analysis and reflect on the deviations from the base year values

6.0 SCOPE AND REPORTING BOUNDARY:

a) **Physical boundary**: All activities including academic and non-academic activities based out of the GDGU Campus located at Gurugram - sohna road, Sohna, Gurugram, Haryana-122103

b) Operational boundary

Scope 1 Direct GHG emissions from:

i. Captive power generation activities including the renewable power and the power from the combustion of fossil fuels (HSD) in stationary source of electricity generators, LPG consumption in hostels, canteen & laboratories
ii. Combustion of fuels in mobile sources - GDGU owned & controlled vehicles and the fuel used for the horticulture activities
iii. Fugitive emissions from Refrigeration/air-conditioning equipment installed and operated

Scope 2 Indirect emissions from:

i. Purchased electricity including renewable and non-renewable power

Scope 3 Other Indirect GHG emissions from:

i. Commuting of Teaching Staff, Non-Teaching Staff, Students and Sub-contractors.
ii. Business Air travel and associated hotel stay
iii. Material procurement, consumption and disposal.
iv. Waste management and disposal.
v. Upstream and downstream activities

7.0 DEPLOYED METHODOLOGY:

GDGU is committed to making to having a sustainable campus, and as a first step in that direction has achieved EHS certification. The comprehensive EHS Policy promotes environment friendly & low emission practices in areas of water, energy, waste, habitat protection etc. One such practice is assessing carbon footprint of its activities and undertake initiatives to reduce the carbon foot print aiming to becoming carbon neutral campus. Cross functional team including teaching & non-teaching staff and student community representatives is engaged in deployment of the identified management programs and monitoring the same to ensure an ownership and motivation to keep the CFP initiatives a sustained effort towards being a Carbon Neutral Campus.

Use standardized emission factors from credible sources such as the IPCC Guidelines, DEFRA, or local regulatory bodies.

Convert activity data (e.g., liters of fuel, kWh of electricity) into carbon dioxide equivalent (CO_2e) emissions.

Use location-specific emission factors for electricity consumption to account for variations in grid mix.

Calculate Total Emissions

For each scope, calculate the total emissions using the formula:

Carbon Emissions (CO_2e) = Activity Data × Emission Factor

Aggregate the emissions for all sources within each scope to determine the university's overall carbon footprint.

Analyze Trends and Changes

Compare the results with previous years or a baseline year to identify trends and measure progress.

Evaluate changes in emissions for each scope and determine contributing factors (e.g., increased energy use, operational changes, or new sustainability initiatives).

Key steps in the Carbon Footprint Journey:

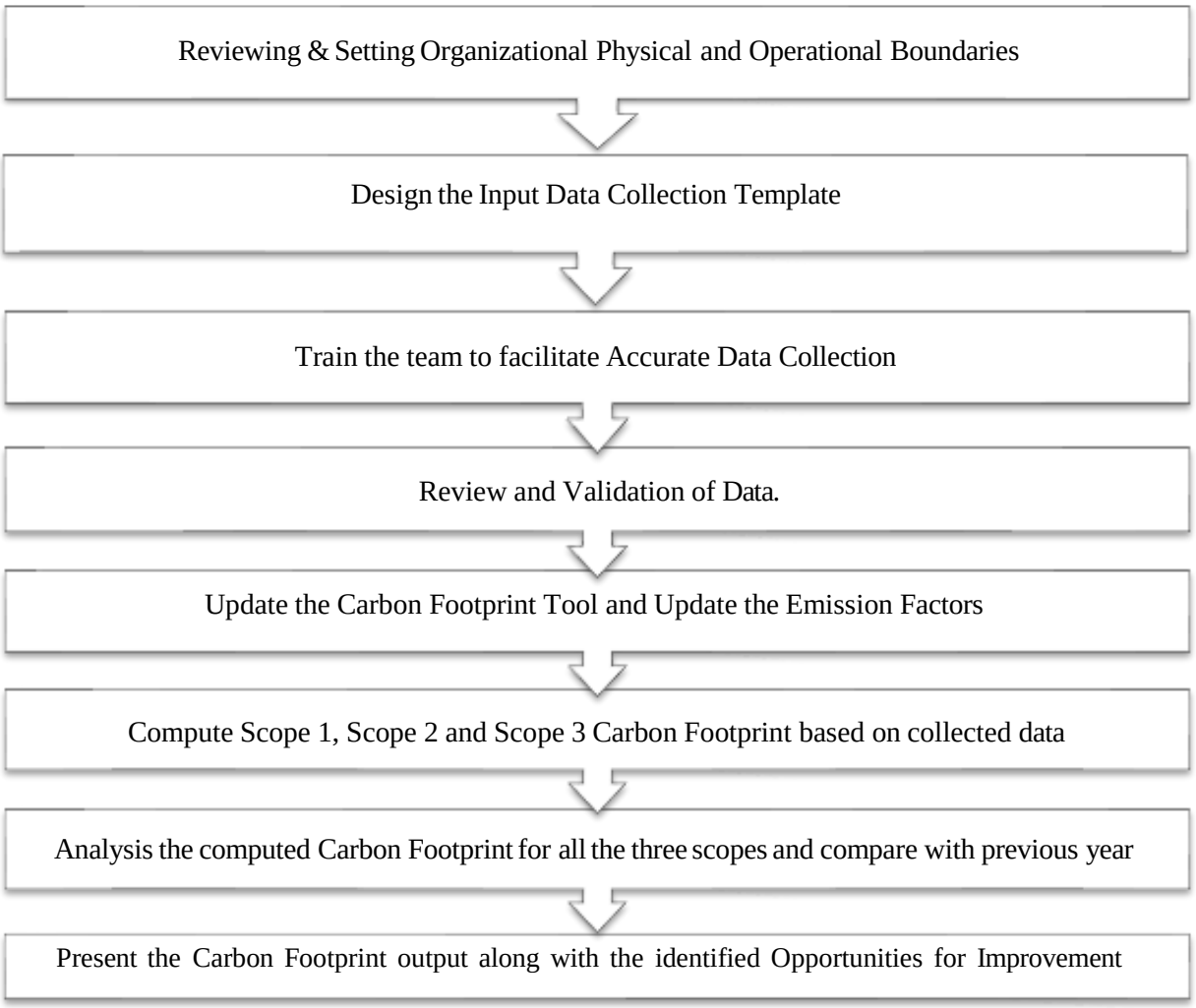


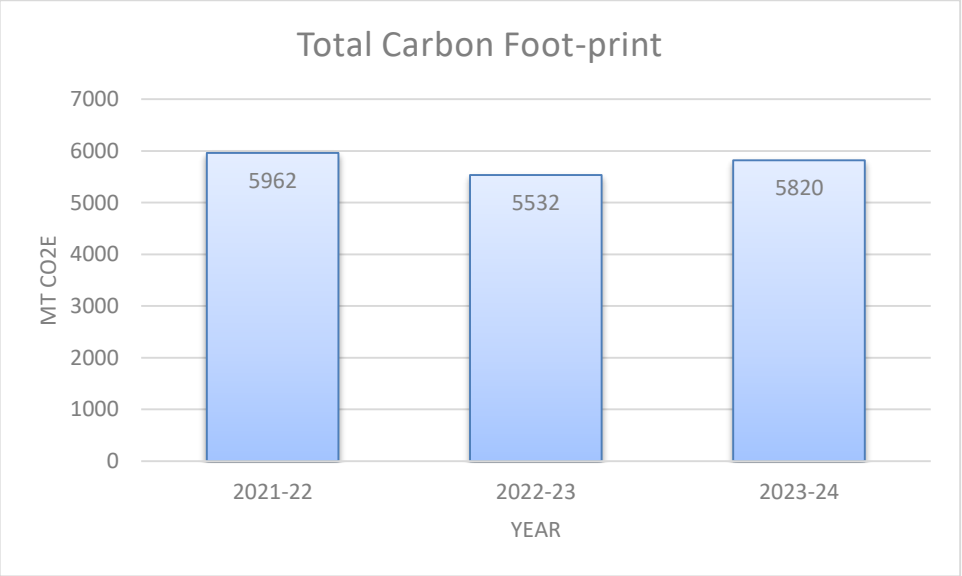
Figure 1: Flowchart Showing Adopted Methodology for Estimation of Carbon Footprint

8.0 COMPUTED RESULT

Computed values of the CFP for Scope 1, Scope 2 & Scope 3 for previous three years.

GHG Emissions	Scope 1	Scope 2	Scope 3
MT CO_2e (2021-22)	1502	3872	588
MT CO_2e (2022-23)	1519	3483	530
MT CO_2e (2023-24)	**1559**	**3696**	**565**

The calculated value is derived using emission factors specific to the Indian context, sourced from the India GHG Protocol and methodologies published by IPCC, WRI, DEFRA, and the GHG Protocol. The carbon footprint assessment follows globally established protocols and adheres to the International ISO 14064 standards.

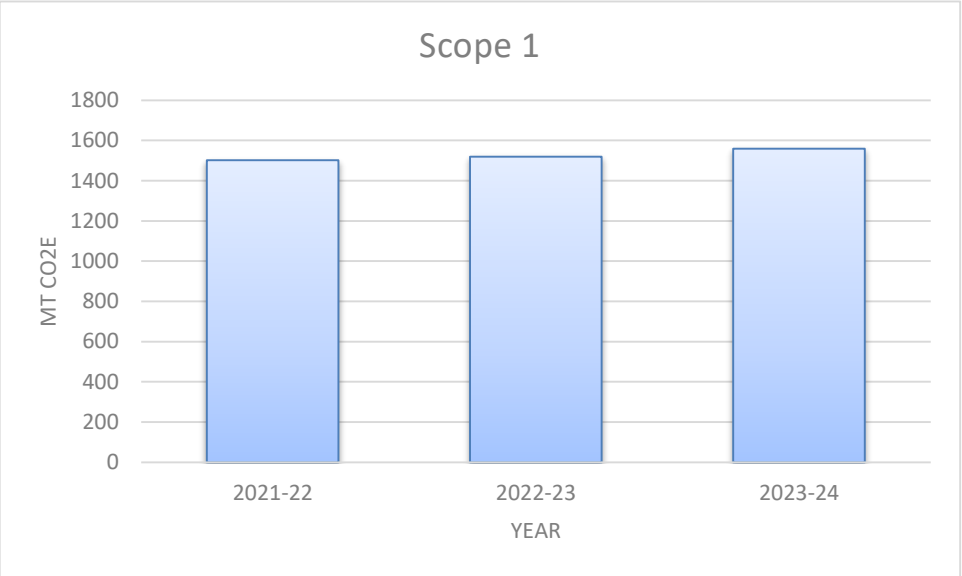


Comparing the cumulative value of the Carbon Foot-print for all Scope 1, 2, & 3 together, there is a **2.5% reduction in the cumulative CFP as compared to the base year 2021-22.**

9.0 ANALYSIS OF THE GHG EMISSIONS

9.1 SCOPE 1 GHG EMISSIONS

- **3.5% Increase in Scope 1 emissions** for FY 2023-24 from base year FY 2021-22 could be achieved in spite of additional lead for the HVAC on account of new facility (Hostels) added during the year. The increase reflects due to 37.5% increase in emissions due to business travel.



Contributing components of Scope 1 Emission

- **Fuel used** 7.5% increase in the CO_2e emissions from the base year could be achieved on account of reduced consumption of fossil fuel for the captive power generation.
- **Business travel:** 37.5% increase in the CO_2e emissions from the base year was observed on account consumption of fossil fuel for local Business Travel using company owned and controlled vehicles
- **HVAC:** An 8% decrease in the CO_2e emissions from the base year was observed on account increased capacity on account of electrification HVAC (water heater in hostels) infrastructure deployed for the increased built-up area (hostels) at the university.

	Year		
Category	**2023-24**	**2022-23**	**2021-22**
Fuel (MT CO2e)	694	632	646
Business Travel (MT CO2e)	238	212	173
HVAC (MT CO2e)	627	675	683
Total (MT CO2e)	**1559**	**1519**	**1502**

9.2 SCOPE 2 GHG EMISSIONS

Scope 2 accounts for the indirect GHG emissions resulting from the generation of electricity which is subsequently purchased and consumed by the university.

A 4.5% reduction in the Scope 2, CO_2 equivalent emission was obtained on account of reduced overall power consumption and transition to cleaner power during the assessment period as against the base year value for the same criteria.

Further, as part of the sustainability program, leadership team at GDGU is evaluating the options to further reduce the dependence on grid power through:

- Power Purchase agreement and sourcing of green power from DHBVN
- Although 4% of total required electricity is generated through solar but still feasibility of setting up a captive **Solar Power Generation** facility at the campus.

9.3 SCOPE 3 GHG EMISSIONS

Scope 3 emissions are contributed by indirect activities including outsourced upstream & downstream activities and is the second highest CO_2e emission contributor at GDGU.

During the FY 2023-24, a **4% reduction in the overall Scope 3 emissions** could be achieved against the base year FY 2021-22.

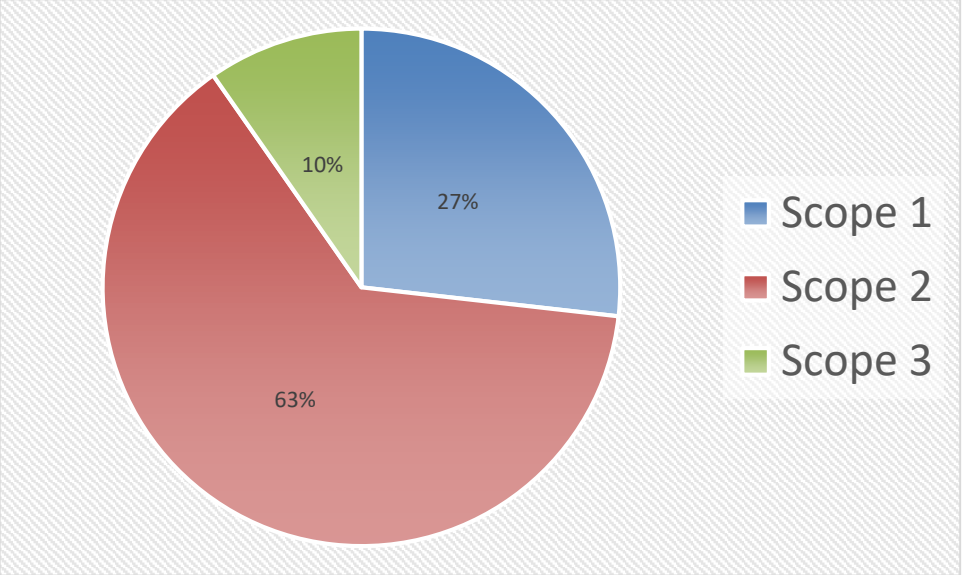
Key contributor to the scope 3 emissions computation include:

	Year		
Category	**2023-24**	**2022-23**	**2021-22**
Air Travel (MT CO2e)	32	46	41
Travel of employee and sub-contractor (MT CO2e)	234	211	254
Material procurement consumption (MT CO2e)	74	56	48
Solid waste management and disposal (MT CO2e)	225	217	245
Total	**565**	**530**	**588**

10.0 OVERALL INFERENCE AND CONCLUSION:

Comparing the cumulative CO2 equivalent emissions generally for over the past three years a general decrease in the overall emissions could be observed.

Overall % contribution by each of the scopes to the cumulative CFP value has stayed almost uniform with a very slight variation over the years.



11.0 LIMITATIONS:

The following limitations were encountered during the implementation of the activity:

- The data used for the carbon footprint calculation was provided by GDGU and is assumed to be accurate.
- Electricity consumption data was sourced directly from electricity meter bills, which are also considered accurate.
- Calibration errors may exist in the monitoring and measuring equipment used by GDGU for data collection.
- Limited availability of India-specific GHG emission factors, including Scope 3 extraction and T&D emission factors, led to reliance on global databases. These values were either adapted to align with India-specific operational practices or calculated using established global methodologies.

12.0 RECOMMENDATIONS AND SUGGESTIONS

Based on the analysis of the computed Carbon Footprint and its comparison with previous years, there is clear evidence of improvement across all sections and scopes of the Carbon Footprint Performance (CFP). To sustain and further enhance these improvements, the following key focus areas are recommended:

- Optimize resource utilization by improving process efficiency and implementing better controls.
- Minimize wastage through the integration of advanced technology and effective human-controlled processes.
- Strive for a water-neutral campus through sustainable water management practices.
- Transition to clean energy sources with the goal of achieving 100% green power.
- Implement “Zero Cost” improvement initiatives involving active participation from students, faculty, and non-teaching staff.
- Adopt energy-efficient technologies to reduce overall energy consumption.
- Increase green cover by planting tree species with a high carbon sequestration potential.
- Engage stakeholders within the campus and surrounding community through structured events like Earth Day, Environment Day, and Safety Weeks.
- Strengthen Integrated Management Systems for effective resource management.
- Adopt and certify water efficiency practices in line with ISO 46001 standards.
- Optimize energy usage through regular energy audits and targeted improvement efforts.
- Promote the use of e-vehicles within the campus to reduce emissions.
- Encourage paperless documentation for official and academic purposes, including online submission of assignments and digital distribution of study materials.
- Install sub-meters to monitor and identify areas with high electricity consumption, enabling targeted optimization measures.
- Assess the impact of major events on GHG emissions, considering factors like increased electricity use, extended operating hours, and reliance on special equipment.