SHIV NADAR

INSTITUTION OF EMINENCE DEEMED TO BE
UNIVERSITY
DELHI NCR

CARBON FOOTPRINT REPORT
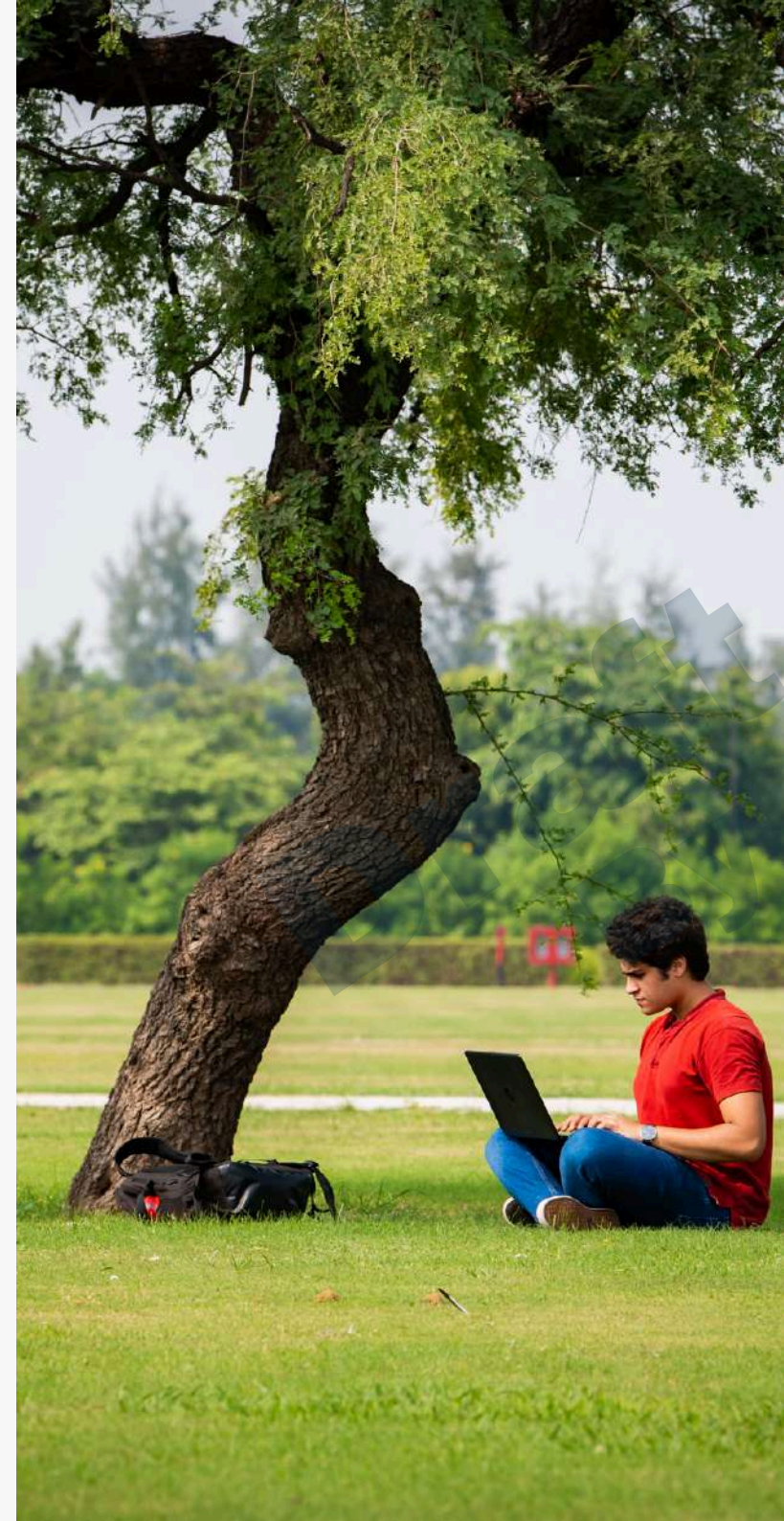
2023-24

Table of Contents

Executive Summary

Shiv Nadar Institution of Eminence is India's premier research university renowned for faculty, talented students, and distinguished alumni. In 2022, it was recognized as an Institution of Eminence (IoE) by the Government of India (one of only four private institutions in the country to achieve this status. Situated in a lush 286-acre campus, it is notable for its sustainable architecture, sprawling of 87.72 acres acres green cover, and long-standing trees, two lakes, all contributing to a rich biodiversity that delights visitors.

This report documents the targeted strategies for reducing their carbon footprint adopted by Shiv Nadar IoE. This effort is vital to its unwavering commitment to sustainability and aligns with India's ambitious goal of achieving net zero emissions by 2070. Over the past years, the university has been actively working on all Sustainable Development Goals (SDGs) and has prepared comprehensive reports on all the SDGs.

The highlights of the university's efforts include:

- A 270% rise in renewable energy generation between FY 2019-20 to FY 2023-24. In 2019-20 it was 384,126 KWh, increasing to 1,421,631.2 KWh in FY 2023-24. This represents an increase of 1,037,505.2 KWh, or a 270% rise.
- A 13.94% reduction in GHG emissions: GHG emissions for FY 2023-24 are 14899.1 mtCO2e, down from 17,314 mtCO2e in FY 2022-23. This represents a decrease of 2,414.9 mtCO2e, or a 13.94% reduction in one year.
- A 64.6% reduction in **Scope 1 emission**: For FY 2022-23, Scope 1 emissions were 2,765 mtCO2e, which decreased to 976.6 mtCO2e in FY 2023-24—an improvement of 1,788.4 mtCO2e, or a 64.6%)
- A 45.8% reduction in **Scope 3 emission**: For Scope 3, emissions dropped from 2,870 mtCO2e in FY 2022-23 to 1,555 mtCO2e in FY 2023-24, resulting in a decrease of 1,315 mtCO2e, or a 45.8% reduction)
- Achievement of bringing its water use per person below NBC BIS guidelines.
- 100% of the wastewater that is processed by the advanced MBR wastewater treatment technology is reused for other campus activities.

While these are commendable successes, Shiv Nadar IoE aims to reach more ambitious net-zero goals. The university cultivates a sustainable culture among its faculty, staff, and students by embracing its dual roles as an educational institution and an environmental steward. By means of these continuous initiatives, the university establishes a standard for environmental responsibility in higher education, opening the door to a more sustainable and greener future for everyone.

Introduction

What is Carbon Footprint?

A carbon footprint represents the greenhouse gas emissions associated with the activities of an entity or individual. The carbon footprint attributable to an investment portfolio measures the proportionate emissions associated with companies held by that portfolio.

The greenhouse gases in our analysis are those covered by the internationally recognized GHG Protocol and include, where available carbon dioxide (CO_2), nitrogen trifluoride (NF_3), methane (CH_4), nitrous oxide (N_2O), hydro fluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). All gases are converted to CO_2 equivalents (CO_2e) to calculate footprint.

There are 3 divisions of GHG emissions on the basis of scopes i.e. Scope 1,2 & 3.

Essentially, scope 1 & 2 are those emissions that are owned or controlled by a company, whereas scope 3 emissions are a consequence of the activities of the company but occur from sources not owned or controlled by it.

Why we need to Disclose our Carbon Footprint?

Disclosure is the essential first step to drive environmental action. 680+ investors with over US$130 trillion in assets and 200+ large purchasers with over US$5.5 trillion in procurement spend are requesting thousands of companies to disclose their environmental data.
There are tangible business benefits to be gained from responding to your stakeholder's requests for disclosure:

- Protect & improve your company's reputation – Build trust through transparency, respond to rising environmental concern among the public.
- Gain a competitive edge when it comes to performance on the stock market, access to capital and winning tenders.
- Track and benchmark progress - Benchmark your environmental performance against your industry peers.
- Uncover risks and opportunities – Identify emerging environmental risks and opportunities.
- Get ahead of regulation – In a world in which mandatory disclosure is gaining momentum, disclosing enables companies to meet reporting rules.
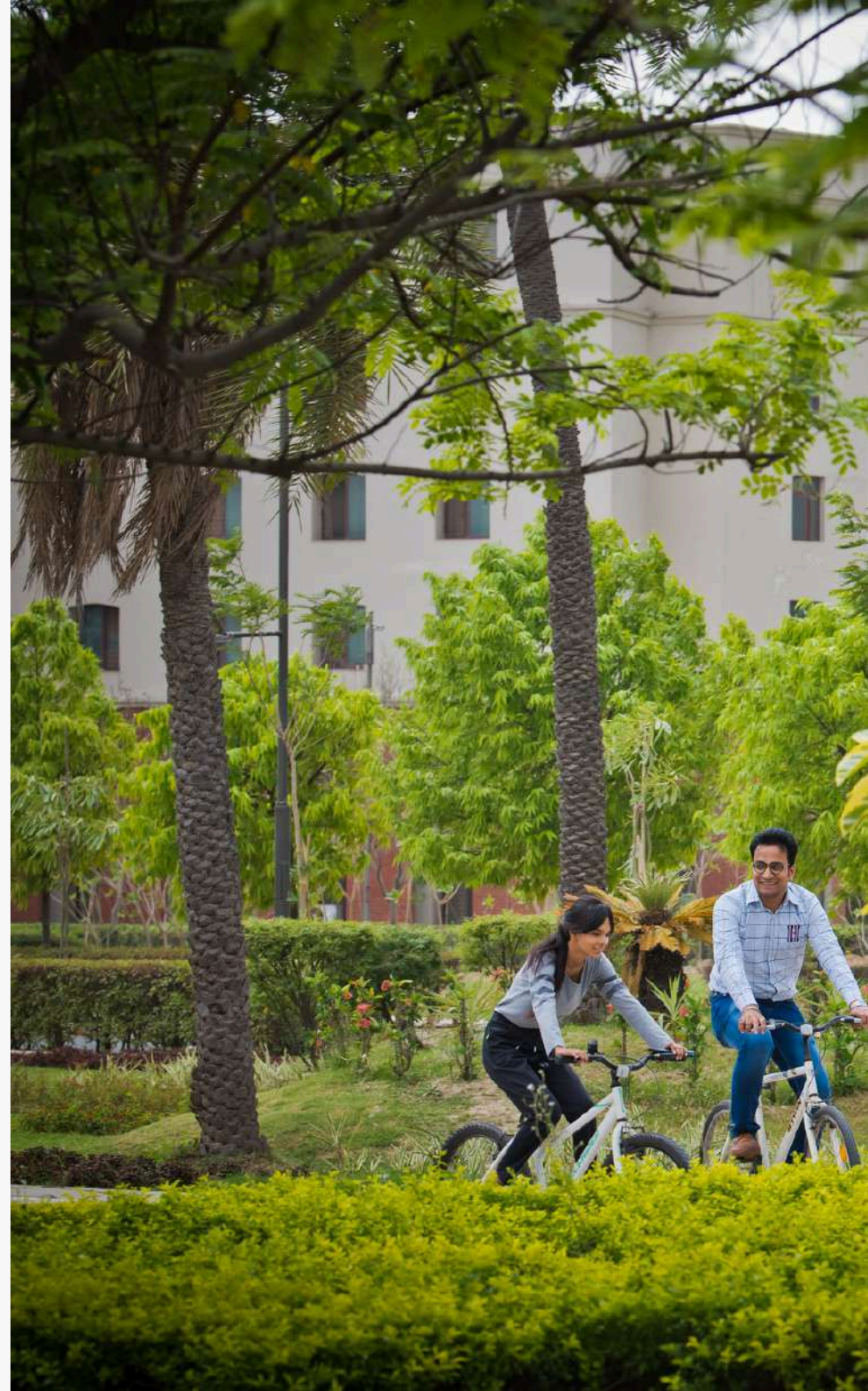
Shiv Nadar (IoE) Sustainability Commitment

Shiv Nadar IoE acknowledges its role in the global fight and has made significant commitments to national and international sustainability efforts.

The university is a part of the National Movement for Net Zero university campuses, U75. This movement of Carbon Neutral Campuses was launched on the occasion of the 75th Anniversary of India's Independence. The movement is inspired by our Hon'ble Prime Minister Narendra Modi's Mission Life and his declaration of making India Net-Zero.

Shiv Nadar IoE is aligned to the national objective of achieving Net Zero by 2075. The university consistently monitors its carbon footprint since 2018-2019. The university regularly discloses its carbon emissions in order to demonstrate its commitment to fighting climate change.

In addition, Shiv Nadar (IoE) is fully committed to advancing **UN Sustainable Development Goals (SDGs)**. Its Reports on all of the 17 SDGs can be found here **https://snu.edu.in/sustainability/**

Sustainability Initiatives Undertaken at the Shiv Nadar (IoE) Campus

Since 2011, Shiv Nadar Institution of Eminence has implemented several sustainable practices on campus.
Below are other key initiatives:

- The campus has a total of 18,638 trees, with 13,548 of these being geotagged. Additionally, there are 119,416 shrubs and 297,963 ground cover plants sequestering most of the carbon emissions.
- The institution uses renewable energy by installing solar panels on its rooftops, reducing dependency on conventional sources of energy and reducing its carbon impact.
- The university has swapped conventional lighting with energy-efficient LED fixtures around campus, resulting in reduced energy usage and longer-lasting performance.
- At Shiv Nadar IoE buildings are IGBC& LEED certified.
- The University has a comprehensive Energy consumption analysis and conservation plan that helps to continually review energy use and identify opportunities for improvement, thus helping in judicious energy usage and optimization through energy-efficient practices in campus operations.
- Solar water heaters are installed in selective hostels.
- Sewage treatment plants and Wastewater treatment plants are used to treat wastewater, and the purified water is recycled for toilet flushing, gardening, and cleaning.
- The campus has established stormwater drain line catchment zones to manage rainfall and prevent flooding, thus encouraging sustainable water management.
- The University promotes green transportation by installing EV charging stations on campus at various locations.
- Motion sensors are used to detect occupancy and automatically turn on or off lights in outdoor spaces and restrooms, thus reducing energy waste.
- Shiv Nadar (IoE) is guided by a comprehensive EHS policy and certified ISO 14001:2015 and ISO 45001:2018.
- Organic waste is converted into manure by in campus Organic waste converter plant.
- Drip irrigation system has been implemented to optimize water usage.
- The sprinkler water system in lawns allows uniform distribution of water with high efficiency.
- Signs are used to encourage sustainable water usage across the campus.
- The campus has introduced a color-coded waste segregation system that streamlines the separation of waste.
- The installation of 3 sewage treatment plant (STP) at different location to treat wastewater and the 100% segregation of waste, with dry waste sorted into six categories and sent to authorized recyclers. Food and garden waste is composted, enriching soil nutrient levels across the campus.
- The university has adopted rainwater harvesting measures to enhance the groundwater table in and around the campus. Artificial recharge pits have been strategically excavated at various locations, playing a crucial role in facilitating water recharge and increasing groundwater resources.

University Growth Trajectory

As an Institution of Eminence (ioE), the university has set targets it needs to achieve in terms of numbers of students, faculty and staff, built-up areas, expanding research infrastructure and others. The graph here shows the growth of the university between FY 2019-20 (base year for CFP analysis) and FY 2023-24.

- **Built-up area:** The university's built-up area has increased by 22.2% from the base year i.e. FY 2019-20. The total built-up area for FY 2023-24 is 3,361,597 sq ft, up from 2,751,712 sq ft in the base year, FY 2019-20.

- **Student Enrollment:** The university has seen a remarkable increase in student numbers, rising from 2,078 in 2019-20 to 3,861 in 2023-24. This **85.8%** growth underscores the university's appeal and its reputation for high-quality education. In the base year FY 2019-20, the student count was 2,078. By FY 2023-24, this rose to 3,861, marking an increase of 1,783 students, or 85.8% growth.

- **Faculty and Staff:** The university has also significantly increased its faculty and staff numbers by **32.59%**, rising from 451 (FY 2019-20) to 598 (FY 2023-24).

- **Overall Population Growth:** In total, the combined growth of students, faculty, and staff reflects a remarkable **76.31%** increase between the base year 2019-20 and the current year 2023-24, (For FY 2019-20 count was 2529 and for FY 2023 -24 it accounts to be 4459).

- **Research Facilities:** The university is committed to advancing research. With an impressive **199 research facilities** equipped with air conditioning, Shiv Nadar University demonstrates its substantial investment in cutting-edge research infrastructure. This commitment not only enhances the university's capacity for innovative research but also significantly enriches the academic inquiry that drives its mission forward.

- **Food Outlets:** The increase in food outlets from 9 to 22 from the base year (FY 2019-20) marks a significant enhancement in the student dining options.

In general, the growth trajectory of Shiv Nadar IoE is an illustrative of the institution's dedication to academic excellence, sustainability, and the welfare of its students, faculty and community.

Built-up area in square feet

Increase in number of Faculty staff and students since base year
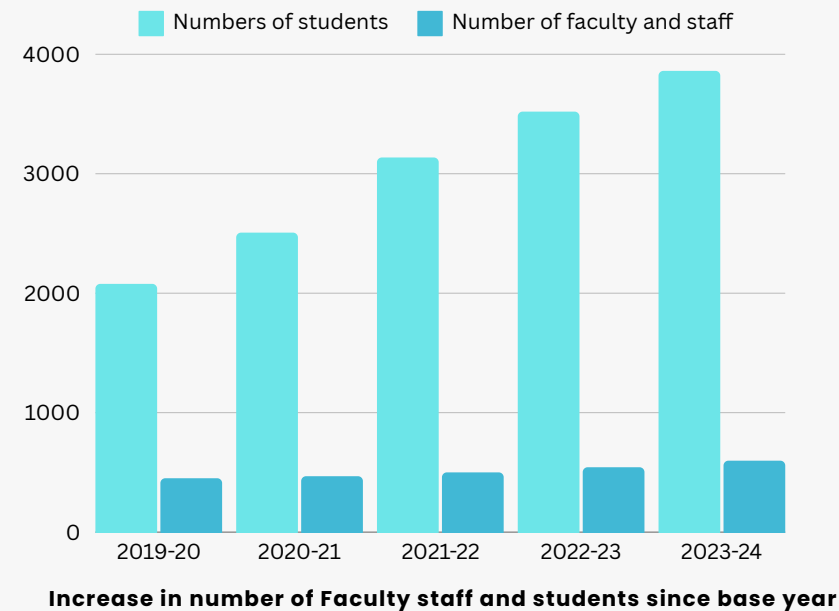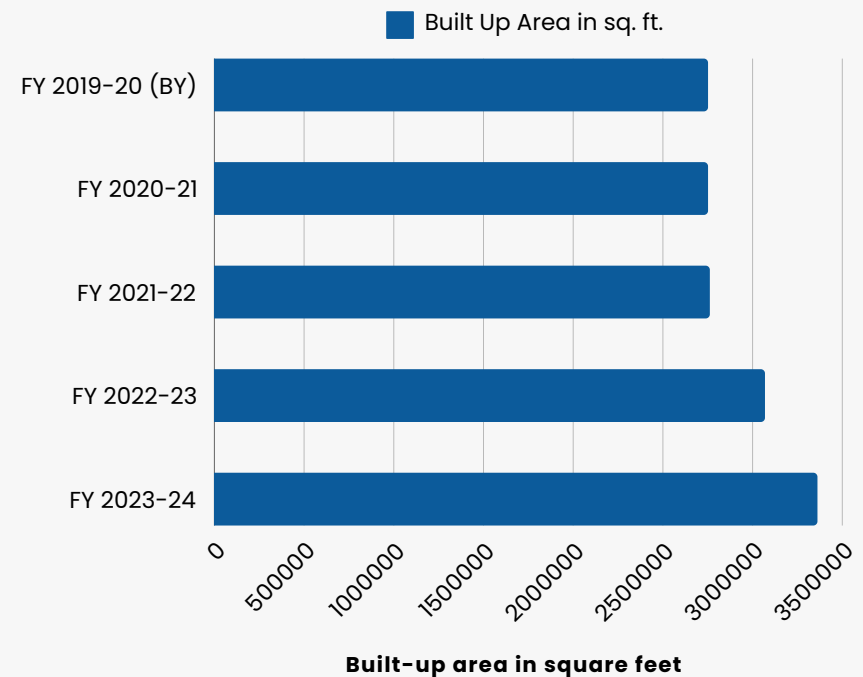
Briefing

The first step towards contributing to climate action is by accounting for one's own emissions.

Holdings & Subsidiaries Included

Shiv Nadar IoE's entire operations and value chain is included. There are no other subsidiaries.

Objective

- To calculate Scope 1,2 & 3 emissions for FY 23-24.
- Assess the impact of changes in carbon emissions, identifying the main drivers for these shifts.
- Provide a factual summary of overall performance, trends, and reasons for changes to support leadership in making sustainability decisions.
- Compare the carbon footprint changes scope-wise with the previous year and base year.

Reporting Period

The reporting period for this carbon footprint assessment is from 1 April 2023 to 31 March 2024. encompassing comprehensive data collection and analysis to accurately quantify the emissions across all operational scopes.

Scope Included & Baseline Year

Entire Scope 1 & 2 have been covered. Scope 3 is covered with its own limitations.

The Financial year **2019-20** is taken as the baseline year .

Where we Operate

Located on NH91 in Greater Noida, Uttar Pradesh, Shiv Nadar Institution of Eminence is a thriving academic institution serving a diverse community of students, faculty and staff. Situated on an expansive 286-acre campus, the university has easy access to important urban centers like Delhi, making it easily accessible for both students and faculty. Established in 2011, Shiv Nadar University is a part of the Shiv Nadar Foundation, which is committed to promoting quality education and research. The university, which has a vibrant community of 3,861 students and 598 permanent employees, focuses on interdisciplinary learning, innovation, and a dedication to sustainability.

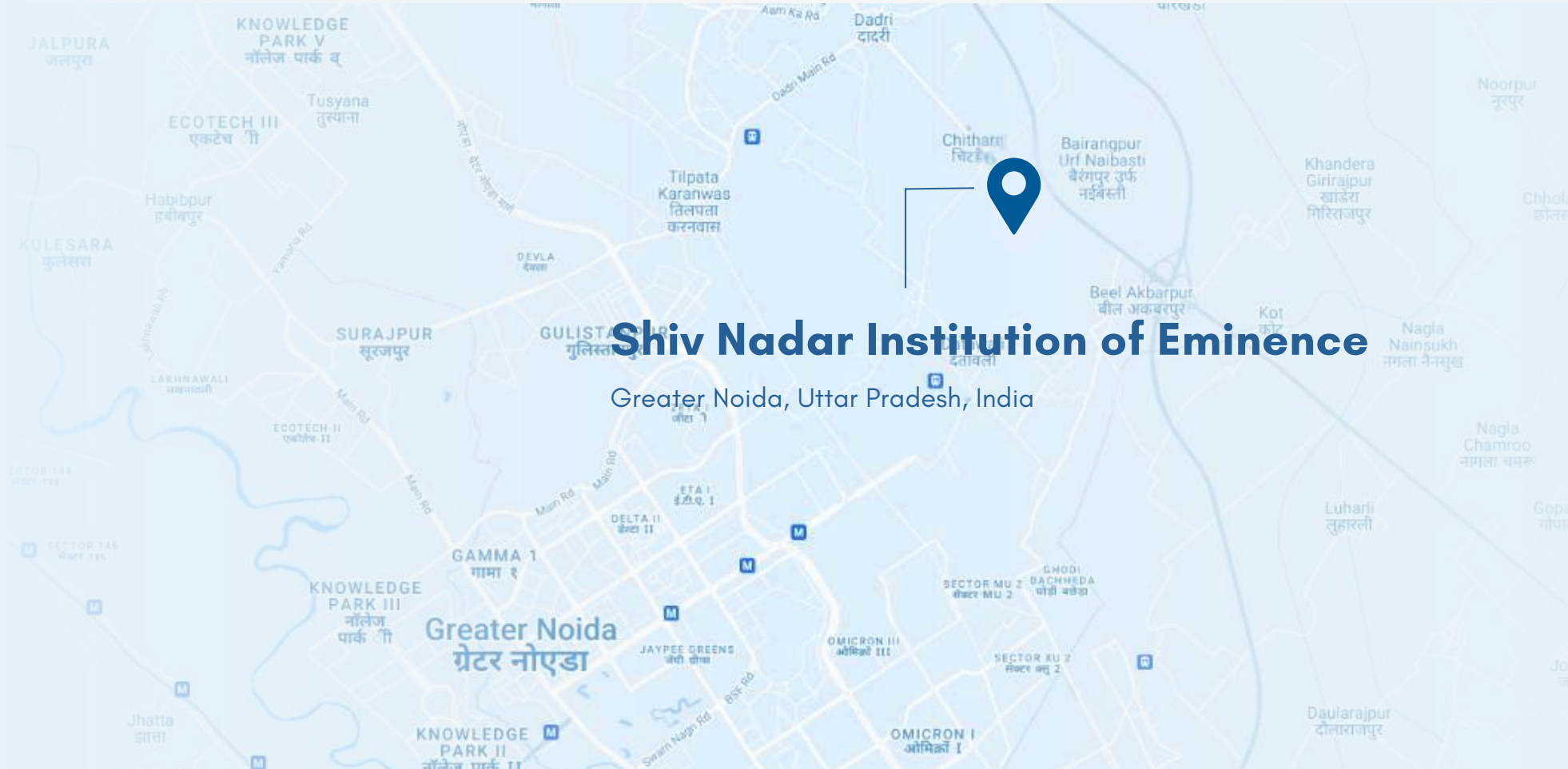| 598	2011	Total Area 286	Revenue 361.58
Employees	Foundation Year	Acres	Crore

69%   31%

Shiv Nadar (IoE) Employees

Shiv Nadar Institution of Eminence

Greater Noida, Uttar Pradesh, India

Methodologies

Brief About CARBURN Tool

The CARBURN tool is a robust solution designed to calculate Scope 1, 2, and 3 emissions for organisations

It provides a comprehensive understanding of their carbon footprint. By utilising detailed questionnaire survey forms, CARBURN captures extensive data across all operational aspects. Carburn offers two dashboards- one for the company and one for services rendered by the company. It also provides their client with post-service accessibility of the dashboards ensuring continuous access to important information and supports white-label reporting. It has features which allows users to save their progress as drafts and view quarterly data separately on the dashboard. Carburn facilitates data collection from vendors in two ways, either by allowing companies to control vendor selection and scope or enable vendors to input data independently. The tool's structured approach facilitates accurate and detailed emissions calculations, helping organisations identify key areas for improvement and develop effective sustainability strategies.
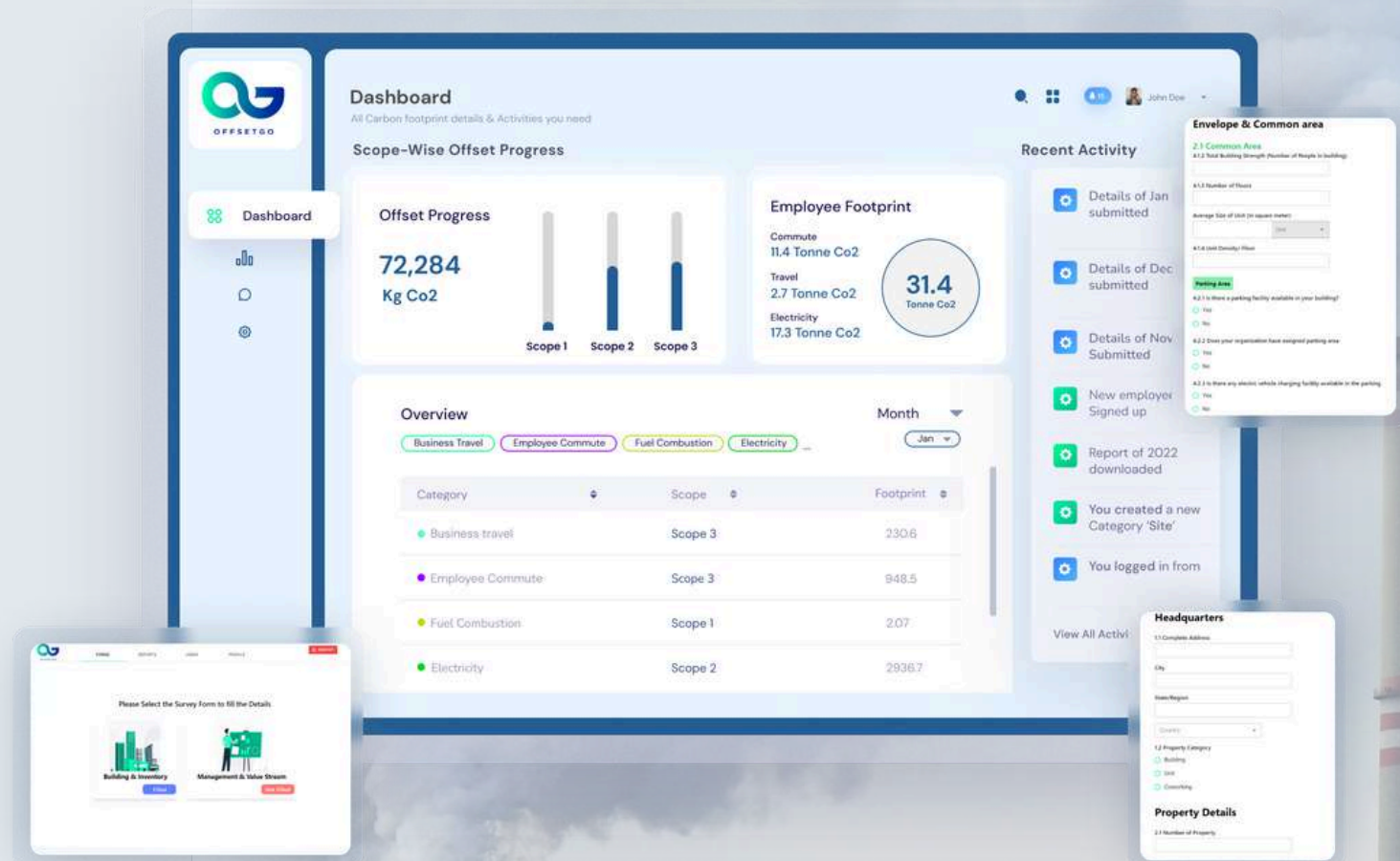
Methodology followed in creation of Tool

Framework Alignment:

The methodology behind the creation of the CARBURN tool is rooted in industry-leading standards to ensure accuracy, reliability, and comprehensiveness in emissions calculations. It adheres to the Corporate Accounting and Reporting Standard of the GHG Protocol, which provides a globally recognized framework for measuring and managing greenhouse gas (GHG) emissions. Additionally, the tool aligns with ISO 14064 standards, which specify principles and requirements for designing, developing, and managing organisation- and project-level GHG inventories. By incorporating these standards, CARBURN ensures that the data collection, processing, and reporting processes are consistent, transparent, and verifiable. This rigorous methodology enables organisations to confidently assess their carbon footprint, meet regulatory requirements, and pursue effective sustainability initiatives.

Features of the carburn tool

Effortless Data Collection

The tool employs detailed questionnaire survey forms to capture extensive data from organisations. These forms cover all aspects of an organisation's operations, including energy use, transportation, waste management, and supply chain activities.

Continuous Improvement

CARBURN is regularly updated to reflect the latest developments in emissions accounting and reporting standards, ensuring ongoing compliance and relevance.

Dynamic Dashboard

CARBURN features dynamic dashboards that display real-time progress and benchmarks, allowing organizations to track their sustainability efforts and understand their position relative to their goals after inputting the relevant data. This enables informed decision-making and strategic planning for a sustainable future.

Boundary & Approach

Reporting Boundary

a) Physical boundary:
All activities including all operational activities based out of the Shiv Nadar IoE Campus located at NH91, Tehsil Dadri, Greater Noida, Uttar Pradesh 201314

b) Operational boundary:
The reporting boundary of this carbon footprint report includes all organisational facilities and operations, as well as emissions from suppliers and upstream & downstream activities.

Approach

The initial step in developing the carbon footprint involves defining organisational boundaries. This entails selecting an approach to consolidate greenhouse gas emissions, specifying the business units and operations comprising the company. These boundaries determined by the level of control exerted by the entity over its operations. This control can be categorised into:

1. **Equity approach**
2. **Control approach**

- Operational control
- Financial control

For an Shiv Nadar (IoE), being a single entity, all emissions are consolidated within its scope and taken operational control approach.

Scope 1 emissions (Direct emissions)

- Combustion of fuels in mobile sources, including Shiv Nadar IoE -owned and controlled vehicles.
- Fugitive emissions from HVAC systems in the campus.
- Emissions associated with fossil fuel usage for horticultural activities and onsite nonrenewable electricity generation and PNG consumption in kitchen.

Scope 2 emissions (Indirect emissions)

- Purchased electricity including renewable and non-renewable power.

Scope 3 emissions (other indirect emissions)

- Commuting by Shiv Nadar (IoE) employees and sub-contractors.
- Business air travel and related hotel stays.
- Waste management and disposal processes.
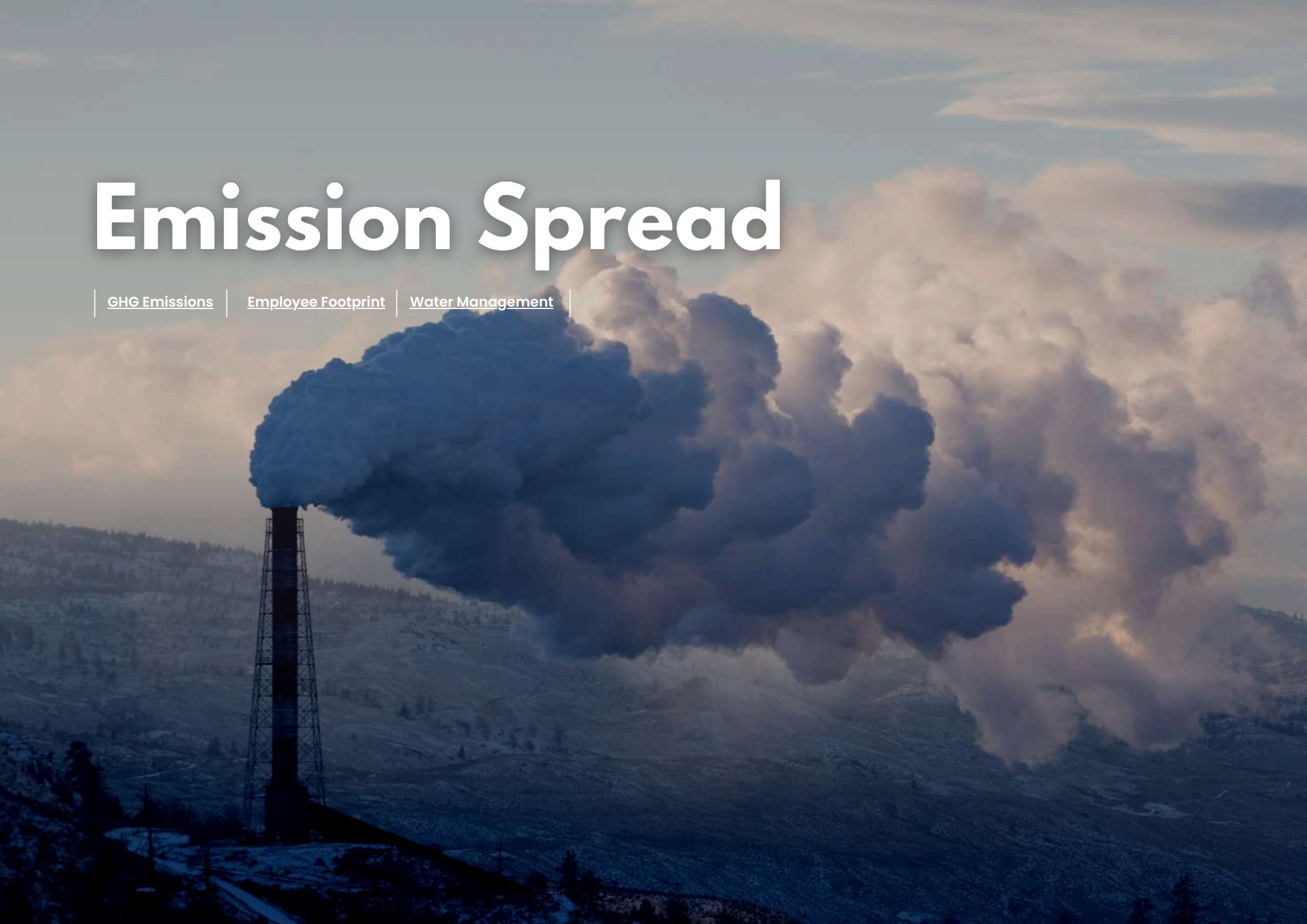- Upstream and downstream transportation.
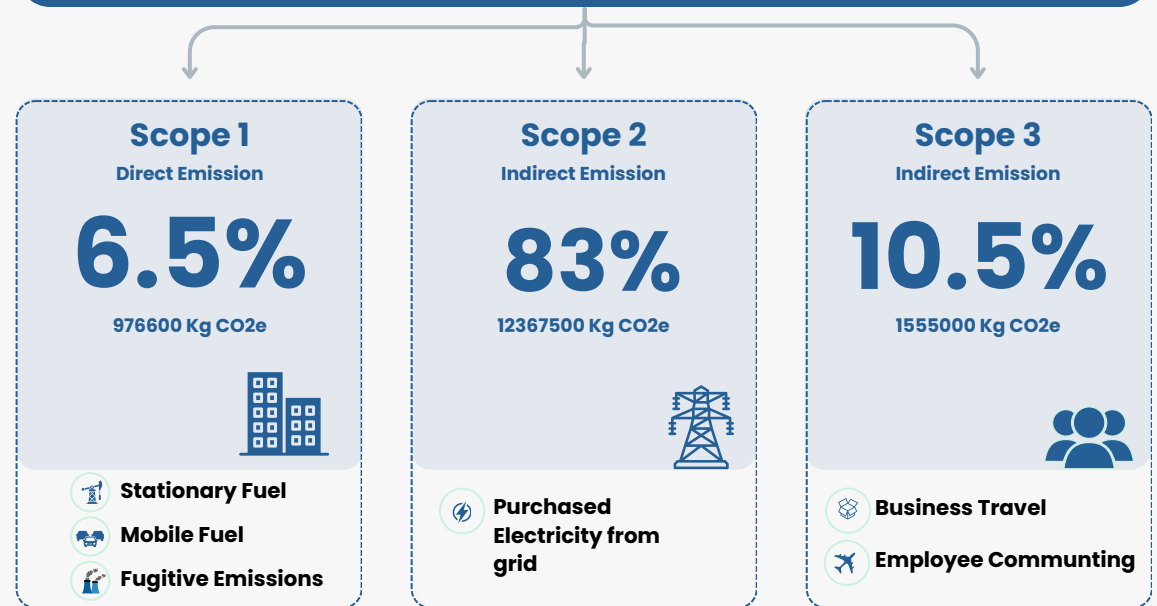
Emission Spread

GHG Emissions | Employee Footprint | Water Management

GHG Emissions

Absolute Emission

Emission percentages by Scope in FY 23-24

Scope 1
Direct Emission

6.5%

976600 Kg CO2e

- Stationary Fuel
- Mobile Fuel
- Fugitive Emissions

Scope 2
Indirect Emission

83%

12367500 Kg CO2e

- Purchased Electricity from grid

Scope 3
Indirect Emission

10.5%

1555000 Kg CO2e

- Business Travel
- Employee Communting

Emission Intensity

Revenue emission intensity indicates that for every crore (10 million) of revenue generated, the organization emits 41.2 metric tons of CO2 equivalent.
Area emission intensity measurement indicates that for every acre of land, the organization emits 52 metric tons of CO2 equivalent.

These metrics can help inform sustainability targets, guiding efforts to improve efficiency, reduce emissions, and align with environmental goals.

Intensity Metrics

- **Revenue Emission Intensity**

  Per Crore
  41.2 Mt CO2e

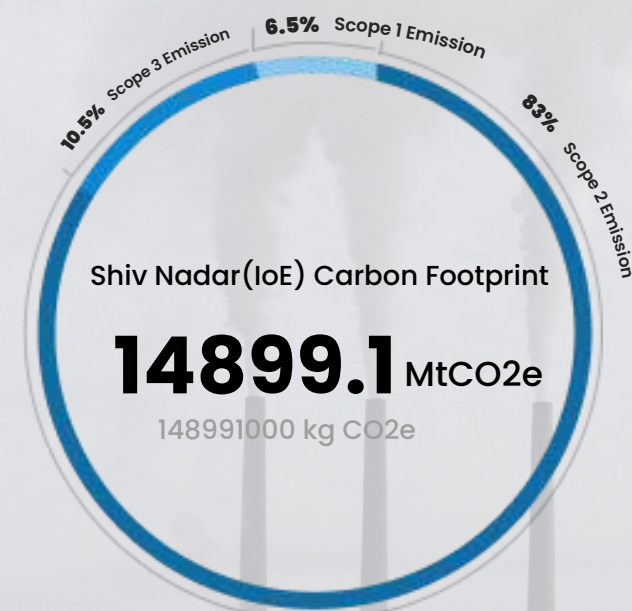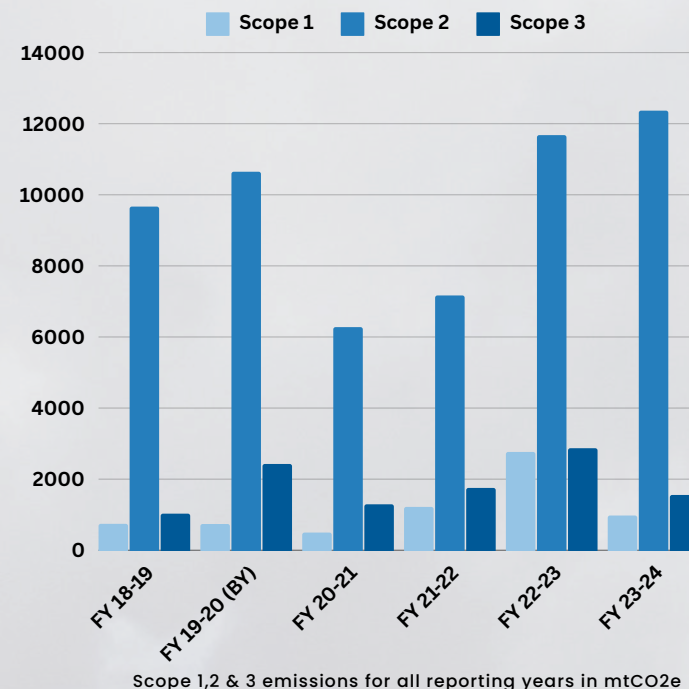- **Area Emission Intensity**

  Per acre Campus Space
  52 Mt CO2e

Scope 1,2 and 3 Spread

Scope wise GHG emissions (in mt CO2e) over past years

Past Five Year	Scope 1	Scope 2	Scope 3
FY 18-19	743	9668.4	1,029
FY 19-20 (Base Year)	738	10,649	2,427
FY 20-21	497	6277	1292
FY 21-22	1219	7168	1753
FY 22-23	2765	11679	2870
FY 23-24	976.6	12367.5	1555

GHG Emission by Scope (in mt CO2e) in FY 2023-2024

Scope wise Emissions	FY 23-24
Total Scope 1	976.6
Stationary Fuel Consumption	391.4
Mobile Fuel Consumption	175.6
Fugitive Emissions	409.6
Scope 2 - Purchased Electricity	12367.5
Total Scope 3	1555
Upstream Transportation & Distribution	146.4
Waste generated in Operations	37
Business Air Travel	283.9
Employee Commuting (Shiv Nadar (IoE) employees + Sub Contractors)	1079.2
Downstream Transportation & Distribution	8.5
Total emissions (Scope 1 + 2 + 3)	14899.1

Scope 1,2 & 3 emissions for all reporting years in mtCO2e

6.5% Scope 1 Emission
10.5% Scope 3 Emission
83% Scope 2 Emission

Shiv Nadar(IoE) Carbon Footprint

14899.1 MtCO2e

148991000 kg CO2e

Scope 1,2 & 3 emissions percentage in FY 23-24
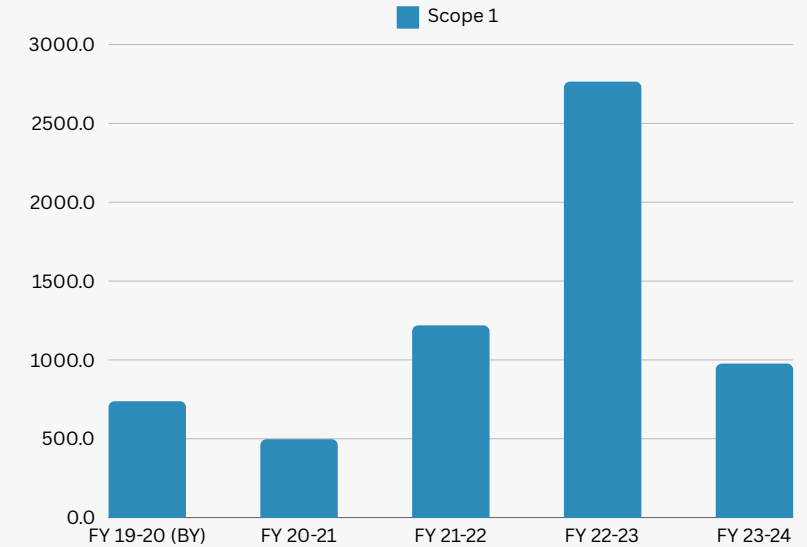
Scope wise Emission Analysis

Scope 1 emissions in FY 2023–24 dropped significantly by 64.6% from FY 2022–23.

In Scope 1 carbon footprint emissions of the reporting year, HVAC systems emerge as the largest contributor, accounting for 42% of total emissions. This is closely followed by stationary fossil fuel use, which contributes 40% and includes emissions from horticulture, cooking, and HSD power generation. Vehicular emissions from company-controlled and owned vehicles represent 18%.
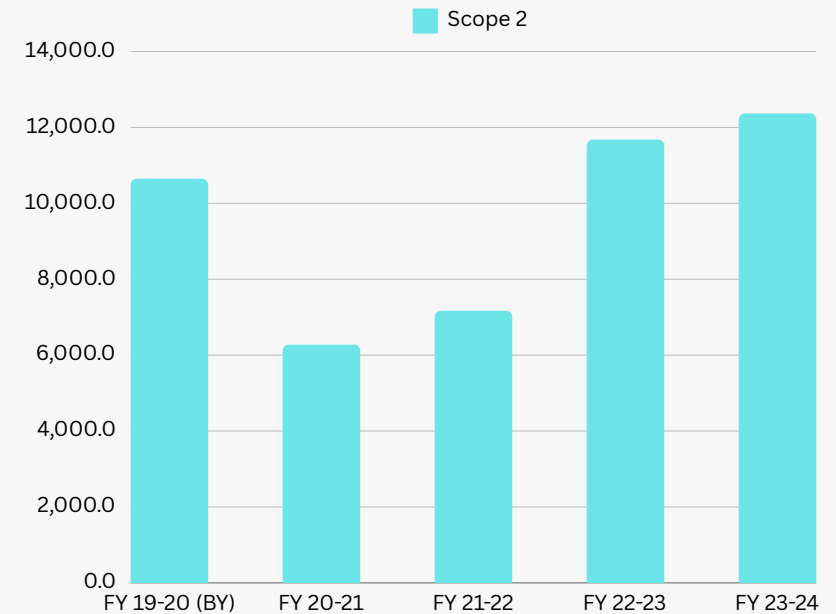
Total Scope 1 emissions jumped by 32% over the base year FY 19-20 to FY 23-24, primarily as a result of an expanded operating area from 2751712 sq. ft. to 3361597 sq. ft. and the installation of new HVAC systems at different locations inside the campus during FY 22-23 and FY 23-24. In contrast, Scope 1 emissions in FY 23–24 dropped significantly by 64.6% from FY 22–23. The decrease in reliance on fossil fuels for horticultural activities and the rise in the usage of electric vehicles (EVs) on campus are the reasons for this reduction. These modifications show an upward trend toward more environmentally friendly behaviors and a decrease in total emissions.

Scope 1 Emissions Analysis (in mtCO2e) Since Base Year

Scope 2 emissions in FY 2023-24 have increased marginally by 5.8% in comparison to FY 2022-23.

The emissions covered by scope 2 belong to the indirect greenhouse gas emissions that arise from the procurement and consumption of power by the institution. Since the base year FY 19-20 the university increased its campus built up area by 22.2%, resulting in increased operational area therefore leading to a greater demand for electricity in the campus. As a result, overall electricity emission from the grid has increased by 16.13% since the base year. During the specified reporting year, the university saw a slight rise of 5.8% in electricity emission from the grid when compared to the fiscal year 2022-2023. The rise in energy consumption, mainly due to increase in population inside the campus and constructed area, showcases the university's changing energy requirements and its possible effect on the total carbon footprint. However, **the share of renewable electricity in total power consumption this year has increased by 4.6% when compared from FY 22-23.**

Scope 2 Emissions Analysis (in mtCO2e) Since Base Year

Scope 3 emissions decreased by 45 % in FY 2023-24 in comparison to FY 2022-23

There has been a 35% reduction in Scope 3 emissions in FY 23-24 compared to the baseline year and a 45% decrease compared to FY 22-23. This is despite the increase in the number of faculty and staff as well as overall university growth in terms of employees and operational area as explained in the report above. This reduction is attributed to the implementation of effective waste management measures and a concerted effort to minimize business travel.

In FY 23-24, commuting by Shiv Nadar (IoE) staff members and sub-contractors was responsible for 69.4% of the total emissions under Scope 3. Air travel for business accounts for 18.26%. Other categories are the generation of waste (2.4%), downstream transportation (0.55%), and upstream transportation (9.4%). This distribution shows that business travel and staff commuting are the main sources of Scope 3 emissions, with waste generation and upstream and downstream transportation making up lower shares of the overall emissions profile.

Advancements in Energy Efficiency

The University has shown impressive improvements in its electricity consumption patterns since the base year.
There has been 270% growth in renewable energy production since the base year FY 19-20. Renewable energy generation was 384,126 KWh in FY 2019-20, increasing to 1,421,631.2 KWh in FY 2023-24. This represents an increase of 1,037,505.2 KWh, or 270% growth.
In renewable power consumption, a 134% increase has occurred between FY 22-23 and FY 23-24. Renewable energy generation was 606,539 KWh in FY 2022-23, increasing to 1,421,631.2 KWh in FY 2023-24. This reflects an increase of 815,092.2 KWh, or 134% growth.
Power consumption from High-Speed Diesel (HSD) has decreased by 44% compared to the base year, helping to reduce the university's carbon footprint and dependence on non-renewable energy sources even more, although it rose by 55% from FY 22-23, presumably due to more frequent power cuts. HSD consumption was 538,552 KWh in FY 2019-20 i.e. base year, decreasing to 299,378 KWh in FY 2023-24 —a reduction of 239,174 KWh, or 44.41%. However for FY 2022-23, consumption was 193,180 KWh, hence an increase of 106,198 KWh, or a 54.97% rise as compared to FY 2023-24.

270% increase in Renewable Power Generation, compared to Base Year.
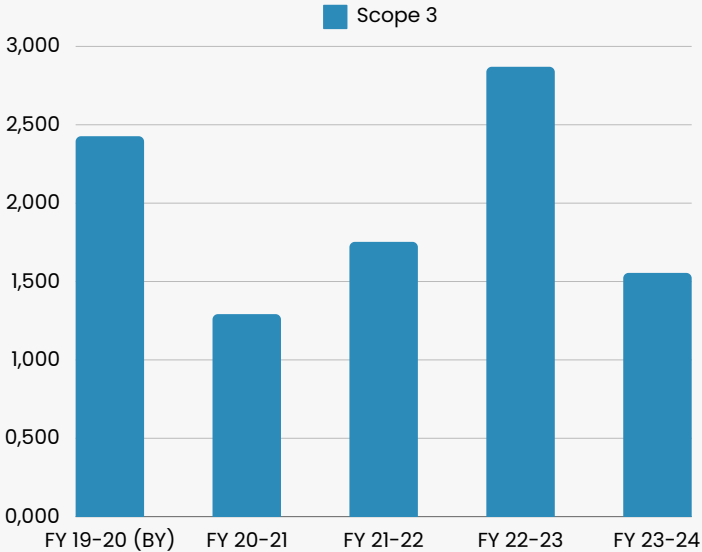
Scope 3 Emissions Analysis (in mtCO2e) Since Base Year

Comparison of Captive power generation in campus
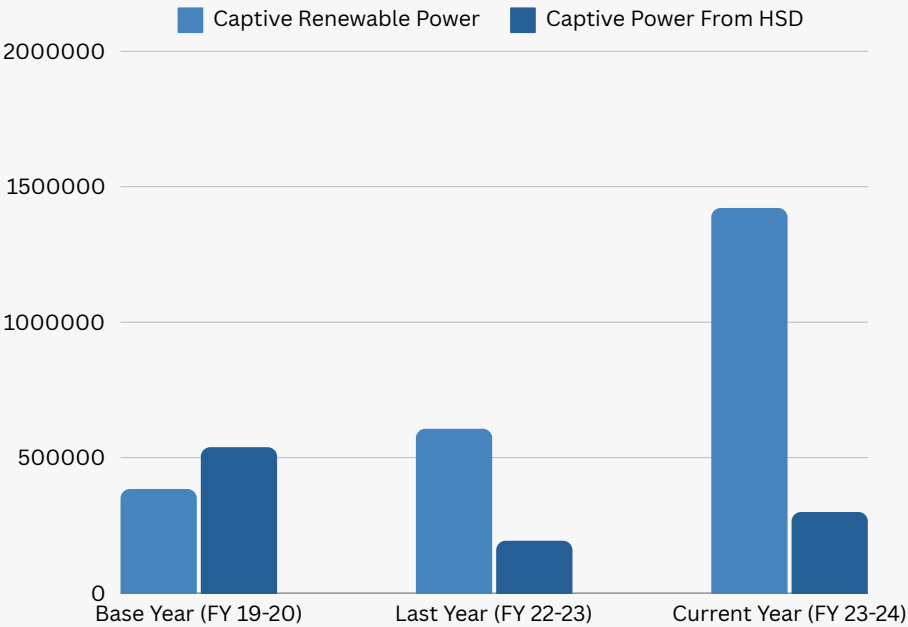
Energy consumption within the organization (KWh Units)

Employee Footprint

Employee footprint refers to the total environmental impact that employees of an organization have, both directly and indirectly, through their work-related activities. To facilitate employee commuting, Shiv Nadar IoE provides company-owned cabs and travel options, which serve the majority of our employees. This initiative not only supports sustainable transportation but also enhances the overall commuting experience. Diet footprint involves the dietary emissions of permanent employees during working hours only. This allows us to understand and address the environmental impact of food consumption on campus and overall employee footprint.

Employee → The employee Footprint includes commute and diet emissions.

Diet Footprint
394.4

Employee Commute
1079.2

Employee's Carbon Footprint
1473.6 Mt CO2e
14736000 kg CO2e
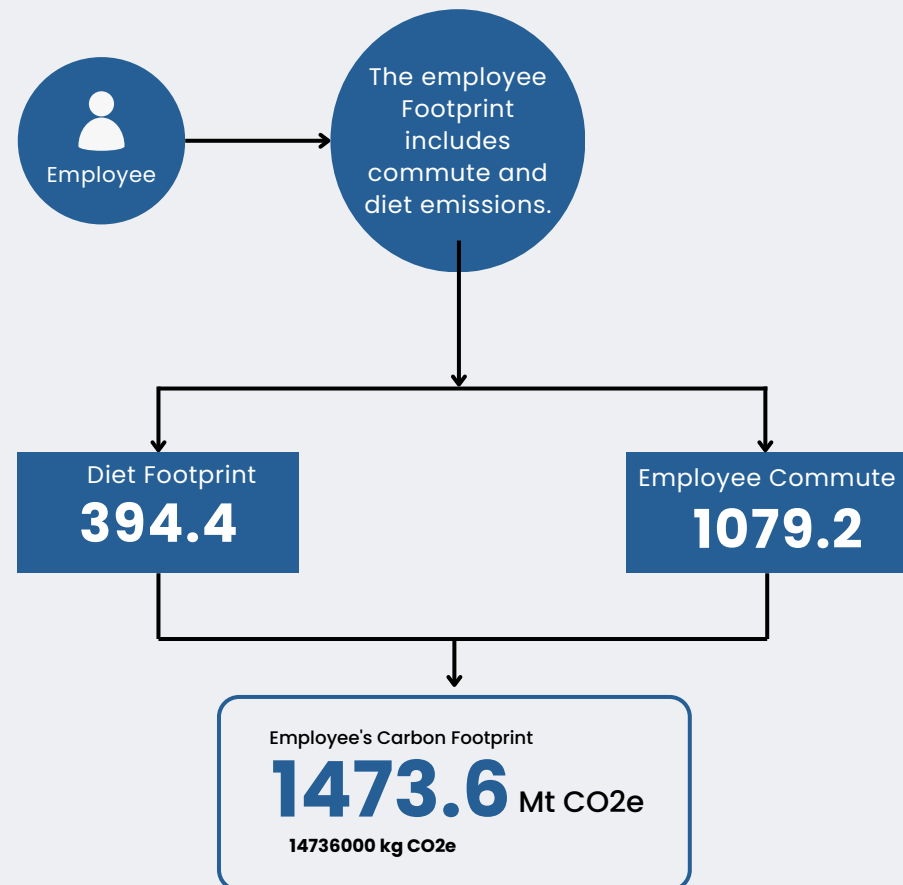
Employee Commuting Pattern

The employee commuting category of Scope 3 emissions refers to the indirect greenhouse gas emissions generated from the transportation of employees to and from their workplace. Out of the 598 employees at SNU, 230 live on campus, where residential facilities are provided. These employees typically use bicycles or walk to their respective departments, promoting a healthier lifestyle while significantly cutting down footprint emissions. The remaining employees are daily commuters, contributing to the overall commuting footprint.

SNU evaluates the commuting behaviors of both full-time employees and subcontractors to measure carbon emissions. About 53% of permanent employees use company-provided vehicles for their daily trips to work, with the remaining 47% depending on private or public transportation choices.

This information showcases the university's emphasis on comprehending and controlling the carbon footprint linked to employee travel, a key aspect in improving sustainability efforts.

In the fiscal year 2023-2024, a total of 11,407,176 kilometers were traveled by SNU employees and subcontractors. The distribution of these kilometers across different vehicle types reveals important insights:

- CNG cars account for 11% of commuting distance, indicating a positive shift towards environmentally friendly vehicles and supporting SNU's sustainability goals.
- Shared autos make up a notable portion of commuting distance, underscoring a preference for economical and communal travel options.
- Diesel buses are the second most popular choice, reflecting a commitment to organized and sustainable transportation among employees.
- The majority of distance covered was through two wheelers presuming most of the employees resides nearby the campus thus reducing scope 3 emissions.
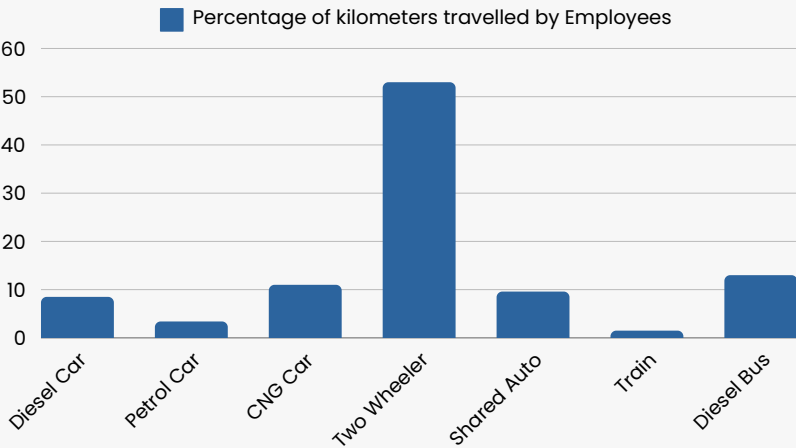
Employee Dietary Pattern

Valuable insights into the dietary habits of staff at Shiv Nadar (IoE) were obtained from the employee questionnaire. The survey showed that a notable number of employees have particular tastes and routines when it comes to their dietary decisions. Significantly, 56% of employees are vegetarian, whereas 44% adhere to a non-vegetarian diet.

The results also showed that the majority of employees choose to bring their own food from home or eat the cafeteria food on site, showing a shift towards healthier eating habits and less dependence on processed or takeout meals. This option not just accommodates personal dietary choices but also helps us achieve our sustainability objectives by reducing packaging waste. In general, the survey findings emphasize the significance of grasping employee eating patterns, which can guide upcoming efforts to support health and sustainability among the university population.

Company Owned Vehicle — 53%

Personal Vehicle/Public Transport — 47%

Percentage of Employee Commuting Patterns from different transport type.

Percentage of kilometers travelled by Employees

Percentage distribution of Kms travelled by different Vehicle

🥕 56%

🍗 44%

Water Management

Hightlights

100% of treated wastewater is reused within the organisation, ensuring environmental responsibility.

Daily water consumption per head per day is 15.87 liters during operational hours, significantly less than the NBC BIS standard of 25 litres.

Water footprint

A water footprint measures the total water consumption and wastewater associated with production and consumption activities. It includes direct and indirect water usage from different water sources. At Shiv Nadar (IoE), water is extracted from borewell water for fulfilling various water needs like drinking, flushing, cooking, agriculture and others. The university has received No Objection Certificate (NOC) from the Ground Water Department of the Ministry of Jal Shakti for groundwater extraction and is committed to using sustainable practices in managing this critical resource.

Water flow

Water Consumption in KL

Borewell Water
434481

Bottled Water
3.750

434484.75

Total Water Consumed
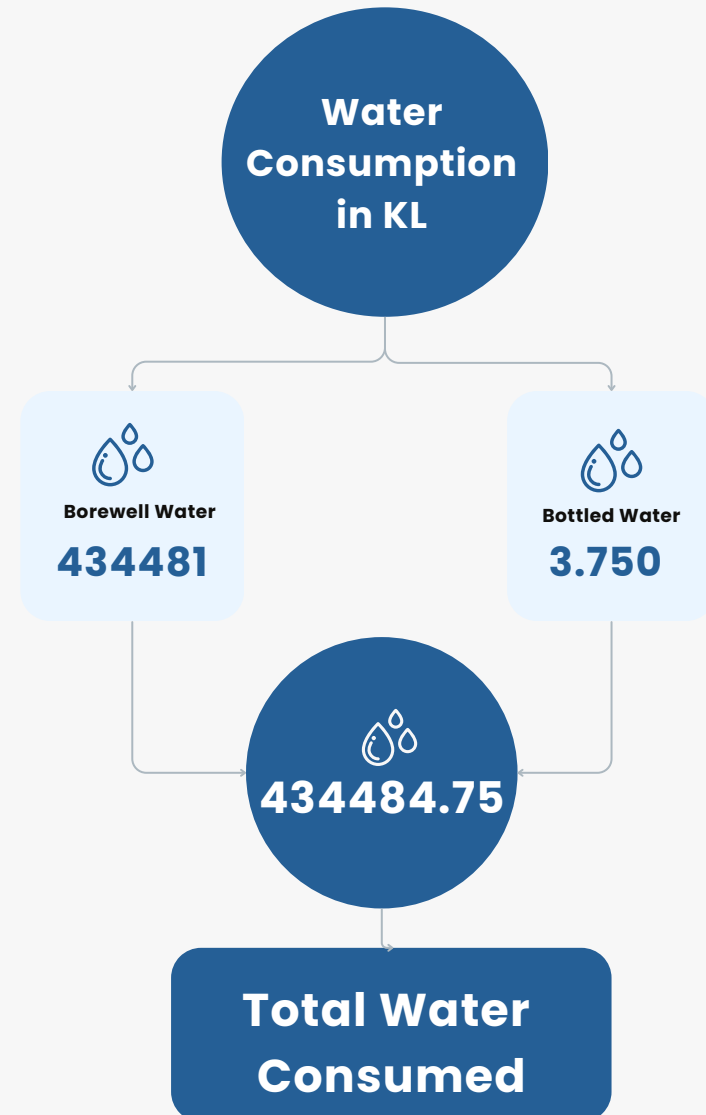
Water Consumption & Treatment Analysis

Since the base year FY 19-20, the campus has seen remarkable growth, with a 22.2% expansion in built-up area and a 76.31% increase in campus population. This growth, in conjunction with the extreme heat in the region where the university is situated has resulted in a rise in water consumption by 145% from the base year. Despite the growing demands of expanded operational activities and increasing population the water usage between FY 22-23 and FY 23-24 increased merely by 1.93% reflecting the usage of water conscious practices in the campus.

Total Water Consumed In KL

*Total water consumption includes water sourced from borewells and bottled water.

Total Water Treated In KL
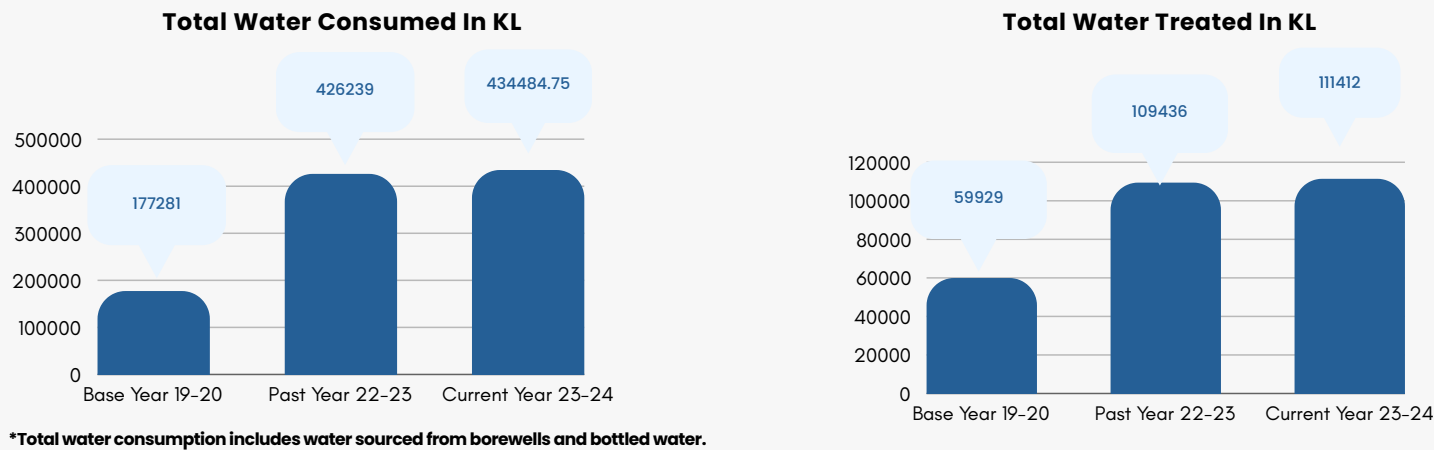
Water Footprint Metrics

In the financial year 2023-24, the Shiv Nadar University community recorded a total water consumption of 434,484.75 kiloliters across its expansive 286-acre campus. This consumption supported the following:

- Residential students
- Employees (39% reside inside the campus)
- Contract workers relying on the university for water needs during their normal 8-hour workday
- Campus residents (consuming water 24/7), and
- Daily visitors

The water usage encompass the day-to-day needs of students, staff, and visitors as well as the heightened demands of construction projects, including the development of two additional hostel clusters with a combined capacity to accommodate 1,391 additional students. These construction activities have contributed to the higher water consumption, in addition to the existing needs for cooking in dining hall kitchens, tuck shops, canteens, and 199 research laboratories, and maintaining over 87.72 acres of lush green space dedicated to horticulture.

Despite the demands of such a large population and the need to sustain the campus's vibrant greenery, the **university's water consumption per person is 36.5% lower than NBC BIS standards**. On an average, each individual consumes 15.87 litres per day during operational hours. This was determined from a thorough real-time water survey of sample population of the campus assessing their drinking, handwashing, and toilet water usage across various departments, including faculty, students, housekeeping, and ground staff. This survey was conducted in July and August of 2024.

The university is situated in an area that experiences extreme summer heat, often exceeding 45-50 degrees celsius, its workers who perform their duties outdoors have higher water requirements during high heat days. Also, the water needs for plants increases these days which adds to its overall water footprint. This context underscores the university's proactive stance towards efficient water management and resource conservation.

Shiv Nadar University is committed to fostering a culture of sustainability, adhering to its EHS policy for conscious water usage. The institution aims to set a benchmark for responsible water consumption in the education sector by continually monitoring and improving its water management practices, reinforcing its dedication to a sustainable future.

Impact Assessment

Damage Impact

Industries and institutions' carbon footprint emissions have a major impact on the environment, leading to deforestation, glacier melting, and the combustion of large amounts of coal for generating electricity. These actions not only exhaust crucial natural resources but also worsen climate change, leading to severe weather occurrences and habitat destruction.

700257 Trees

Shiv Nadar University 's annual footprint of Scope 1, 2 and 3 accounts for loss of 700257 tress on an annual basis further affecting biodiversity.

6231.4 Tonnes

Shiv Nadar University 's annual Scope 2 Emission accounts for 6231.4 tonnes equivalent of Coal burnt for electricity generation.

44697.3 sq. m. Ice

Shiv Nadar University 's annual footprint of Scope 1, 2 and 3 accounts for 44697.3 square metres ice melt resulting in rising sea levels and contributing to coastal submergence.

Risks and Opportunity Analysis

Risk Factors	Recommended Actions	Opportunities
1 **Operational Energy Risk**	Installing dual fuel kits for DG sets, optimizing fuel mix with cleaner alternatives.	Shiv Nadar (IoE) can significantly reduce emissions from diesel by installing dual fuel kits for diesel generator sets and optimizing the fuel mix with cleaner alternatives thereby reducing operational cost.
2 **Rising and Fluctuating Energy Costs**	Invest in renewable energy and enhance energy efficiency while monitoring energy markets and considering fixed-rate contracts to stabilize costs.	Adopting 100% renewable energy and energy efficiency strategies helps organizations mitigate energy price risks and reduce Scope 2 emissions.
3 **Supply Chain Management**	Contract with socially responsible suppliers holding Environmental Product Declaration (EPD) certification and utilizing electric vehicles (EVs) for transportation.	By monitoring supply chain operations and working with eco-friendly suppliers, Shiv Nadar University can lower carbon emissions, enhance productivity, and enhance its status as a sustainability advocate, paving the way for fresh partnerships and financial savings.
4 **Depleting Ground Water Levels**	Implement a mixed water supply strategy, incorporating municipal water, treated wastewater, and stormwater harvesting to reduce reliance on borewell water.	By addressing climate vulnerability and diversifying water sources, the university can position itself as a leader in sustainability, attracting students and faculty who prioritize environmental responsibility.
5 **Fossil Fuel Deficiency**	Transition to electric or hybrid vehicles to reduce emissions and fuel dependency.	Transitioning to electric or hybrid vehicles can lower operational costs, reduce environmental impact, and enhance the university's sustainability credentials, while decreasing reliance on fossil fuels.
6 **Waste Management Risks**	Addition of on-campus recycling and incineration units.	By introducing waste management systems on campus, the university has the potential to function as a self sustainable unit. This program aims to boost recycling rates, cut down on waste produced, and serve as a hub for sustainable research and innovation.

Alignment with Sustainable Development Goals – Some highlights

In September of 2015, the United Nations General Assembly adopted the Sustainable Development Goals (SDGs) for the purpose of establishing a sustainable society across the world through community, environmental protection and inclusive economic growth. The timeline for these UN SDGS run from 2016 until 2030. As a responsible campus, Shiv Nadar (IoE) attempts to take account of the SDGs in running their instituition.

SDGs	Our Approach	Some Highlights
2 ZERO HUNGER	Our strategy to address the goal of Zero Hunger places a strong emphasis on community involvement reducing food waste, encouraging sustainable eating habits, and addressing food security. At Shiv Nadar University, our approach to achieving Zero Hunger emphasizes holistic education on food systems, agriculture, and nutrition. We integrate operational efficiency with research to promote sustainability and assist vulnerable communities both on and off campus. Our commitment is reflected in innovative programs like master's program in Rural Management, designed to cultivate future leaders equipped to tackle pressing issues.	• **A tracking system** to reduce food waste. We reported a 23% decrease in food waste per person from 2022-23 to 2023-24. • **Water Management Field Laboratory:** Established in 2021, and co-funded by the Government of India, research in this lab focuses on the questions of food and water security nexus. • **Scholarships for Rural Students:** We support students from economically disadvantaged backgrounds by covering educational expenses and providing free meals. • **Student-run Feeding India Chapter** at Shiv Nadar University tackles hunger and food waste through initiatives like the Adrika Drive, providing educational workshops and meals to children; the Aabhaar Drive, which offers meals to over 350 campus workers; and Sard-E-Chuski, serving hot tea to guards and staff during cold winter nights. • **Affordable, nutritious food choices on Campus:** Our campus dining facilities offer diverse, nutritious meals while promoting sustainable food choices and minimizing waste.
6 CLEAN WATER AND SANITATION	We have adopted a multidisciplinary approach to clean water & sanitation through teaching, research, sustainable campus operations, and partnerships.We recognize the critical nexus between water management and food security, particularly in the face of climate change.We recognize the critical nexus between water management and food security, particularly in the face of climate change. Our initiatives are aligned with national missions aimed at enhancing water use efficiency and improving agricultural productivity, ensuring that our strategies are both scientifically sound and practically applicable.	• Water Management Field Laboratory: Co-funded by the Government of India, the laboratory supports national priorities, aligning with government missions to enhance water use efficiency and increase irrigated areas. It features advanced crop experimentation facilities with a drip irrigation system, enabling extensive monitoring of crops and soil parameters. • Our research develops AI-based decision-support systems aimed at improving crop water use for rice and wheat. The initiative actively engages local farmers through education on sustainable irrigation practices, while also conducting soil and irrigation water testing and providing weather data to support local agriculture. • Sewage Treatment Plant: Advanced facility using membrane bioreactor technology to treat wastewater for safe reuse in domestic and horticultural applications. • Rainwater Harvesting: We have implemented rainwater harvesting systems across campus buildings to enhance water availability • Infrastructure for Water Efficiency: All campus buildings feature LEED-certified designs that emphasize water conservation and efficient plumbing fixtures. • Pollution Prevention Measures: Strict controls are in place on campus to stop water contamination, and routine maintenance and inspections guarantee the integrity of nearby water supplies.

7 AFFORDABLE AND CLEAN ENERGY

Our commitment to SDG 7 focuses on ensuring access to affordable, reliable, sustainable, and modern energy for all. We recognize the urgency of addressing energy consumption and avoiding greenhouse gas emissions, and we have implemented comprehensive policies and initiatives to drive our sustainability goals forward. Our Environment, Health, and Safety (EHS) policy, alongside our ISO 14001:2015 and ISO 45001:2018 accreditations, guide our infrastructure and operational decisions, ensuring compliance with environmental standards and minimizing adverse impacts.

- Campus Initiatives: Key efforts include energy conservation, renewable energy integration, and bio-waste conversion.
- Sustainable Infrastructure: We use Energy Optimization Monitors in LEED and IGBC-certified buildings to optimize energy usage.
- Our campus aims to transition 50% of its car fleet to electric vehicles to reduce carbon emissions.
- Solar Energy: The campus features 1.5 MW of solar power for captive generation, complemented by solar water heaters and innovative projects like a solar drying system with heat storage, showcasing student-led initiatives in sustainable technology development.

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13 CLIMATE ACTION

We adopted a multi-faceted approach to address climate action and promote sustainability. Our academic curriculum integrates climate-related courses across disciplines, fostering critical understanding among students about the local and global impacts of climate change. The university emphasizes hands-on learning through initiatives like the "Campus as a Living Lab," where students actively engage in projects focused on sustainability issues, such as waste management and renewable energy.

- We promote cycling and minimize travel distances within campus to encourage eco-friendly commuting.
- Net Zero Commitment: The university is part of the **U75 movement**, aiming for carbon neutrality across campuses.
- Start-up Support for Climate Solutions: Fostering entrepreneurial innovation in the climate sector with start like Recycle Baba and Upcycleluxe through the Atal Incubation Center.
- Young Environmentalist Program: Educating school students on sustainable living and the importance of biodiversity.
- Our campus hosts a total of **13,548 trees** and **119,416 shrubs**, and soil under grass cover area of 30.39 hectares. This diverse vegetation, along with the presence of lakes, plays a significant role in the sequestration of greenhouse gases (GHG).
- Extensive solar panels:1.5 MW of solar power installed on campus across academic and residential blocks to transition from complete captive power and generate clean, sustainable energy on campus
- Tree Plantation Drives: Each year, we organize tree plantation drives in collaboration with Green O Tech, as part of our recycling initiatives.

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17 PARTNERSHIPS FOR THE GOALS

As a multidisciplinary, student-centric research university, we foster an environment where collaboration is paramount. Our approach for SDG 17 is centered around building strong partnerships across various sectors, including civil society, government, non-profit organizations, international academic institutions and local organizations. This interconnectedness not only enhances our research capabilities but also amplifies our contributions to societal advancement.

- Our Partnership with Krishi Vigyan Kendra, Dadri focuses on engagement with local farmers to facilitate technological interventions for sustainable agriculture, spreading knowledge and resources widely to farmers in the most remote areas.
- Our master's program in Rural management integrates field education with NGO partnerships to address rural challenges like water management, women's empowerment, and sustainable agriculture.
- Our MoU with GNIDA enhances local green spaces while promoting community responsibility.
- We signed an MoU with the Kala Chaupal Trust to collaborate on preserving Bulandshahr's cultural heritage and nature, engaging in projects that document the district's narratives, support sustainable tourism, and facilitate student internships, faculty research, nature walks, and publications

Limitations, Assumptions and Considerations

- The carbon footprint assessment is based on data available within defined scope boundaries.

- The data provided by the organisation and stakeholders for computation of carbon footprint is considered to be accurate.

- Calibration errors in the monitoring and measuring equipment used by the organization for data generation may occur.

- Incomplete or missing data from certain departments may result in approximations or reliance on secondary data sources.

- Emission factors are typically computed based on the location and specific conditions taken from our emission factor repository. In cases where specific emission factors are unavailable, we use standardised emission factors from global sources such as DEFRA or the US EPA and others.

- Indirect emissions (Scope 3) such as employee commuting and third-party logistics are accounted for based on available data categories within the organisation.

- The report covers data for the fiscal year 2023-2024 only, with limited historical comparisons due to changes in data collection methodologies.

- The report covers the operational region of Shiv Nadar IoE, Dadri, UP.

- The calculations were based on available sample size data in cases where complete data from the organization was not accessible.

- It is assumed that the operations and activities of the company remain consistent over the reporting period.

- The report takes into account current regulatory requirements and compliance obligations relevant to the client's operations and geographic locations.

- CARBURN tool is regularly updated with technological advancements and regulatory changes, ensuring that year-on-year reports reflect the most current information and may vary accordingly. This continuous improvement guarantees accurate and up-to-date carbon footprint assessments.

- Primary data from internal records and documents were used. Assumptions were made where direct measurement was impractical.

- Exclusions may apply to certain minor sources of emissions that are difficult to quantify, such as occasional campus events.

- The accuracy of data is influenced by variations in how survey respondents understand and interpret the questions.

- The emission factors and computation methods applied for report preparation are valid for current year and aligned with international standards. Updates or changes in these factors could impact future assessments.

- External variables such as weather conditions, electricity grid composition, or unforeseen events that can influence energy consumption and emissions are considered while report generation.

Appendix

Abbreviations | Glossary

Abbreviations

Shiv Nadar (IoE)	Shiv Nadar Institution of Eminence
MtCO2e	Metric tonnes of Carbon Dioxide equivalent.
KgCO2e	Kilograms of Carbon Dioxide Equivalent.
KL	Kilolitres
GHG	Greenhouse Gases
HVAC	Heating, Ventilation, and Air Conditioning
PNG	Piped Natural Gas
CO2	Carbon dioxide
STP	Sewage treatment plant
WTP	Water treatment plant
EV	Electric vehicle
BY	Base year
FY	Financial year
EHS	Environment, Health & Safety
CF	Carbon Footprint
SDGs	Sustainable Development Goals
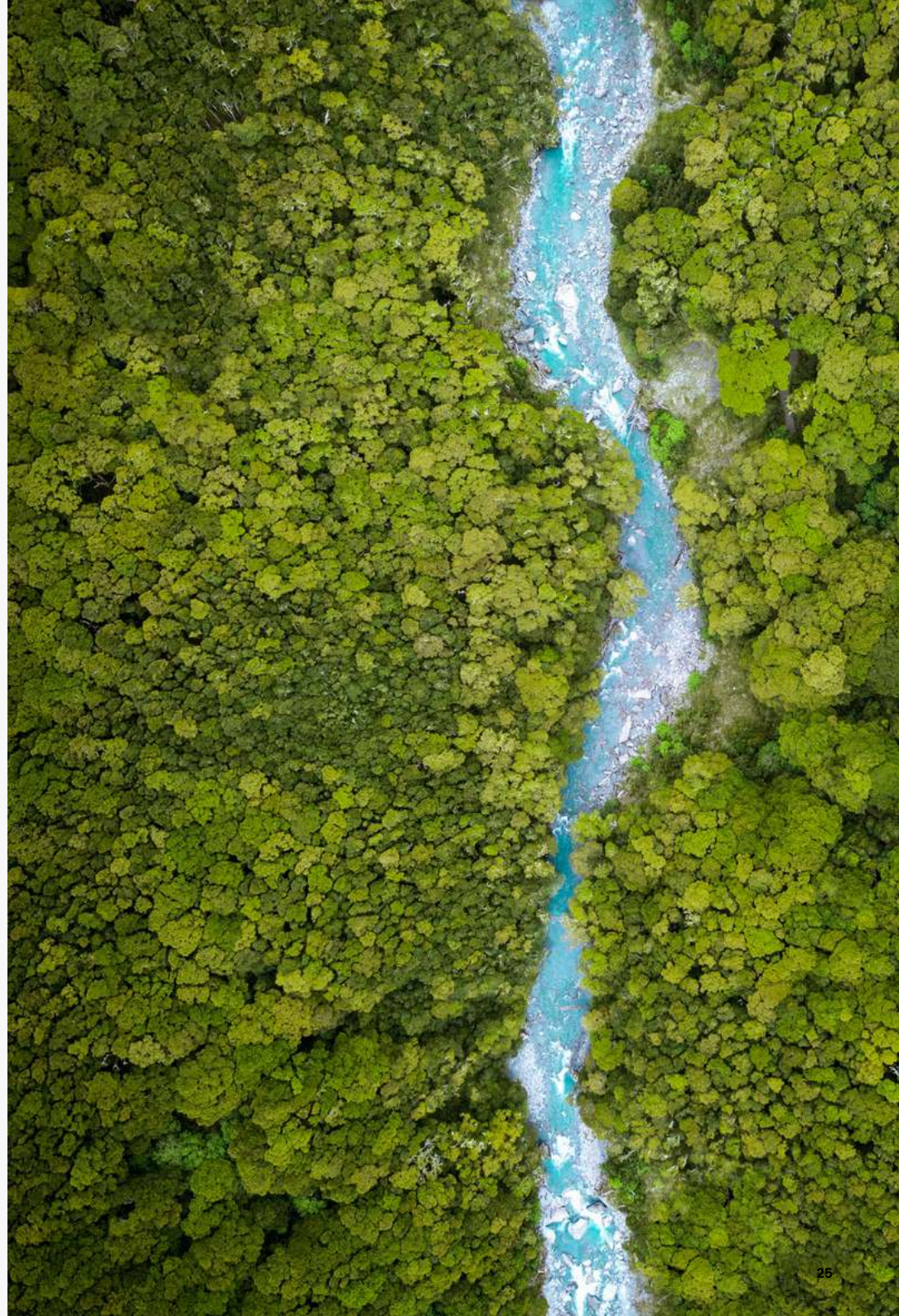
Glossary

Carbon Calculator

An online tool that calculates your carbon footprint based on your home energy use, driving and flying habits, food, trash, recycling, and other factors.

Carbon Credits

Equal to the offsetting of one tonne of carbon dioxide or carbon dioxide equivalent. A monetary value is ascribed to the reduction or offset of greenhouse gas emissions; this is a general term for any tradable certificate or permit reflecting emissions reductions.

Carbon Cycle

For as far back as geological evidence shows – at least 650,000 years – the Earth's natural carbon cycle has maintained a steady equilibrium of carbon dioxide in the atmosphere - around 275 parts per million (ppm). We discovered this by examining the contents of Antarctic ice cores. As a result of the natural carbon cycle: People and animals (source) use respiration to turn oxygen into carbon dioxide. Plants (sinks) absorb CO_2 and release it back into the atmosphere. Over the seas, oceans both produce (source) and absorb (sink) carbon dioxide. Dead organic matter traps carbon underground in various forms such as fossil fuels (sink), while volcanic eruptions (source) can release CO_2 from carbonate rocks deep inside the Earth.

Carbon dioxide

A heat-trapping gas composed of one part carbon and two parts oxygen. Too much CO_2 in our atmosphere causes the Earth to retain too much of the sun's heat, leading to global warming. And excessive global warming eventually leads to various complications that are detrimental to our planet and its inhabitants, such as rising sea levels or certain areas becoming too hot for humans to live in.

Carbon Footprint

The quantity of carbon dioxide emitted into the atmosphere as a result of any given entity's actions. Individuals, corporations, and even nations can have a carbon footprint.

Carbon Neutral

Often known as having a net zero carbon footprint, this is achieved by either reducing carbon emissions to zero, or by balancing a measurable quantity of carbon emitted with an equivalent amount offset.

Carbon Market

A marketplace that treats emissions reductions as a commodity, where participating members can buy and sell carbon credits.
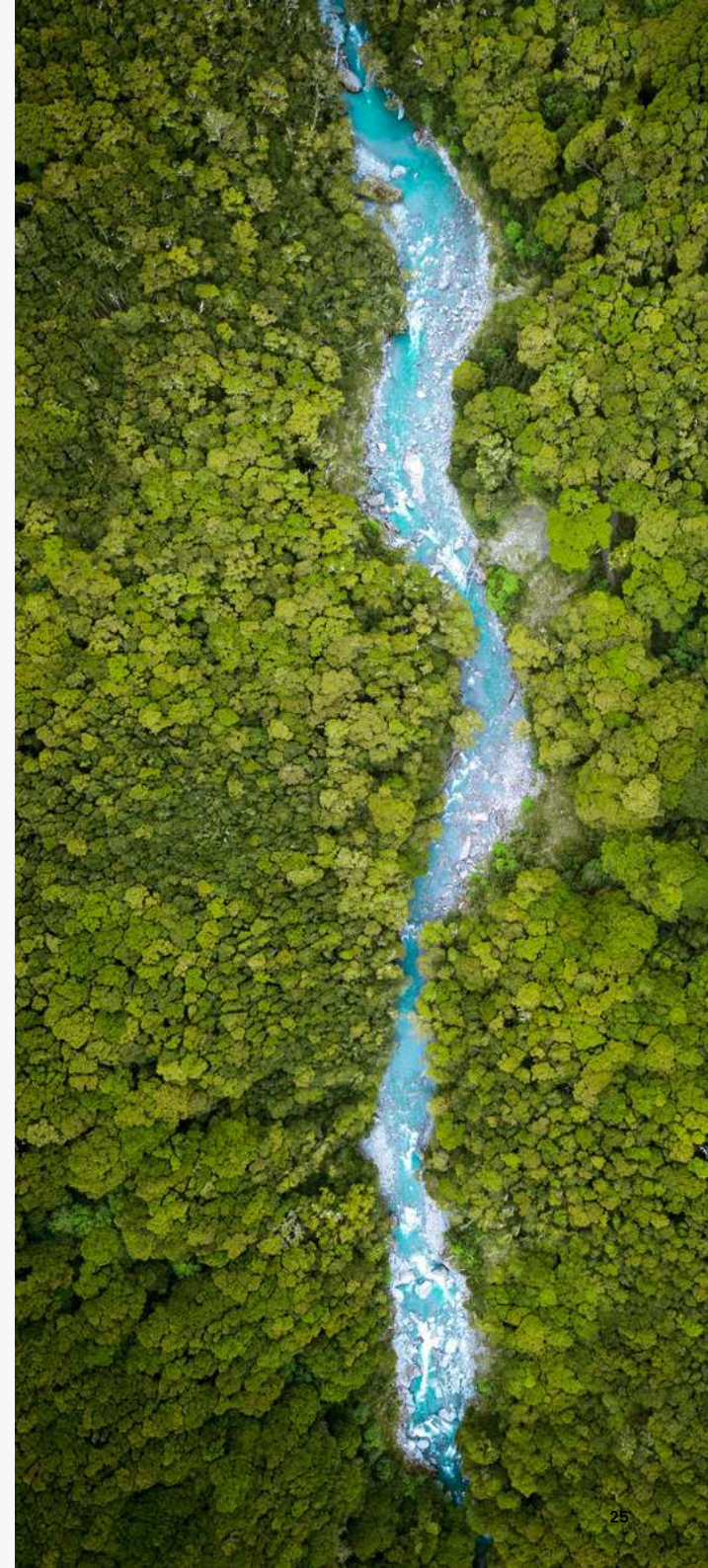
Glossary (cont.)

Carbon dioxide equivalent

The globally accepted standard measure of greenhouse gas emissions, and it permits other greenhouse gas emissions to be represented in terms of CO2 based on their proportional global warming potential (GWP). The following gases are included under the term CO2e.

Carbon source

Any source of carbon dioxide or equivalent greenhouse gases. People and animals, as well as seas and volcanic eruptions, are all natural carbon sources. Carbon emissions from human-caused sources include the use of fossil fuels, automobile exhaust, deforestation, and manufacturing, building, and mining activities.

Climate change

As defined by the UN Framework Convention on Climate Change, climate change is: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". In other words, in most contexts, climate change refers specifically to anthropogenic climate change, and not the Earth's natural climate cycles. This includes both global warming as well as extreme weather events.

Extreme Weather Events

Unexpected weather events and patterns that are considered extremely unusual outliers in the regions where they occur. Unexpected heat waves, such as the 2021 Western North America heat wave that set new record-high temperatures in Canada, or the February 2021 North American cold wave that caused significant damage in the state of Texas, are examples of such events. There is some evidence to suggest that climate change is causing extreme weather events to occur both more frequently as well as more severely.

Global Warming

An increase in the world's average surface temperature, as compared to a baseline reference period. The average temperature of world has increased by approximately 1°C since the late 19th century, and the scientific consensus is that human activity is the primary contributor.

Fossil Fuels

Fuels derived from hydrocarbon deposits formed by fossils, such as coal, oil, and natural gas. The combustion of these products, for example in car engines or coal-fired power plants, produces greenhouse gases like carbon dioxide.

Global Warming Potential (GWP)

A scientific measure that compares how harmful each greenhouse gas is to the atmosphere, in terms of how long they stay there and how much heat they trap, relative to carbon dioxide.

Glossary (cont.)

Greenhouse Gases (GHG)

Gases that trap heat in the atmosphere. Carbon dioxide, methane, nitrous oxide, and fluorinated gases are the primary greenhouse gases.

Greenwashing

The use of false or misleading promotion and marketing to exaggerate an organization's environmental or sustainable activities.

Kyoto Protocol

A global accord signed in 1997 that aimed to decrease greenhouse gas emissions. The phrase "carbon credit" appeared for the first time in the Kyoto Protocol. The Kyoto Protocol would later be superseded by the Paris Agreement.

Leakage

When a reduction in emissions from a carbon offset project in one location produces a rise in emissions in another area. For example, when preserving a forest in one region transfers logging activities to another area of forest.

Megawatt (MW)

A power measurement unit equal to one million watts. One megawatt is approximately equal to the amount of energy produced by ten car engines.

Megawatt Hour (MWh)

Equivalent to 1,000 kilowatts of continuous power consumption for one hour.

Net Zero

A condition in which greenhouse gases emitted into the atmosphere are balanced by the amount of greenhouse gases being removed from the atmosphere.

Offset Certificates

Paper licenses provided in exchange for the purchase of carbon credits. Offset certificates should include a serial number unique to the offset, total tonnage bought, the verifier's name and signature, project location, owner's name and address, and a vintage date.

Paris Agreement

An international treaty on climate change that superseded the Kyoto Protocol. Signed in 2016, the agreement has been ratified by all but six countries in the world. The long-term goal of the Paris Agreement is to keep global warming below 2°C, and the treaty contains various provisions to enforce this target.

Glossary (cont.)

Renewable Energy

Energy derived from sources that can be naturally renewed in a relatively short amount of time. The five most common renewable sources are biomass (such as wood and biogas), hydropower, geothermal (heat from inside the earth), wind, and solar.

Renewable Energy Credits (REC)

Unlike a carbon offset, which represents one tonne of CO2e emissions reduction, a renewable energy credit represents one MWh of energy produced by a renewable energy source, such as solar, wind, or hydroelectric power.

Sequestration

The removal of carbon dioxide from the atmosphere through biological (for example, photosynthesis in plants and trees), chemical (for example, turning CO2 into carbonate minerals), or physical processes (for example, storage of carbon dioxide in underground reservoirs).

Sustainable Development Goals (SDG)

The United Nations established 17 global development goals for all countries through a participatory process, elaborated in the 2030 Agenda for Sustainable Development. These goals include ending poverty and hunger, ensuring health and well-being, education, gender equality, clean water and energy, and decent work and building and ensuring resilient and sustainable infrastructure, cities, and communities.

We make sustainable solutions for our future work.

At OffsetGo, sustainability isn't just a buzzword, but our guiding principle. We're committed to crafting sustainable solutions for our future endeavours, prioritising environment friendly practices and innovative solutions. Offsetgo is dedicated to environmental solutions, employing a holistic approach to sustainability.

Shiv Nadar (IoE) initiative in calculating its environmental footprint aligns perfectly with our mission, and we're honoured to support them in this crucial endeavour.

Together, we are committed to protecting our environment and ensuring a safe planet for future generations. Let's build a more sustainable *"Tomorrow"*.

Learn more at offsetgo.earth

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