

# CARBON FOOTPRINT REPORT FY 2024-25

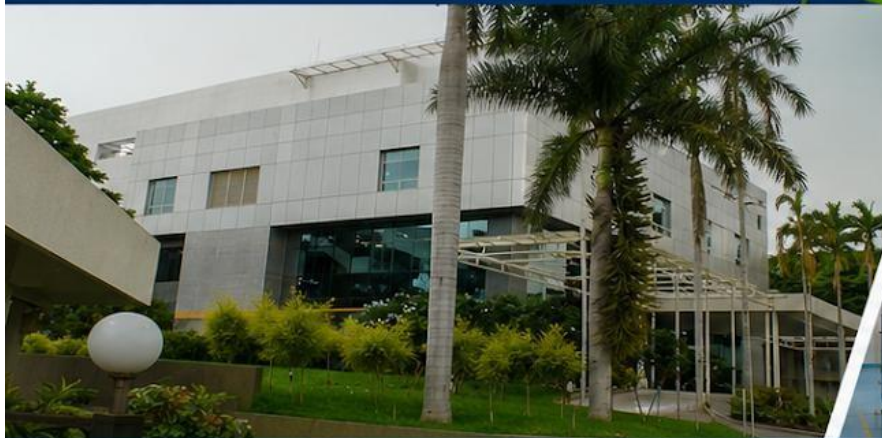
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*Research*

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# Introduction to Carbon footprint



# 1. INTRODUCTION

The Carbon Footprint (CF) is a parameter that represents the total emissions of CO<sub>2</sub> and other greenhouse gases (GHG), expressed in mass of CO<sub>2</sub> equivalent, caused directly or indirectly by a product, organization, service, or event. The carbon footprint is important to quantify the main emission sources and to have a complete picture of the impact of an organization on climate change. It is also the first step to carry out a plan to reduce GHG emissions. The carbon footprint of an organization intends to quantify the GHG emissions implied by the activity flows of an interconnected entity or group of entities. The calculation of the carbon footprint is more than GHG emissions data; it allows us to identify the main GHG emission sources of an organization and to have a global image of its impact on climate change. Furthermore, it constitutes a necessary base to address and continue actions to reduce this impact over time. Therefore, although the calculation of the carbon footprint by an organization is

voluntary, its assessment has an important strategic aspect and involves a large number of environmental, economic, and reputational benefits. A well-structured carbon footprint analysis also helps organizations set measurable climate targets and track progress over time. It enables better decision-making by highlighting high-impact processes where efficiency improvements can lead to substantial emission reductions. The assessment also supports compliance with emerging climate policies and reporting frameworks across global markets. Moreover, it strengthens stakeholder trust by demonstrating transparency and commitment to sustainability. For companies seeking international competitiveness, understanding and reducing their carbon footprint is becoming essential as supply chains increasingly require verified emissions data.



# 1.1 Types of Carbon Footprint

“**Organizational Carbon Footprint:**

Organizational Assessments involve quantifying the direct and indirect emissions associated with an organization. Direct emissions are those from the combustion of fossil fuels in equipment or vehicles owned by the organization, and also escaped greenhouse gases from the organization’s facilities (e.g., refrigerant gas losses from air conditioning systems). Indirect emissions are all emissions which are the result of an organization’s activities, but which are emitted from facilities or vehicles owned by third parties (e.g., an organization’s electricity consumption indirectly causes emissions at the electricity generating plant, which is owned by a third party.”

“**Product Carbon Footprint:** Product

Assessments involve quantifying all the emissions associated with a product. Product footprints can be from “cradle to customer”, which includes all emissions from the extraction of the raw materials, processing, manufacturing, and delivery to retailers/customers, or “cradle to grave” (also known as “whole-of-life”), which includes all emissions sources for “cradle to the customer”, and emissions associated with consumer use and final disposal of the product.”

“**Other types of Carbon Footprints:**

Assessments can be undertaken for events, services, websites, journeys, or even, for example, comparing the emissions from sending a letter by post with those associated with sending the letter by email. To quantify such activities, the principles are the same: inclusion of the direct and indirect emissions for a defined scope of activity.”

# 1.2 Intended user

The client is the intended user of this report. The first step towards managing GHG emissions is to measure them. This report provides essential quantitative information on GHG emissions of **Caprihans India Limited**. This report helps organizations to enhance the environmental impacts of GHG quantification/removal which further helps to reduce GHG emissions as measurement leads to management.

# 1.3 Standards/ guidelines used

This report is prepared in accordance with the principles set out by GHG Protocol for the quantification and reporting of GHG emissions and removals. GHG protocol establishes comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions. These standard details the principles and requirements for the design, development and management of GHG inventories for companies and organizations, and for the reporting of these inventories. It also includes the requirements to determine the GHG emission limits, quantify the emissions and removals of the organization’s gases and identify the activities or specific actions of the company in order to improve the management of these gases. GHG Protocol focuses mainly on the facilities and activities subject to the entire organization, conducting a study of GHG emissions associated with the processes carried out by the company, leaving open the possibility of including scope 3 sources.

G GHG Protocol establishes comprehensive global standardized frameworks to measure and manage GHG emissions from public and private sector operations, value chains and mitigation actions. The emissions are associated with the company’s operations and are categorized as direct and indirect emissions. These direct and indirect emissions are further sub divided into three scopes which are described below:

| Scope 1 – Direct GHG Emissions                                                                                                                                                                                                                                                                                                                         | Scope 2 – Direct GHG Emissions                                                                                                                                                                                                | Scope 3 – Other Direct GHG Emissions                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| It includes sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.; emissions from chemical production in owned or controlled process equipment. It also includes emissions from sources such as refrigerant gas and CO <sub>2</sub> fire extinguishers. | It includes GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or brought into the organizational boundary of the company. | Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services, disposal of wastes, employee commuting, etc |

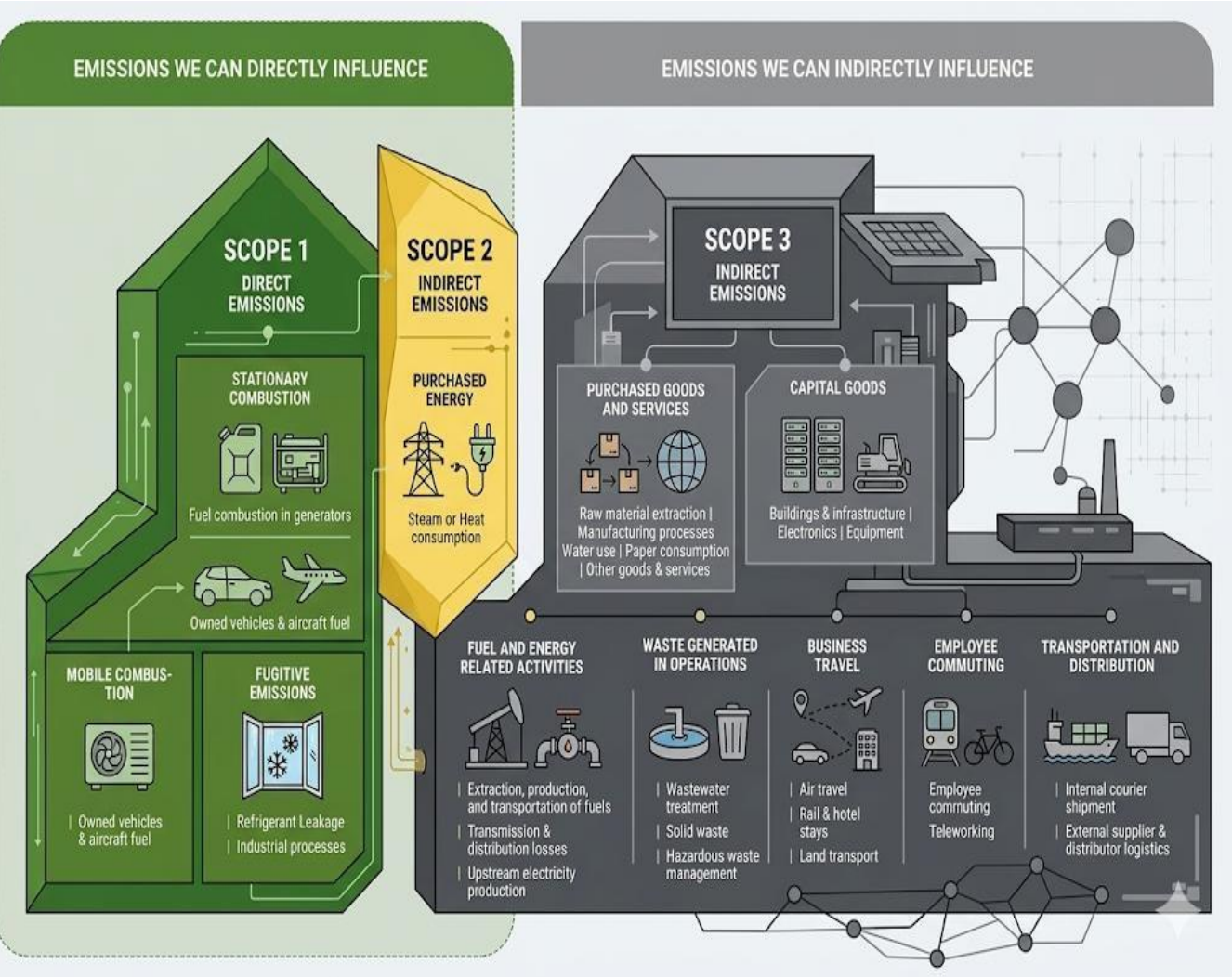
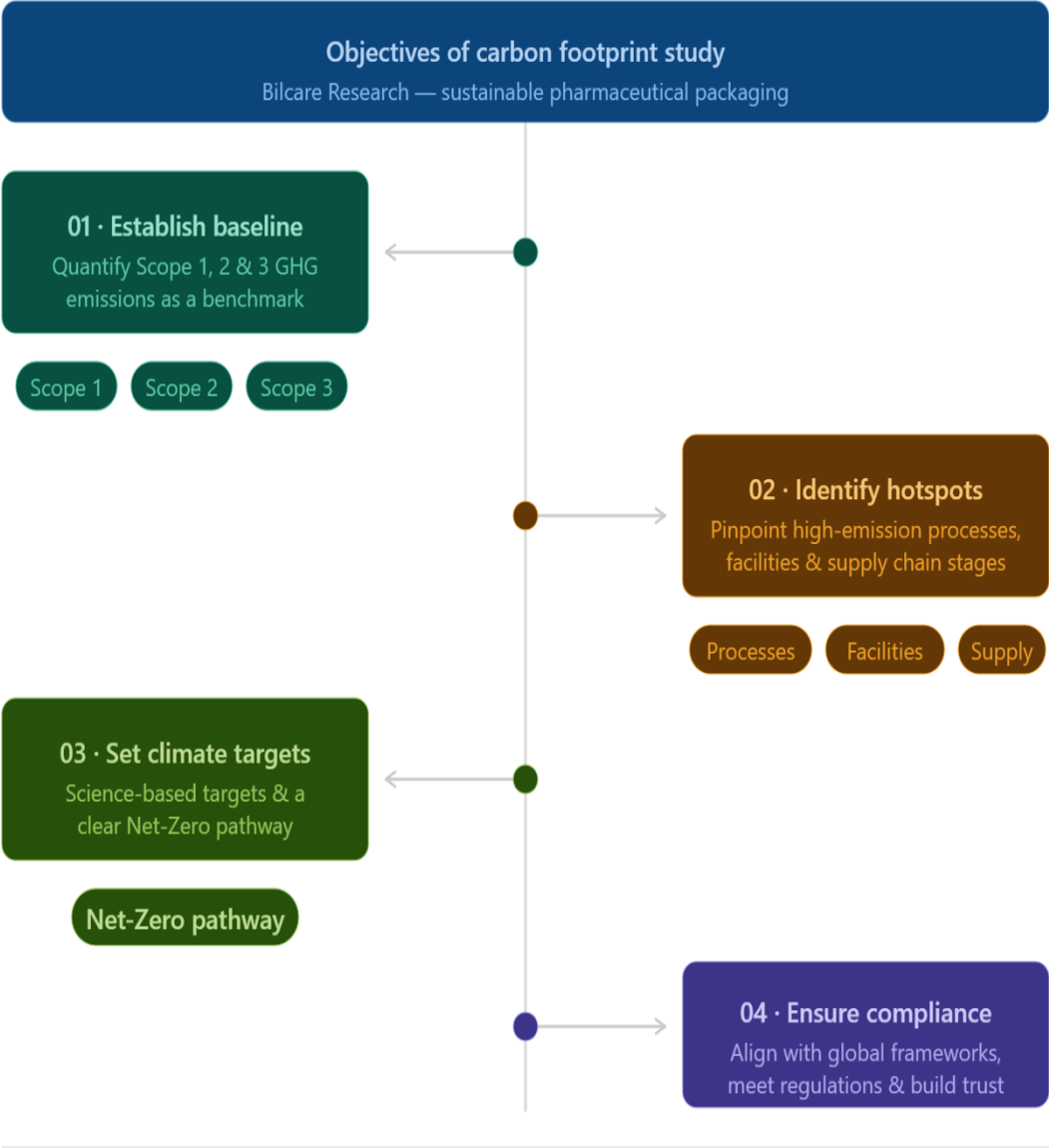


Figure 1: Representation of scopes according to GHG protocol





# Description of the Organization

## 2. DESCRIPTION OF THE ORGANIZATION

Bilcare Limited, has transferred its Pharma Packaging Business to Caprihans India Limited (Bilcare Subsidiary) with effect from 27th March 2023. Caprihans India Limited is a unique organization focused exclusively on the latest packaging technology for pharmaceuticals determined based on external and internal issues. Caprihans India Limited, Pune plant is primarily into manufacturing of specialty barrier films, other multi-layered barrier films & foils for blister packaging of pharmaceutical dosage forms as well as into the research services with a focus on conclusive end to end solution for pharma packaging under Bilcare brand. Caprihans, Pune plant is an established supply chain partner, meeting the packaging needs of leading pharma manufacturers worldwide and this objective is achieved through its Pharma Packaging Innovations (PPI) business vertical. Caprihans, Pune plant overall policy, intentions and approach to risk management, validation and change control is implemented through documented procedure in order to fulfil GMP requirements. Caprihans India Limited has plant and facility at Pune and Nashik in India. Caprihans India Limited, Pune plant is located in pollution free and scenic surroundings at Rajgurunagar, near Pune in Maharashtra State. Manufacturing is done in a classified environment Class 100000 (Class ISO - 8) under controlled temperature and humidity, conforming to current Good Manufacturing Practices (cGMP) norms. The plant have the capacity to meet all pharma packaging needs with flexibility in volumes and specifications. The entire Caprihans, Pune plant process, from manufacturing to dispatch from innovation to application, conforms to high quality standards as per cGMP requirements. The India plant is ISO 9001 : 2015, ISO 15378:2017, ISO 14001:2015 certified by TÜV SÜD South Asia and Drug Master File

(DMF) Registered with USFDA, Health CANADA for entire range of products and CFDA for four major range of products. As a part of Social compliance, Bilcare India plant is SEDEX registered and conforms to the SMETA audit requirements as per ETI Base Code. The company has a strong base in research. The Caprihans, Pune plant research initiative is directed towards eliminating the random selection of the packaging component by utilizing an innovative methodology “Formulation Evaluation” for identifying the correct and optimal packaging component/s for a specific drug, based upon its sensitivity to the environmental conditions. Caprihans Research program incorporates a comprehensive research plan for deliverance of end-to-end innovative, efficacious, viable and cost-effective packaging solutions for the pharmaceutical sector. This program encompasses Packaging Audits, Stability Studies and Packaging Development & Design. This research initiative also supports Caprihans in continuous improvement of its products as well as expanding the product range being offered to the global pharmaceutical sector by way of developing novel and innovative barrier films. Caprihans, Pune plant has state of the art R&D facilities at campuses located in green, highly scenic surroundings in India. Team Caprihans, Pune plant is comprised of postgraduates and doctorates in the field of polymer science and pharmacy working hand-in-hand to find innovative packaging solutions to the challenging requirements of global pharmaceutical industries. With its total focus on the pharma industry, Caprihans, Pune plant, supports and works closely with all its customers. A worldwide network of qualified personnel offers prompt and localized expert assistance. The latest ERP solution from SAP (SAP-S/4HANA) is in place to maintain round-the-clock efficiency of all customer-oriented processes. SAP Business Suite encompasses Customer Relationship

Management (CRM), SCM (Supply Chain Management) and SRM (Supplier Relationship Management) and is also equipped with APO (Advanced Planning & Optimizer) which takes care of planning & optimization. Page | 1 International sourcing of non-toxic raw materials, innovative management techniques and rigorous quality control ensures that Caprihans, Pune plant packaging solutions are of superior quality and at the same time it is highly cost-effective. Caprihans, Pune plant has been awarded thrice the “Best Vendor Award” for the year 2016-17 and also in the past during 2011-2012, 2012-2013 by OPPI (Organization of Pharmaceutical Producers in India). Also awarded for best Anitcounterfeit solution provider for the year 2016-17 by OPPI. OPPI is the premier industry association of research based pharmaceutical companies in India with affiliation to Geneva based International Federation of Pharmaceutical Manufacturer’s Association. Caprihans, Pune plant is a member of IQA, UK and HCPC, USA. Caprihans, Pune plant is an R&D led organization that focuses on developing cutting-edge solutions to enable the pharmaceutical industry to improve patient healthcare outcomes. As solution-provider to an industry based on innovation and research, Caprihans, Pune plant has innovation at the heart of its business. The organization is felicitated for its commendable contribution to Indian intellectual property from the period of April 2017 to March 2018, for having had the distinction of filing 445 applications for Design Protection on the occasion of World Intellectual Property Day 2019 by the Confederation of Indian Industry (CII) in partnership with Department of Industrial Policy and Promotion. Our products under Bilcare brand are sold globally spreading over 30 countries of which the key ones are US, Australia, Europe (Germany, Turkey, Greece etc.), Thailand, Bangladesh, South Korea, Taiwan, Nepal, Sri Lanka, Egypt, Mexico, Colombia, Brazil, Venezuela, Vietnam. Domestically we cater to the requirements of Indian multinationals and other multinationals. Our major customers are; Abbott, Aventis Healthcare Ltd., Apotex Research, Alkem Laboratories Ltd., Alembic Pharmaceuticals

Limited, Aurobindo Pharma Limited, Biocon Biologics Limited, Biotec Healthcare, Beximco Pharmaceuticals Ltd., Bristol Laboratories, Cipla Ltd., Cadila Healthcare Ltd., Dr. Reddy’s Laboratories Ltd., FDC Limited, Glaxo Smith Kline, Glenmark Pharmaceuticals Ltd., Global Pharma Co. LLC, Hetero Labs Ltd., Ipca Laboratories Ltd., Intas Pharmaceuticals Ltd., Johnson & Johnson, JSC Akrikin, Lupin Limited, MSD Pharmaceuticals Limited, Merck Limited, Micro Labs Ltd., Mylan Laboratories Limited, Novartis, Oman Pharmaceuticals, Pfizer Limited, Par Formulations Pvt. Ltd. Sanofi, STADA, Sun Pharmaceutical Industries Ltd., Square Pharmaceuticals Ltd., Serum Institute of India Pvt. Ltd., Torrent Pharmaceuticals Limited, Tabuk Pharmaceuticals Mfg. co., USV Limited / Unichem Laboratories Ltd., Mars / Wrigley India Ltd., Zentiva Private Ltd. etc.



# 2.1 Vision and Values

## Our Vision

- Transforming Health Outcomes, Touching Lives

## Our Values

- **Speed**

Proactive and swift action are our mantras.

- **Innovation**

Our constant approach at all levels is to seek better ways of listening, thinking, and doing - making our offerings meaningful and impactful.

- **Happiness**

We are motivated by our customers’ success and the happiness of our stakeholders.



## 2.3 Production Capacity

The table below outlines the annual production capacity for the product manufactured at the facility. The quantity is represented in **Tonne/Year**.

Table 1: Production details

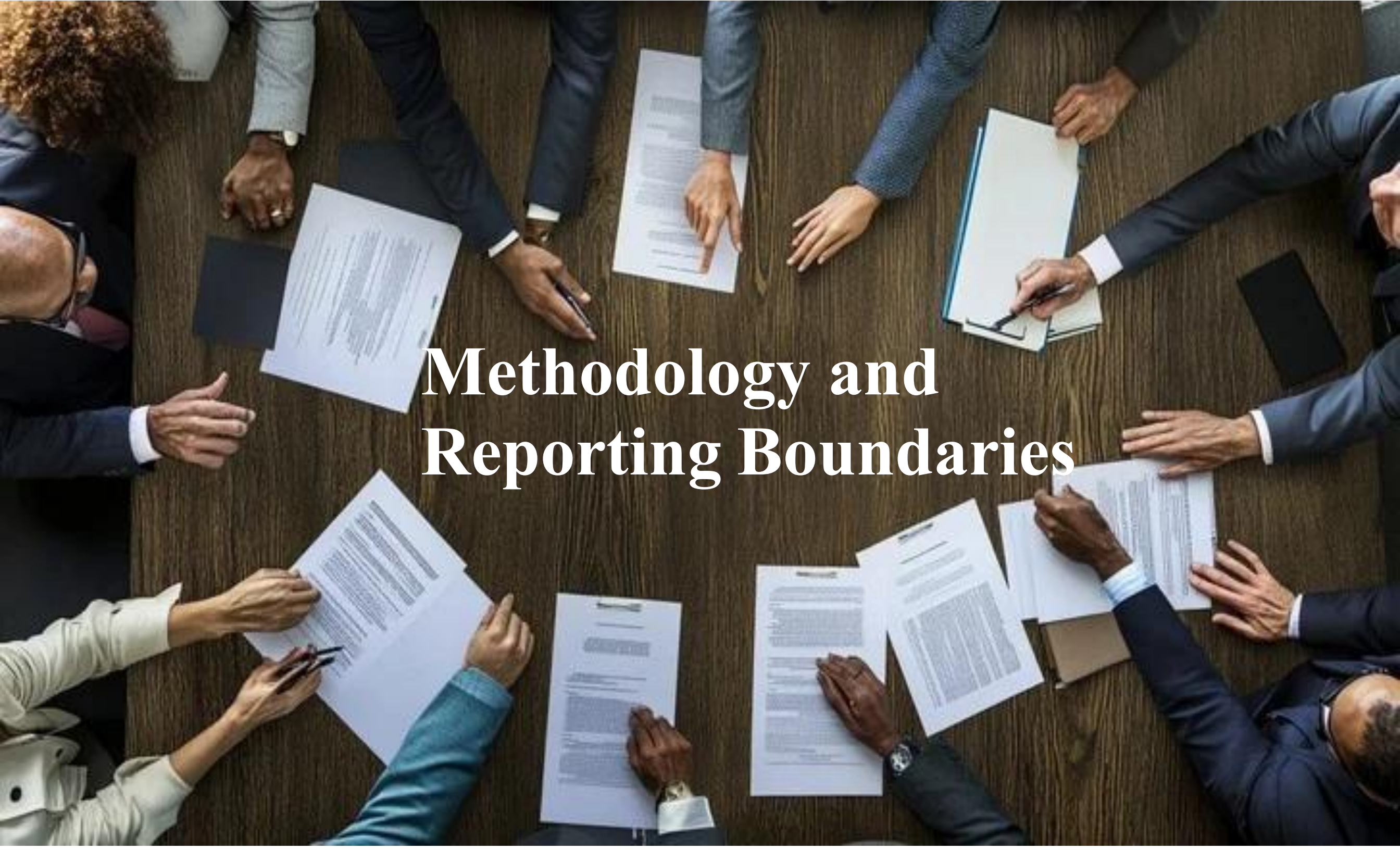
| Sr. No. | Product                                                                                                                                                                             | Maximum Quantity | UOM     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------|
| 1       | Primary packaging materials for medicinal products made from mono and composite barrier films and foils, including speciality coated, laminated, printed, and plain films and foils | 33,216           | MT/year |

## 2.4 Other inputs

This section summarizes the key utility and resource inputs associated with operations. It covers the consumption of diesel, LPG, electricity, water, and fire extinguishing agents used in operational and safety activities. In addition, the section outlines the generation of wastewater and solid waste arising from routine operations. Detailed information on these inputs and outputs is presented below:

Table 2: Other inputs

| Sr no | Category                             | Quantity | Unit        |
|-------|--------------------------------------|----------|-------------|
| 1     | Diesel (DG Set)                      | 92414    | Liter/Annum |
| 2     | Diesel (Company Owned Vehicles)      | 2059.26  | Liter/Annum |
| 3     | Fire Extinguisher (CO <sub>2</sub> ) | 224      | kg/Annum    |
| 4     | Refrigerant (R134a)                  | 161      | kg/ Annum   |
| 5     | Refrigerant (R22)                    | 98       | kg/ Annum   |
| 6     | Waste Generation                     | 15.96    | MT/Annum    |
| 7     | Electricity                          | 8833404  | kWh         |

An overhead view of a business meeting. Several people are seated around a dark wooden table, their hands and arms visible as they review and discuss various documents and papers spread across the surface. The scene is professional and collaborative.

# Methodology and Reporting Boundaries

# 3. Methodology and reporting boundaries

## 3.1 Methodology

### 3.1.1 Protocols & Standards Followed

The carbon footprint assessment follows globally recognized standards and frameworks widely accepted across all industries for measuring, reporting, and verifying greenhouse gas (GHG) emissions.

#### GHG Protocol Guidelines

Provides guidance for:

- Identifying emission sources
- Determining which GHGs to measure
- Setting organizational and Operational

boundaries Includes the following standards:

GHG Protocol Scope 1 Guidance:

- Provides standardized calculation methods for direct GHG emissions from owned or controlled sources, including stationary combustion (boilers, furnaces,

generators), mobile combustion (company vehicles and equipment), process emissions from industrial activities, and fugitive emissions such as refrigerant leaks, venting, and flaring.

GHG Protocol Scope 2 Guidance:

- Provides standardized calculation methods for purchased electricity, heat, cooling, and steam.

GHG Protocol Scope 3 Guidance:

- Framework for quantifying indirect emissions across the full value chain.

#### ISO 14064-1:2018

Guidelines for quantifying and reporting GHG emissions and removals at the organizational level.

**IPCC Guidelines (2006 + 2019 Refinements)**

Used for:

- Emission factors
- Global Warming Potentials (GWPs)
- Greenhouse gas classification and calculation conventions

**3.1.2 Definition of Calculation Boundaries**

To measure GHG emissions accurately, all units, departments, and operations of the organization are included.

Organizations must choose a boundary consolidation approach:

**Equity Share Approach**

- Emissions are allocated based on the organization’s economic or financial ownership

**Control Approach**

- Operational Control: Organization controls daily operations and policies.
- Financial Control: Organization controls financial and investment decisions.

The chosen approach defines which facilities, assets, and operations are included in the inventory and is kept consistent throughout reporting.

**Operational control** approach has been considered for the study of the manufacturing processes at the Pune manufacturing unit of Caprihans India Limited.

**3.1.3 Selection of Conversion Factors**

Conversion factors convert activity data (e.g., kWh, liters of fuel, km traveled, tons of waste) into kg CO<sub>2</sub>e or tCO<sub>2</sub>e using standardized global warming potentials (GWPs).

Criteria for Selecting Factors

- Accessibility
- Reliability
- Consistency
- Transparency
- Annual updates during the first quarter of each year

**Primary Sources Used**

- DEFRA (UK, latest available)
- IPCC
- US EPA
- Country-specific grid emission factors (based on national electricity generation mix)
- SimaPro

Water supply and wastewater treatment factors are typically based on DEFRA but adjusted using the local electricity emission factor.

3.1.4 Emission Factors & Their Application

An emission factor is a coefficient that converts activity data into GHG emissions. Examples include:

- tCO<sub>2e</sub> per kWh of electricity
- tCO<sub>2e</sub> per litre of fuel
- tCO<sub>2e</sub> per km of travel
- tCO<sub>2e</sub> per ton of waste

Application Method

- Most emission factors are used directly from the selected source.
- When multiple sources show slight differences, averages or sector-specific custom factors may be calculated.
- Ad-hoc factors may be developed for activities such as hotel stays, freight transport, or business travel and cross-

checked with reputable calculators.

3.1.5 Greenhouse Gases Included

- The assessment incorporates all seven Kyoto Protocol greenhouse gases using 100-year Global Warming Potentials (GWPs) from IPCC AR5:

| Greenhouse Gas                          | 100-Year GWP |
|-----------------------------------------|--------------|
| Carbon dioxide (CO <sub>2</sub> )       | 1            |
| Methane (CH <sub>4</sub> )              | 28           |
| Nitrous oxide (N <sub>2</sub> O)        | 265          |
| Hydrofluorocarbons (HFCs)               | 124–14,800   |
| Perfluorocarbons (PFCs)                 | 7,390–12,200 |
| Nitrogen trifluoride (NF <sub>3</sub> ) | 16,100       |
| Sulphur hexafluoride (SF <sub>6</sub> ) | 23,500       |

These GWPs ensure consistent CO<sub>2e</sub> conversions across all industries.

3.1.6 Calculation Approach

Every activity is assigned to a GHG Protocol scope:

Scope 1 - Direct Emissions

Emissions from sources owned or controlled by the organization:

- Fuel combustion
- Company vehicles
- Refrigerant
- Fire Extinguisher

**Scope 2 - Indirect Energy Emissions**

Emissions from purchased electricity, heat, cooling, or steam.

**Scope 3 - Other Indirect Emissions**

Emissions from the organization’s value chain:

- Business travel
- Commuting
- Waste disposal
- Purchased goods
- Transportation & distribution
- Water supply and wastewater

**Standard Calculation Formula**

**GHG Emissions (tCO<sub>2</sub>e) = Activity Data [unit]×Emission Factor [tCO<sub>2</sub>e/unit]**

A unit analysis process ensures consistency and accurate conversion to metric tons of CO<sub>2</sub> equivalent.

**Reporting Period:**

This report covers the period from April 1, 2024, to March 31, 2025.

**Organisation Boundary & scope**

The GHG report for Caprihans India Limited includes all three operational units: Unit 1, Unit 2, and Unit 3. Emissions from each unit have been considered across Scope 1 (direct emissions), Scope 2 (indirect emissions from purchased electricity), and Scope 3 (other indirect emissions).

As these are the only units within Caprihans India Limited Pune Plant, the reported GHG inventory covers the entire organization.

### 3.2 Operational boundaries considered for the project

The table below showcases the scopes of the GHG protocol. The applicability given within the table describes which of the boundary conditions have been considered for the calculations of the carbon footprint of **Caprihans India Ltd.**

| Table 3: Boundary conditions |                                             |                                              |               |
|------------------------------|---------------------------------------------|----------------------------------------------|---------------|
| Scope                        | Description                                 |                                              | Applicability |
| 1                            | DIRECT GHG EMISSION                         |                                              |               |
|                              | 1.1                                         | Direct emission from stationary combustion   | ✓             |
|                              | 1.2                                         | Direct emissions from mobile combustion      | ✓             |
| 2                            | INDIRECT GHG EMISSIONS FROM IMPORTED ENERGY |                                              |               |
|                              | 2.1                                         | Indirect emissions from imported electricity | ✓             |
|                              | 2.2                                         | Indirect emissions from imported energy      | N. A          |
| 3                            | OTHER INDIRECT GHG EMISSIONS                |                                              |               |
|                              | 3.1                                         | Purchased goods and services                 | ✓             |
|                              | 3.2                                         | Capital goods                                | ✓             |
|                              | 3.3                                         | Fuel- and energy-related activities          | ✓             |
|                              | 3.4                                         | Upstream transportation and distribution     | ✓             |
|                              | 3.5                                         | Waste generated in operations                | ✓             |
|                              | 3.6                                         | Business travel                              | ✓             |
|                              | 3.7                                         | Employee commuting                           | ✓             |
|                              | 3.8                                         | Upstream leased assets                       | N. A          |
|                              | 3.9                                         | Downstream transportation and distribution   | ✓             |
|                              | 3.10                                        | Processing of sold products                  | N. A          |
|                              | 3.11                                        | Use of sold products                         | N. A          |
|                              | 3.12                                        | End-of-life treatment of sold products       | N. A          |
|                              | 3.13                                        | Downstream leased assets                     | N. A          |
|                              | 3.14                                        | Franchises                                   | N. A          |
|                              | 3.15                                        | Investments                                  | N. A          |

# GHG Inventory and Emission Quantification



## 4. GHG inventory and emission quantification

### 4.1 Scope 1

This section presents the direct greenhouse gas (GHG) emissions from onsite fuel combustion sources. The emissions are calculated based on LPG, Diesel consumption, Refrigerant and Fire Extinguishers contributing to Scope 1 under the GHG Protocol.

Table 4: Scope 1 emissions

| Category                                                    | Consumption<br>(Liter/Year) &<br>(Kg/Year) | Emission (t CO <sub>2</sub><br>eq./year) |
|-------------------------------------------------------------|--------------------------------------------|------------------------------------------|
| Fuel (LSHS)                                                 | 1336650                                    | 3899.37                                  |
| Fuel (Diesel)                                               | 96134                                      | 255.69                                   |
| Diesel (DG Set)                                             | 92414                                      | 245.80                                   |
| CNG                                                         | 2059.26                                    | 5.55                                     |
| Fire Extinguisher (CO <sub>2</sub> )                        | 224                                        | 0.22                                     |
| Refrigerant (R 134 a)                                       | 161                                        | 895.16                                   |
| Refrigerant (R 22)                                          | 98                                         | 172.48                                   |
| <b>Total Scope 1 emissions (t CO<sub>2</sub> eq. /year)</b> |                                            | <b>5474.28</b>                           |

## 4.2 Scope 2

This section accounts for indirect GHG emissions resulting from the consumption of purchased electricity. These emissions are generated offsite at the power generation source but are attributed to the facility’s electricity usage.

Table 5: Scope 2 emissions

| Category                                              | Consumption (kWh/Year) | Total emission (Kg CO <sub>2</sub> eq./Year) | Total emission (t CO <sub>2</sub> eq./Year) |
|-------------------------------------------------------|------------------------|----------------------------------------------|---------------------------------------------|
| Electricity                                           | 8833404                | 6271720                                      | 6271.72                                     |
| Total Scope 2 emissions (t CO <sub>2</sub> eq. /year) |                        |                                              | 6271.72                                     |

## 4.3 Scope 3

### (a) Purchased goods and services

This section captures upstream Scope 3 emissions associated with the extraction, production, and processing of goods and services purchased by the organization. These indirect emissions occur outside the organizational boundary but are a result of supplier activities within our value chain. Emissions are calculated based on the life-cycle impacts of raw material sourcing, manufacturing, and service provision and are classified under **Scope 3, Category 1: Purchased Goods and Services in accordance with the GHG Protocol.**

Table 6: Emissions due to Purchased Goods and Services

| Material type                                                                         | Total emission (t CO <sub>2</sub> eq./year) |
|---------------------------------------------------------------------------------------|---------------------------------------------|
| Purchased Goods                                                                       | 871531.31                                   |
| Water Consumption                                                                     | 0.50                                        |
| <b>Total emission due to Purchased Goods and Services (t CO<sub>2</sub> eq./year)</b> | <b>871531.81</b>                            |

b) Capital Goods

This section captures upstream Scope 3 emissions associated with the production of capital goods purchased by the organization, such as machinery, equipment, buildings, and infrastructure. These embedded emissions arise from the extraction of raw materials, manufacturing, and assembly of capital assets and occur outside the organizational boundary. They are attributable to supplier activities within the value chain and are classified under **Scope 3, Category 2: Capital Goods** in accordance with the GHG Protocol.

Table 7: Emissions due to Capital Goods

| Category                                                               | Total emission (t CO <sub>2</sub> eq./Year) |
|------------------------------------------------------------------------|---------------------------------------------|
| Capital Goods                                                          | 9.02                                        |
| <b>Total emission due to Capital Goods (t CO<sub>2</sub> eq./year)</b> | <b>9.02</b>                                 |

**c) Fuel- and Energy-Related Activity**

This section captures upstream Scope 3 emissions associated with fuel- and energy-related activities not included in Scope 1 or Scope 2 emissions. These emissions arise from the extraction, production, refining, and transportation of fuels and energy purchased and consumed by the organization, as well as transmission and distribution losses associated with purchased electricity. The emissions occur outside the organizational boundary and are attributable to supplier and energy supply chain activities within the value chain. They are classified under **Scope 3, Category 3: Fuel- and Energy-Related Activities** in accordance with the GHG Protocol.

Table 8: Emissions due to Fuel- and energy-related activities

| Category                                                                                     | Total emission (t CO <sub>2</sub> eq./Year) |
|----------------------------------------------------------------------------------------------|---------------------------------------------|
| LSHS                                                                                         | 1388.32                                     |
| Diesel                                                                                       | 58.68                                       |
| <b>Total emission due to Fuel- and Energy-Related Activities (t CO<sub>2</sub> eq./year)</b> | <b>1447.00</b>                              |

**d) Upstream Transportation of Products**

This section captures upstream Scope 3 emissions associated with the transportation and distribution of purchased goods and raw materials from suppliers to the company’s facilities via Land, Sea or Air. These indirect emissions occur outside the organizational boundary but are generated by third-party logistics providers as part of the company’s supply chain activities. In accordance with the GHG Protocol, these emissions are classified under **Scope 3, Category 4: Upstream Transportation and Distribution (Land + Sea)**.

Table 9: Emissions due to Upstream Transportation and Distribution

| Category                                                                                     | Total emission (t CO <sub>2</sub> eq./Year) |
|----------------------------------------------------------------------------------------------|---------------------------------------------|
| Upstream Transportation by land                                                              | 4617.88                                     |
| Upstream Transportation by Sea                                                               | 16120.99                                    |
| <b>Emissions due to Upstream Transportation and Distribution (t CO<sub>2</sub> eq./year)</b> | <b>20738.87</b>                             |

**(e) Waste generated in operations**

This section captures upstream Scope 3 emissions associated with the treatment and disposal of waste generated from the company’s operational activities, including solid waste and wastewater. These indirect emissions occur outside the organizational boundary and result from third-party waste management processes such as recycling, landfilling, incineration, composting, and wastewater treatment. In accordance with the GHG Protocol, these emissions are classified under **Scope 3, Category 5: Waste Generated in Operations**.

Table 12: Emission due to Waste Generated in Operations.

| Material type                                                                     | Quantity (Ton/Year) | Total emission (t CO <sub>2</sub> eq./year) |
|-----------------------------------------------------------------------------------|---------------------|---------------------------------------------|
| Waste Generated in Operations.                                                    | 3184832             | 14.52                                       |
| Waste Generated in Water use                                                      | 6096.48             | 1.04                                        |
| Total emission due to Waste Generated in Operations. (t CO <sub>2</sub> eq./year) |                     | 15.96                                       |

**(f) Business Travel**

This section captures Scope 3 emissions associated with the travel undertaken by employees for business-related purposes across all modes of transportation, including air, rail, road, and hotel stay. These indirect emissions occur outside the organizational boundary and are generated through the use of third-party transport services such as commercial airlines, railways, taxis, and rental vehicles while conducting company business. In accordance with the GHG Protocol, these emissions are classified under **Scope 3, Category 6: Business Travel**.

Table 13: Emission due to Downstream Transportation and Distribution

| Material type                                                            | Total emission<br>(t CO <sub>2</sub> eq./year) |
|--------------------------------------------------------------------------|------------------------------------------------|
| Business travel                                                          | 28.14                                          |
| <b>Total emission due to Business Travel (t CO<sub>2</sub> eq./year)</b> | <b>28.14</b>                                   |

**g) Employee Commuting**

This section captures upstream Scope 3 emissions associated with the daily transportation of employees between their homes and worksites. These indirect emissions occur outside the organizational boundary and result from the use of personal vehicles, public transportation, company-provided transport, and other commuting modes. In accordance with the GHG Protocol, these emissions are classified under **Scope 3, Category 7: Employee Commuting.**

Table 10: Emission due to Employee Commuting.

| Material type                                                                | Total emission (t CO <sub>2</sub> eq./year) |
|------------------------------------------------------------------------------|---------------------------------------------|
| Employee Commuting.                                                          | 762.70                                      |
| <b>Total emission due to Employee Commuting. (t CO<sub>2</sub> eq./year)</b> | <b>762.70</b>                               |

**(h) Downstream transportation & Distribution**

This section captures downstream Scope 3 emissions associated with the transportation and distribution of the company’s products from operational facilities to end customers or distribution centers. These indirect emissions occur outside the organizational boundary and are generated by third-party logistics and transportation providers as part of downstream value chain activities. In accordance with the GHG Protocol, these emissions are classified under **Scope 3, Category 9: Downstream Transportation and Distribution**.

Table 13: Emission due to Downstream Transportation and Distribution

| Material type                                                                                           | Total emission<br>(t CO <sub>2</sub> eq./year) |
|---------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Final Product Distribution                                                                              | 1721.48                                        |
| <b>Total emission due to Downstream Transportation and<br/>Distribution (t CO<sub>2</sub> eq./year)</b> | <b>1721.48</b>                                 |



# Scope 3 Emissions Summary

Table 14: Scope 3 emissions

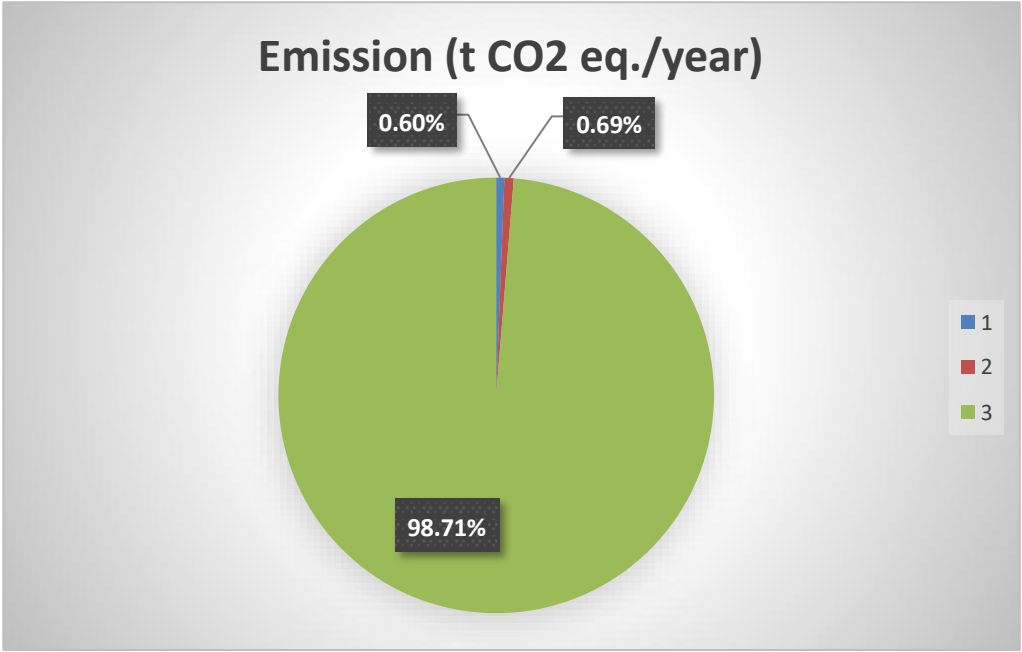
| Category                                                    | Emission (t CO <sub>2</sub> eq./year) |
|-------------------------------------------------------------|---------------------------------------|
| Purchased Goods & Services                                  | 871531.81                             |
| Capital Goods                                               | 9.02                                  |
| Fuel- and Energy-Related Activities                         | 1447.00                               |
| Upstream Transportation and Distribution                    | 20738.87                              |
| Employee Commuting                                          | 762.70                                |
| Waste Generated in Operations                               | 15.96                                 |
| Downstream Transportation and Distribution                  | 1721.48                               |
| Business Travel                                             | 28.14                                 |
| <b>Total Scope 3 emissions (t CO<sub>2</sub> eq. /year)</b> | <b>896254.98</b>                      |

## 4.4 Total emission

The table below summarizes the total greenhouse gas emissions across all scopes for the reporting year. It includes direct (Scope 1), indirect energy- related (Scope 2), and other indirect (Scope 3) emissions, providing a comprehensive overview of the organization’s carbon footprint.

Table 15: Total emissions

| Scope                                             | Emission (t CO <sub>2</sub> eq./year) |
|---------------------------------------------------|---------------------------------------|
| 1                                                 | 5474.28                               |
| 2                                                 | 6271.72                               |
| 3                                                 | 896254.98                             |
| <b>Total emission (t CO<sub>2</sub> eq./Year)</b> | <b>908000.98</b>                      |



| Target Year | Milestone                             | Action                                                                                                                                                                                                                                  |
|-------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2027</b> | <b>Baseline &amp; SBTi submission</b> | Validate FY 2024–25 baseline (908,000.67 tCO <sub>2</sub> eq). Submit near-term and long-term Science Based Targets to SBTi. Complete full Scope 3 category mapping.                                                                    |
| <b>2030</b> | <b>42% absolute reduction (S1+S2)</b> | Achieve 100% renewable electricity procurement. Electrify owned vehicle fleet. Reduce combined Scope 1 & 2 from 11,746 to below 6,700 tCO <sub>2</sub> eq. Launch supplier decarbonisation programme covering top 80% of Scope 3 spend. |
| <b>2040</b> | <b>70% total emissions reduction</b>  | Reduce total footprint to below 272,400.20 t CO <sub>2</sub> eq. Mandate low-carbon standards for all strategic suppliers. Eliminate high-emission product categories. Deploy circular economy principles across operations.            |
| <b>2050</b> | <b>NET-ZERO — All scopes</b>          | Achieve net-zero across Scope 1, 2, and 3. Annual independent third-party verification of net-zero status.                                                                                                                              |

# 8. RECOMMENDATIONS



## Scope 1 Emissions

### 1. Reduce LSHS (Low Sulphur Heavy Stock) Fuel Consumption (Major Contributor)

#### Justification:

LSHS fuel is the largest contributor to Scope 1 emissions, accounting for approximately 71% of total Scope 1 emissions. Reducing its consumption or switching to cleaner fuel alternatives can significantly lower the organization's carbon footprint.

#### Actions:

- Optimize boiler and furnace operations through regular performance monitoring.
- Improve thermal insulation of steam lines, tanks, and process equipment to reduce heat losses.
- Install waste heat recovery systems to utilize excess process heat.
- Replace LSHS with lower-carbon fuels such as natural gas, biomass, or biofuels where feasible.
- Conduct periodic energy audits to identify fuel-saving opportunities.

#### Expected Impact:

- 15–40% reduction in fuel-related emissions.
- Lower fuel consumption and operating costs.

### 2. Minimize Refrigerant Leakage from R-134a Systems

#### Justification:

R-134a contributes approximately 16% of total Scope 1 emissions despite low consumption due to its high Global Warming Potential (GWP). Reducing leakage can provide substantial emission reductions.

#### Actions:

- Implement a routine refrigerant leak detection and repair (LDAR) program.
- Maintain refrigeration and HVAC systems regularly to prevent fugitive emissions.
- Install refrigerant monitoring systems for early leak identification.
- Train maintenance personnel on proper refrigerant handling practices.
- Gradually replace R-134a with lower-GWP refrigerants where technically feasible.

#### Expected Impact:

- 20–80% reduction in refrigerant-related emissions.
- Reduced refrigerant replacement costs.

### 3. Phase Out R-22 Refrigerant

#### **Justification:**

R-22 is an ozone-depleting substance with a high GWP and contributes significantly to Scope 1 emissions. Many jurisdictions are already phasing out its use.

#### **Actions:**

- Develop a phased replacement plan for R-22-based refrigeration and air-conditioning systems.
- Retrofit existing equipment to use environmentally friendly refrigerants.
- Prevent refrigerant leakage through regular inspections and maintenance.
- Ensure proper recovery and disposal of refrigerants during servicing and equipment replacement.

#### **Expected Impact:**

- Up to 100% elimination of R-22-related emissions over the long term.
- Improved regulatory compliance.

### 4. Reduce Diesel Consumption in Production Operations

#### **Justification:**

Diesel used in operational activities contributes directly to Scope 1 emissions.

#### **Actions:**

- Optimize equipment utilization and operational scheduling.
- Replace diesel-powered equipment with electric or energy-efficient alternatives where feasible.
- Implement fuel monitoring systems to track consumption and identify inefficiencies.
- Conduct regular maintenance to improve fuel efficiency.
- Train operators in fuel-efficient operating practices.

#### **Expected Impact:**

- 10–25% reduction in diesel-related emissions.
- Lower fuel expenditure and maintenance costs.

## 5. Reduce Diesel Consumption in DG Sets

### Justification:

Diesel generators contribute substantially to Scope 1 emissions and are often operated during power outages or peak demand periods.

### Actions:

- Minimize DG set operation through improved power management.
- Install rooftop solar systems with battery storage to reduce generator dependency.
- Upgrade to energy-efficient generators with better fuel performance.
- Implement preventive maintenance to ensure optimal combustion efficiency.
- Explore alternative fuels such as biodiesel blends where technically feasible.

### Expected Impact:

- 20–50% reduction in DG-related emissions.
- Reduced diesel consumption and operating costs.
- Enhanced energy resilience and sustainability performance.

## 6. Optimize CNG Consumption

### Justification:

Although CNG contributes a relatively small share of total Scope 1 emissions, efficiency improvements can further reduce emissions and operating costs.

### Actions:

- Monitor gas consumption and identify process inefficiencies.
- Maintain burners and gas-fired equipment for optimal combustion.
- Optimize process parameters to reduce fuel demand.
- Recover and utilize waste heat where possible.

### Expected Impact:

- 5–15% reduction in CNG-related emissions.
- Improved fuel efficiency and cost savings.

## 7. Improve Fire Suppression Gas Management

### Justification:

Emissions from CO<sub>2</sub> fire extinguishers are minimal but can be reduced through proper management and maintenance.

### Actions:

- Conduct regular inspections to prevent accidental discharge.
- Maintain accurate inventory and servicing records.
- Replace extinguishers only when necessary and according to safety requirements.

### Expected Impact:

- Minor reduction in emissions.
- Improved asset management and regulatory compliance.

## Scope 2 Emissions -Electricity Consumption

### Current Status

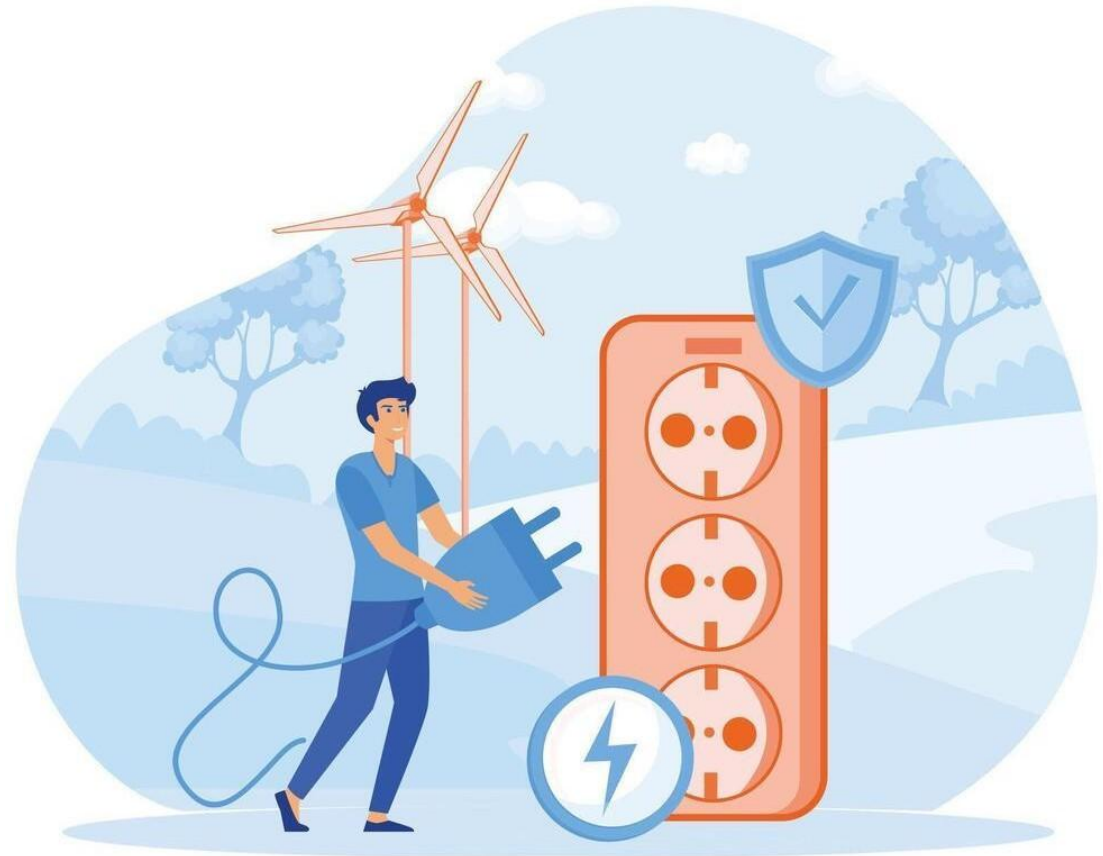
- **2024-25:** 6271.72 tCO<sub>2</sub>e/year from electricity consumption

### Recommendations

- Increase renewable electricity procurement.
- Install rooftop solar systems.
- Explore open-access renewable power procurement.
- Set target of 30–50% renewable electricity sourcing.
- Implement Energy Management System (EMS).
- Upgrade to energy-efficient motors, pumps, and HVAC systems.
- Conduct annual energy audits.
- Implement real-time energy monitoring.

### Expected Impact:

- Largest overall carbon reduction opportunity.
- Reduced energy costs and improved sustainability performance.



# Scope 3 Category 1 – Purchased Goods & Services

## Current Status

- **2024-25:** 871,531.81 tCO<sub>2</sub>e/year

## Recommendations

- Engage suppliers with lower carbon footprints and sustainability certifications.
- Increase procurement of recycled and sustainable raw materials.
- Establish supplier sustainability assessment and monitoring programs.
- Incorporate carbon footprint criteria into supplier selection processes.
- Collaborate with key suppliers to reduce emissions across the value chain.

## Expected Impact

- Significant reduction in Scope 3 emissions across the supply chain.
- Improved supplier sustainability performance and ESG compliance.

# Scope 3 Category 2 – Capital Goods

## Current Status

- **2024-25:** 9.02 tCO<sub>2</sub>e/year

## Recommendations

- Prioritize procurement of energy-efficient machinery and

equipment.

- Evaluate embodied carbon during capital asset procurement.
- Extend equipment lifespan through preventive maintenance.
- Source equipment from suppliers with verified environmental credentials.

## Expected Impact

- Reduction in embodied carbon associated with future capital investments.
- Improved asset efficiency and longevity.

# Scope 3 Category 3 – Fuel- and Energy-Related Activities

## Current Status

- **2024-25:** 1,447.00 tCO<sub>2</sub>e/year

## Recommendations

- Increase procurement of renewable electricity.
- Improve energy efficiency across manufacturing operations.
- Implement energy monitoring systems to identify losses.
- Purchase power from low-carbon energy providers where feasible.
- Promote energy conservation practices among employees.

## Expected Impact

- Reduced upstream emissions associated with energy consumption.
- Lower energy costs and improved sustainability performance.

# Scope 3 Category 4 – Upstream Transportation &

### Current Status

- **2024-25:** 20,738.87 tCO<sub>2</sub>e/year

### Recommendations

- Optimize inbound logistics routes and vehicle utilization.
- Increase load consolidation to reduce transportation frequency.
- Prioritize local and regional suppliers where feasible.
- Collaborate with logistics providers using fuel-efficient or alternative-fuel vehicles.
- Implement transportation management systems for route optimization.

### Expected Impact

- 10–30% reduction in transportation-related emissions.
- Reduced logistics costs and improved supply chain efficiency.

## Scope 3 Category 5 – Waste Generated in Operations

### Current Status

- **2024-25:** 15.96 tCO<sub>2</sub>e/year

### Recommendations

- Improve waste segregation at source.

- Increase recycling and recovery of production waste.
- Implement waste minimization initiatives within manufacturing processes.
- Identify opportunities for reuse of packaging and scrap materials.
- Monitor waste generation intensity on a periodic basis.

### Expected Impact

- Reduced waste disposal emissions.
- Lower waste management costs and improved resource efficiency.

## Scope 3 Category 6 – Business Travel

### Current Status

- **2024-25:** 28.14 tCO<sub>2</sub>e/year

### Recommendations

- Encourage virtual meetings and remote collaboration tools.
- Prioritize rail travel over air travel for short-distance trips.
- Establish a sustainable business travel policy.
- Monitor travel-related emissions regularly.

### Expected Impact

- Reduced travel emissions and travel-related expenses.
- Enhanced corporate sustainability performance.

## Scope 3 Category 7 – Employee Commuting

### Current Status

- **2024-25:** 762.70 tCO<sub>2</sub>e/year

### Recommendations

- Promote carpooling and shared transportation programs.
- Encourage use of public transportation.
- Provide incentives for cycling and walking where feasible.
- Implement flexible work arrangements and hybrid work models.
- Install EV charging infrastructure to encourage electric vehicle adoption.

### Expected Impact

- Reduction in commuting-related emissions.
- Improved employee engagement and transportation efficiency.

## Scope 3 Category 9 – Downstream Transportation & Distribution

### Current Status

- **2024-25:** 1,721.48 tCO<sub>2</sub>e/year

### Recommendations

- Optimize product distribution routes and shipment planning.
- Increase shipment consolidation to maximize vehicle utilization.
- Collaborate with distributors using low-emission transportation fleets.
- Explore alternative transportation modes with lower carbon intensity.
- Implement logistics performance monitoring systems.

### Expected Impact

- Reduced downstream transportation emissions.
- Improved distribution efficiency and reduced transportation costs.

# 7. CONCLUSION

| Scope                                             | Emission (t CO <sub>2</sub> eq./year) |
|---------------------------------------------------|---------------------------------------|
| 1                                                 | 5474.28                               |
| 2                                                 | 6271.72                               |
| 3                                                 | 896254.98                             |
| <b>Total emission (t CO<sub>2</sub> eq./Year)</b> | <b>908000.98</b>                      |

Caprihans India Limited's greenhouse gas inventory highlights that the majority of its emissions originate from Scope 3 activities, contributing 896,254.98 tCO<sub>2</sub>e/year, followed by Scope 1 emissions of 5,474.28 tCO<sub>2</sub>e/year, while Scope 2 emissions contribute a comparatively smaller share. The analysis indicates that Purchased Goods & Services are the most significant emission hotspot, accounting for nearly 97% of total Scope 3 emissions, emphasizing the critical role of supplier engagement, sustainable procurement, and raw material optimization in the company's decarbonization journey.

Within Scope 1 emissions, LSHS fuel consumption and refrigerant leakages (R-134a and R-22) are the primary contributors, presenting significant opportunities for emission reductions through fuel switching, energy efficiency improvements, and enhanced refrigerant management practices. Transportation-related activities, both upstream and downstream, also represent important areas for emission reduction within Scope 3.

Moving forward, Caprihans can strengthen its climate strategy by focusing on:

- Transitioning to lower-carbon fuels and energy-efficient technologies.
- Reducing refrigerant leakage and adopting low-GWP alternatives.
- Collaborating with suppliers to lower embodied emissions in purchased goods.
- Optimizing logistics and transportation networks.
- Enhancing resource efficiency and waste management practices across operations.

By implementing these measures, Caprihans can substantially reduce its carbon footprint, improve operational efficiency, strengthen ESG performance, and align with global sustainability and climate action objectives.

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