PROSE

Greenhouse Gas Emissions Inventory Report of PROSE TECHNOLOGIES INDIA PVT. LTD.

Reporting Period
1 January 2023 to 31 December 2023

Prepared by

KDS

KAIZEN DESIGN SOLUTIONS PVT. LTD.

CONTENTS

ABBREVIATIONS

Prose	Prose Technologies India Pvt. Ltd. (Pune)
AR5	IPCC Fifth Assessment Report
CH_4	Methane
CO_2	Carbon Dioxide
NF_3	Nitrogen Trifluoride
N_2O	Nitrous Oxide
SF_6	Sulfur Hexafluoride
CO_2e	Carbon Dioxide Equivalent
WH	Warehouse
GHG	Greenhouse Gas
GWP	Global Warming Potentials
HFCs	Hydrofluorocarbons
WRI	World Resource Institute
WTT	Well to Tank
EF	Emission Factor

CHAPTER 1: GENERAL DETAILS, PURPOSE AND POLICY

1.1. Introduction

A 'Carbon Footprint' refers to the potential climate impact of the GHG that are emitted directly or indirectly due to the process activities. To calculate a Carbon Footprint involves the preparation of a GHG inventory, typically an estimation of annual emission of GHG expressed in terms of tons of carbon dioxide equivalent (tCO_2e). The following document provides the Prose Technologies India Pvt. Ltd. (Pune)'s greenhouse gas(GHG) emissions inventory for the 2023 calendar year.

Prose's reporting processes and emissions classifications are consistent with international protocols and standards. This report has been prepared in accordance with the *International Standards Organization* standard *ISO 14064-1:2018*. The information provided follows the requirements outlined in Part 9.3.1 and (where applicable) 9.3.2 of the standards.

1.2. Purpose

Prose Technologies India Pvt. Ltd. (Pune)'s intent here is to demonstrate best practice and purpose for accounting of greenhouse gas emissions. The report is prepared in line with following purpose:

1.2.1. To understand current level of carbon emissions in accordance with ISO 14064 standard. The report has been prepared in accordance with the requirements of the same standard.

1.2.2. To use primary data wherever possible but especially surrounding all major emissions sources. Where primary data is not available, a consistent and conservative approach to the calculation will be applied.

1.2.3. To use the report as a guiding tool in setting carbon emission reduction targets/net zero targets. It reflects our commitment to better understanding and ultimately improving our operational performance with respect to emissions.

1.3. Description of Prose Technologies

Prose Technologies India Pvt. Ltd. is a global team of wireless communication professionals with a mission to connect people's lives, their work and everything in between. Prose Technologies India Pvt. Ltd. strive to provide the most innovative and advanced wireless communication solutions in the market and an industry leader invites all to witness a better future. For further information or details, visit our website: www.prosetechnologies.com

1.3.1. GHG and Sustainability Policies, Strategies and Programs

Prose Technologies India Pvt. Ltd. (Pune)'s vision for a 100-year company is not about reaching an end-point. It's a mind-set that every day and every deed is about growing a strong, iconic, enduring business. This means leaving the place better than we found it and doing all that can safeguard the future of the people, communities, and the Mother Earth.

Climate change remains a defining issue for businesses and governments everywhere. For Prose Technologies India Pvt. Ltd., it begins with accepting that business is based on an activity that generates carbon emissions and therefore taking responsibility to reduce those emissions over time while maintaining our competitiveness and ability to deliver quality services as customers expect.

Prose Technologies India Pvt. Ltd. (Pune)'s commitment to sustainability, and the environment has been, and continues to be, a fundamental element of our operating practices and success to date. Being sustainable and adopting a careful approach towards protecting our environment, Prose Technologies India Pvt. Ltd. is committed to designing low-carbon, energy-saving and environmentally friendly products. For more on Prose Technologies India Pvt. Ltd.(Pune)'s sustainability please visit: https://www.prosetechnologies.com/companyHistory.html?id=16 and PROSE India Achieves SBTi Validation for Groundbreaking Climate Targets

1.4. Persons Responsible

The provided GHG Inventory and Report has been prepared by the Pune based team, with significant support from many parties across all major operating regions.

Overall responsibility lies with Kaizen Design Solution Pvt. Ltd. (KDSPL). Responsibility for the preparation of the inventory and report:

- Swati Sawant – Associate Sustainability – KDSPL
- Priyanka Budruk – Sr. Analyst - Carbon, LCA & ESG-KDSPL
- Aditi Garge - Sr. Analyst - Carbon, LCA & ESG- KDSPL

Provision of background data, company details and supporting information:

- Elanthiraiyan Mohan - Prose Technologies India Pvt. Ltd. (Pune)
- Vishal Surushe- Prose Technologies India Pvt. Ltd. (Pune)

1.4.1. Team Training for the Preparation of this Emissions Inventory and GHG Report

Members of the core inventory preparation team are aware of all principles and requirements within ISO 14064-1:2018 standard.

The inventory preparation team provided regional contributors with a detailed data input template and instructions on collection of data in line with the standard.

Individual skills and insight have also been informed through a separate service arrangement with **Kaizen Design Solutions Pvt. Ltd.** to provide a detailed GHG Report on Prose Technologies India Pvt. Ltd. (Pune)'s existing understanding and reporting methods.

1.5. Audience and Dissemination Policy

This report is intended for all Prose Technologies India Pvt. Ltd.'s stakeholders interested in its greenhouse gas emissions inventory and the associated reporting structure, notation and explanations. The report is intended for third-party verification.

1.6. Reporting Period and Frequency of Reporting

This GHG report covers the calendar year 1st January 2023 to 31st December 2023.

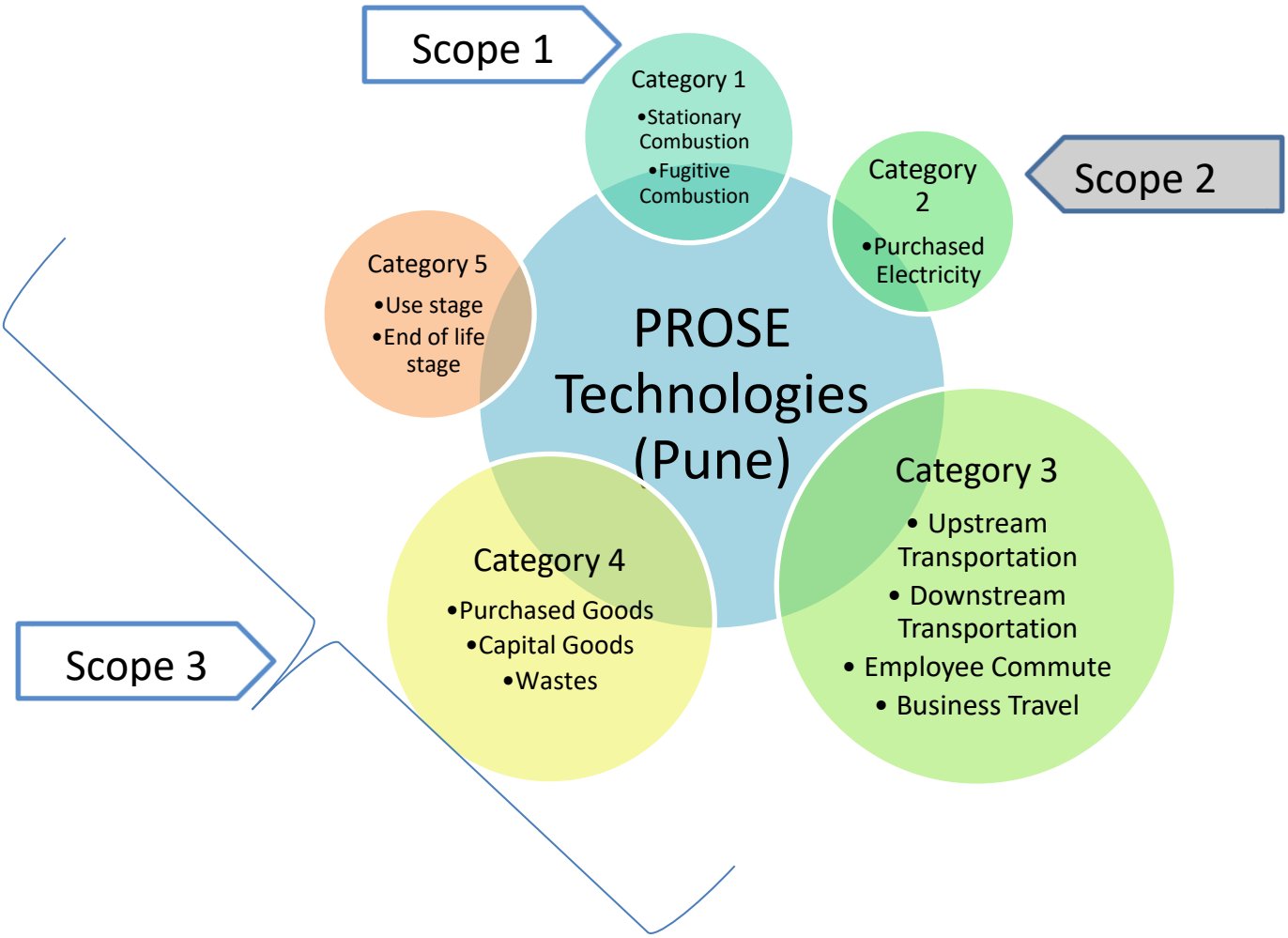
GHG reports are produced annually.

1.7. Reporting Standards, Approach and Verification

1.7.1. Compliance with ISO 14064-1:2018 and GHG Protocol

The GHG report for the year ending 31st December 2023 has been prepared in accordance with ISO 14064-1:2018. A reporting index and list of GHGs taken into account are explained in appendix 1. Details of GHG protocol is explained in Chapter 5.

Figure 1: ISO 14064:2018 & GHG Protocol



CHAPTER 2: ORGANISATIONAL BOUNDARIES

2.1 Consolidation Approach

Prose Technologies India Pvt. Ltd. (Pune) utilizes the 'operational control' consolidation method for our emissions inventory. This approach considers all emissions that Prose Technologies India Pvt. Ltd. (Pune) has control over but not necessarily financial control.

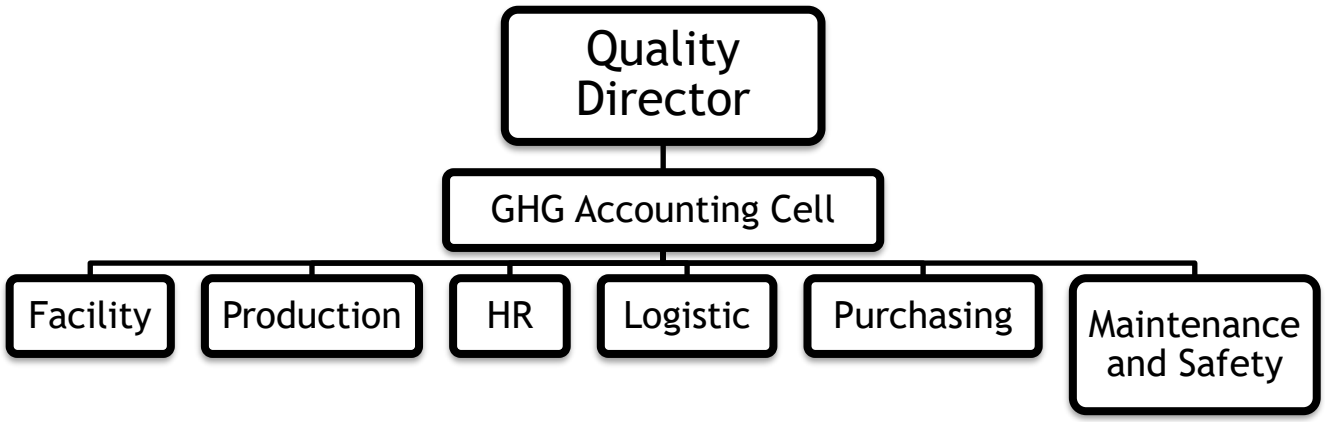
The most significant application of this approach is the inclusion of emissions from our owner drivers, agents, rail providers, shipping lines and airlines that support our service offering to customers.

2.2 Organizational Chart

The organizational chart below depicts the Prose Technologies India Pvt. Ltd. (Pune)'s operating nature as is relevant to the emissions summary.

Prose Technologies India Pvt. Ltd has a facility unit, a ware house and one more separate unit viz. AVIZA nearby the facility unit in Pune, Maharashtra, India. We are focusing on the operations carried out by all together units which are operates under the Pune branch, in this report.

Figure 2: Prose Technologies India Pvt. Ltd. (Pune)'s Operational Organization Chart



CHAPTER 3: REPORTING BOUNDARIES

3.1 ISO 14064:2018 Emissions Categories and Classification

Greenhouse gas emissions sources have been identified and grouped in accordance with the ISO 14064-1:2018 standard. This methodology lists six categories of emissions and differs somewhat from earlier categorization in line with the Greenhouse Gas Protocol's Scopes 1 through 3.

- **Category 1: Direct GHG emissions and removals**

  Direct GHG emissions and removals occur from GHG sources or sinks inside organizational boundaries and that are owned or controlled by the organization. Those sources can be stationary (e.g. heaters, electricity generators, industrial process) or mobile (e.g. vehicles).

- **Category 2: Indirect GHG emissions from imported energy**

  This category includes only GHG emissions due to the fuel combustion associated with the production of final energy and utilities, such as electricity, heat, steam, cooling and compressed air. It excludes all upstream emissions (from cradle to power plant gate) associated with fuel, emissions due to the construction of the power plant, and emissions allocated to transport and distribution losses.

- **Category 3: Indirect GHG emissions from transportation**

  GHG emissions occur from sources located outside the organizational boundaries. Those sources are mobile and are mostly due to fuel burnt in transport equipment. If relevant, the category also includes emissions associated with: refrigeration gas leaks (e.g. chilled transport, air conditioner); upstream emissions arising from fuel generation and fuel transportation/distribution; and construction of the transport equipment (vehicle and infrastructure).
  This category includes transport for persons and goods, and for all modes (rail, maritime, air and road). If transport equipment is owned or controlled by the organization, the emissions shall be taken into account in category 1 as direct emissions.
  Options for quantification methodologies: According to the consolidation approach chosen by the organization, emissions from leased vehicles could be reported either in this category or in the category for indirect GHG emissions from services used by an organization.

- **Category 4: Indirect GHG emissions from products used by the organization**

  GHG emissions occur from sources located outside the organizational boundaries associated with goods used by the organization. Those sources might be stationary or mobile and are associated with all types of goods purchased by the reporting organization. Emissions are mostly due to the following phase in a "cradle to supplier output gate" approach: embodied energy of the material; transportation of raw materials/products between suppliers; and manufacturing and processing of raw materials.

- **Category 5: Indirect GHG emissions associated with the use of products from the organization**

  GHG emissions or removals associated with the use of products from the organization result from products sold by the organization during life stages occurring after the organization's production process. Those emissions or removals might cover a very wide range of services and associated processes.

- **Category 6: Indirect GHG emissions from other sources**

  The purpose of this category is to capture any organization specific emission (or removal) that cannot be reported in any other category. In consequence, it is the organization's responsibility to define the content of this particular category.

3.2 Summary of Emissions Source Inclusions

Table 1: Emissions Source Inclusions

Category	Main Process	Activity	Fuel/ Energy Required?	Details and purpose	Emission Source
1	Facility	Refrigerator operation	Yes	Cooling	Fugitive emissions
	Facility	Fire Extinguisher	-	Extinguisher	Fugitive emissions
	D. G. sets	Fuel Consumption by D.G. sets	Yes	Diesel	D. G. sets
2	Purchased Electricity	Electricity used in the facility for different activities	Yes	Electricity Purchased	Electricity
3	Employee Commuting	Employees Commute in their private vehicles	Yes	Diesel/Petrol	Vehicular emission
	Upstream Transportation	Raw material Transportation	Yes	Diesel	Vehicular Emission
			Yes	Heavy fuel oil (HFO)	Sea Transportation
			Yes	Aviation gasoline (AVGAS)	Air Travel
	Downstream Transportation	Product transportation	Yes	Diesel	Vehicular Emission
			Yes	Heavy fuel oil (HFO)	Sea Transportation
			Yes	Aviation gasoline (AVGAS)	Air Travel
	Business Travel	Transportation for business	Yes	Diesel/Petrol	Vehicular Emission
			Yes	Railway Transport	Rail Transport
			Yes	Aviation gasoline (AVGAS)	Air Travel
			Yes	Hotel Stay	Hotel Activities
4	Emissions from Purchased goods	Raw materials, Water supply and treatment, Electricity T & D Losses	Yes	Production, Domestic use	Use of Raw materials, Water discharge, Electricity T & D Losses
	Emissions from Capital goods	Emissions from fixed assets	Yes	Use of Fixed assets	Embodied Energy
	Waste Transportation & Disposal	Hazardous and Non-hazardous waste	Yes	Diesel, Disposal methods	Vehicular Emissions, treatment
5	Emissions from use stage of the product	Use of electricity as per the frequency	Yes	Use of the product-Antenna	Electricity
	Emissions from end of life stage of the product	Disposal of the product after the life	Yes	Disposal of used product	Treatment for disposal

Notes to Table 1

1. *Prose Technologies India Pvt. Ltd.(Pune)'s sea transport operates by Cosco Shipping Lines Ltd.*
2. *Different regions use different fuel types (i.e. Gasoline & diesel) and measures (kg & liters)*

3.3 Significance and Materiality

Factors for consideration in assessing significance and materiality include:

- Size of the emissions
- Prose Technologies India Pvt. Ltd. (Pune)'s influence on the emission source
- Difficulty in obtaining data
- Poor validity in available estimation approaches

3.4 Summary of Emissions Source Exclusions

The following are emissions sources that have been identified but excluded from the emissions inventory. These sources are not considered significant or material to stakeholders, the context of the inventory, and/or are not feasible or practical to calculate at the current point in time.

Table 2: Emissions Source Exclusions

Category	Emission Source	Methodology & Materiality
1	Biogenic emissions	Difficult to obtain, estimated to be *<1%*
1	Fugitive emissions by Soldering	Difficult to obtain, estimated to be *<1%*
4	Transportation of Fixed assets	Emissions are *<1%*

Notes to Table 2

1. *Prose have only one warehouse near the factory and only for storing the final product until dispatch.*
2. *Prose Technologies India Pvt. Ltd. outsources the production of spare parts and technical services to "Aviza" and bares the operational costs like transportation, manpower, electricity, and also provides the raw material.*
3. *Biogenic emissions for the likes of composting have not been included in any part of this report.*
4. *Emissions from the transportation of fixed assets have been excluded as they account for less than 1% of the total emissions and are considered immaterial.*

CHAPTER 4: QUANTIFIED GHG INVENTORY OF EMISSIONS

4.1. ISO 14064 Consolidated Statement of Greenhouse Gas Emissions

Table 3: Consolidated Statement of GHG emission

Consolidated statement of GHG emissions

REPORTING COMPANY	PROSE TECHNOLOGY PVT. LTD, PUNE
Reporting period covered	From 01/01/2022 To 31/12/2022

	EMISSIONS	Notes	TOTAL tCO2e	Carbon dioxide	Methane (CH4)	N2O	HFC	PFC	SF	NF
		1								
		2	GWP	1	29.8	273				
Scope 1: Direct GHG emissions and removals in tons			**33.86**	**14.53**	**0.06**	**0.03**	**19.24**	-	-	-
1.1	Direct emissions from stationary combustion		14.62	14.53	0.06	0.03				
1.2	Direct emissions from mobile combustion	NS								
1.3	Direct process emissions and removals arise from industrial processes	NS								
1.4	Direct fugitive emissions arise from the release of greenhouse gases in anthropogenic systems									
1.4.1	Direct Emissions from Refrigerent	3	19.24				19.24			
1.4.2	Direct Emissions from Extinguishers	4								
1.5	Direct emissions and removals from Land Use, Land Use Change and Forestry	NS								
	Direct emissions in tCO2e from Biomass	**NS**								
	Indirect Emissions in tCO2e		**1,32,536.00**							
Scope 2 : Indirect GHG emissions from imported energy										
2.1	Indirect emissions from imported electricity		382.39							
2.2	Indirect emissions from imported energy	NS								
Scope 3 : Indirect GHG emissions from transportation										
3.1	Purchased Goods & Services		60,934.45							
3.2	Capital Goods		138.33							
3.3	Fuel- Energy		112.61							
3.4	Upstream transportation and distribution		66,446.49							
3.5	Waste generated in operations		1,007.47							
3.6	Business travel		143.31							
3.7	Employee commuting		245.98							
3.8	Upstream leased assets	NS	7.26							
3.9	Downstream transportation and distribution		3,071.60							
3.10	Processing of sold products	NS								
3.11	Use of sold products		6.98E-28							
3.12	End-of-life treatment of sold products		46.13							
3.13	Downstream leased assets	NS								
3.14	Franchises	NS								
3.15	Investments	NS								
	Total emission Scope 1, 2, and 3		**1,32,569.86**							
Removals		5								
Direct removals in tonn CO2e			55.47							
Other related Information										

NS	Non significant

Notes to table 3

1. *Direct and indirect emissions have been prepared in accordance with the recommendations of Annexure B of the standard ISO 14064:2018.*
2. *Gas types CO_2, CH_4 and N_2O have been included as those relevant to direct emissions from mobile combustion. All other GHGs without values have been excluded.*
3. *There are no any refrigerants refilled by the company within the reporting period.*
4. *Details of refrigerant refilled by the company is given in Appendix 2: Emission factors of Category 1: Emissions from refrigerants.*
5. *Reduced consumption due to solar adjustment is 62,701 kWh, resulting in avoided emissions of approximately 44.89 tCO_2 and carbon removal due to 452 trees accounts for an additional 10.58 tCO_2, it sums up to 55.47 tCO_2.*

4.2. Methodologies for the Collection and Quantification of Data

The emissions summary represents the best attempt to consolidate and standardize emissions data and provide a detailed explanation of working and estimation in line with the ISO 14064-1:2018 standard.

Section 3.3 describes the overview of emissions sources and their respective data sources. Where an estimation approach is required, the best available data and calculation method is applied.
Where two or more estimation approaches are considered equally valid, that which produces themore conservative figure is used.

4.2.1 Approach to Emission Factors

This report tries to use regional emission factors instead of international emission factors. Where specific regional emission factors are not available or applicable, we have taken the most relevant as suggested by:

- Department for Environment, Food & Rural Affairs (DEFRA), govt. of UK (https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023)
- Causes of climate change, Prof. Asgeir Sorteberg, University of Bergen (https://www.futurelearn.com/courses/causes-of-climate-change/0/steps/13583)
- Global Warming Potential (https://en.wikipedia.org/wiki/Global_Warming _Potential)
- Global Warming Potentials, US EPA (https://www.epa.gov/ghgemissions/understanding-global-warming-potentials)
- UNFCCC, Climate Change 1995, The Science of Climate Change: Summary for Policymakers and Technical Summary of the Working Group
- https://www.ncbi.nlm.nih.gov/pubmed/16287599
- Journal of Environment and Earth Science. ISSN 2224-3216 (Paper) ISSN 2225-0948 (Online) Vol.4,No.22, 2016
- WRI India specific factors: https://www.wri.org/sustainability-wri/dashboard
- https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023

4.2.2 Changes in Methodologies on prior year/base year

The 2023 calendar year is the first GHG report to be published by Prose Technologies India Pvt. Ltd., it provides the base year for the original assessment and for future years.

4.2.3 GWP Calculation and Source

Quantities of GHG emissions are expressed as tones of CO_2e (Carbon Dioxide Equivalents) using the global warming potentials (GWP) from the IPCC Sixth Assessment Report (AR6). The time horizon is 100 years.

Direct emissions sources (Category 1) are expressed as both CO_2e and their detailed GHG breakdown, including the GWP (Global Warming Potential) value. The most notable GHGs include:

Table 4: Greenhouse Gases and their respective Global Warming Potentials.

GHG	Chemical Formula	GWP
Carbon dioxide	CO_2	1
Methane	CH_4	29.8
Nitrous oxide	N_2O	273

4.2.4 Review and Improvement

This report examines the available data and information as the first comprehensive portrayal of Prose Technologies India Pvt. Ltd.(Pune)'s emissions. The collection of primary data on all key sources of emissions has been pursued. Where data is absent or incomparable, conservative estimation methods have been deployed, creating an incentive to continuously improve the ratio of source data to estimation methods. In future years, Prose Technologies India Pvt. Ltd.(Pune) plans to utilize this as base case, to develop Prose Technologies India Pvt. Ltd.(Pune)'s framework and methodology for capturing and calculating emissions figures and reduce ambiguity.

4.3. Information Management Procedures

The GHG measurement and reporting process has been developed to ensure conformance to the principles of the ISO 14064-1:2018 standard and to be consistent with the intended use of the GHG inventory. The procedural elements below are designed to set structure and consistent checks to provide accuracy and completeness of the inventory and address errors and omissions.

4.3.1 Key Procedural Elements for GHG Information Management

- Regional cross functional team at Pune, collect source data from appropriate sources of Prose Technologies India Pvt. Ltd.(Pune)'s finance and transport management systems.
- Data is reviewed and consolidated by Kaizen Design Solutions Pvt. Ltd. (KDS) team for the GHG inventory and report preparation.
- This GHG report also outlines consideration for the following:
  - Responsibility and authority for inventory development.
  - Identification of organizational and reporting boundaries.
  - Selection and review of GHG sources and sinks.
  - Details of quantification approaches and consideration to their consistent application.

4.4. Assessment of Uncertainty

For this 2023 report uncertainty has been reported with the current tools and variety of emission sources. The applicability of such assessments will be reviewed in each reporting period.

The uncertainty of GHG emissions is determined by the measurement method of the activity data (Table 5), the emission factors selected (Table 6), and the equipment calibration (Table 7). The higher rating indicates the better quality of the data.

Table 5: The level of activity data.

Sr. No.	Measurement method of the activity data	Score
1	Continuous measurement	6
2	Intermittent measurement	3
3	Inference	1

Table 6: The level of emission factor

Sr. No.	Level of activity data	Score
1	Factor obtained by measurement or mass balance	6
2	Experience factor form the same process or equipment	5
3	Emission factor provided by the manufacturing plant	4
4	Regional emission factor	3
5	National emission factor	2
6	International emission factor	1

Table 7: The level of equipment calibration

Sr. No.	Measurement method of the activity data	Score
1	Perform equipment calibration according to regulations	6
2	Perform equipment calibration without relevant regulations	3
3	No relevant regulations require equipment calibration	1

The uncertainty of GHG emissions is based on the level of activity data, emission factor and equipment calibration, and then according to the weighted average of emission divided into five grades. The higher weighted average indicates better data quality.

Table 8: Degrees of uncertainty

Degrees of uncertainty	The weighted average A
Level 1	$A \geq 5.0$
Level 2	$5.0 > A \geq 4.0$
Level 3	$4.0 > A \geq 3.0$
Level 4	$3.0 > A \geq 2.0$
Level 5	$A < 2.0$

Table 9: Follow shows the data quality of GHG emission in 2023.

Scope	Details		Level of activity data	Level of emission factor	Level of equipment calibration	Average	Level of data	Total GHG emission (CO2e/year)	Percentage of emission (%)	Weighted average
Scope 1	Direct emissions from stationary combustion		6	1	3	3.33	Level3	14.62	0.0110%	0.0004
	Direct Emissions from Refrigerants		6	1	3	3.33	Level3	19.24	0.0145%	0.0005
Scope 2	Indirect emissions from imported electricity		6	2	6	4.67	Level2	382.39	0.2884%	0.0135
Scope 3	Emissions from Upstream transport and distribution of goods	Road	3	2	3	2.67	Level4	29,795.75	22.4755%	0.5993
		Sea	3	1	3	2.33	Level4	4,409.27	3.3260%	0.0776
		Air	3	2	3	2.67	Level4	19,955.07	15.0525%	0.4014
	Emissions from Downstream transport and distribution of goods	Road	3	2	3	2.67	Level4	11,111.70	8.3818%	0.2235
		Sea	3	1	3	2.33	Level4	120.41	0.0908%	0.0021
		Air	3	2	3	2.67	Level4	4,125.88	3.1122%	0.0830
	Emissions from Employee commuting includes emissions		1	2	1	1.33	Level5	245.98	0.1855%	0.0025
	Emissions from Business travels	Air	3	2	3	2.67	Level4	114.04	0.0860%	0.0023
		Train	3	2	3	2.67	Level4	0.39	0.0003%	0.0000
		Bus	3	2	3	2.67	Level4	0.37	0.0003%	0.0000
		Car	3	2	3	2.67	Level4	8.19	0.0062%	0.0002
		Hotel Stay	3	2	3	2.67	Level4	20.32	0.0153%	0.0004
	Emissions from Purchased goods	Raw material	3	1	3	2.33	Level4	60,933.62	45.9634%	1.0725
		Water Supply & Treatment	6	1	3	3.33	Level3	2.20	0.0017%	0.0001
		T & D Losses	6	2	6	4.67	Level2	109.19	0.0824%	0.0038
		WTT for Purchased Diesel	6	1	3	3.33	Level3	3.41	0.0026%	0.0001
	Emissions from Capital goods		3	1	3	2.33	Level4	138.33	0.1043%	0.0024
	Emissions from the disposal of solid and liquid waste		3	1	3	2.33	Level4	1,006.10	0.7589%	0.0177
	Emissions from the use of assets		3	1	3	2.33	Level4	7.26	0.0055%	0.0001
	Emissions from use stage of the product		3	1	3	2.33	Level4	6.98E-28	0.0000%	0.0000
	Emissions from end of life stage of the product		3	1	3	2.33	Level4	46.13	0.0348%	0.0008
Sum								**1,32,569.86**	**100%**	**2.5042**
Sum of Weighted average			2.5042							
Degree of uncertainty			**Level 4**							

4.5. Changes to Base Year

This is the second year of our emissions inventory assessments, and there is no change to the base year. The reasons for maintaining the original base year are as follows:

1. As we continue our greenhouse gas (GHG) calculations assessments, we have retained the same base year to ensure consistency and accuracy in tracking our emissions reduction progress.
2. The emissions inventory continues to be based on the calendar year, providing a standardized framework for annual comparisons.
3. In our commitment to adhere to ISO standards, we have thoroughly examined the initial trends and determined that the original base year remains a valid and reliable reference point for ongoing analysis.

This update emphasizes that the base year remains unchanged, reflecting a consistent approach to emissions inventory assessments.

4.6. Removals

GHG removals by solar energy and sequestration through trees

4.6.1. GHG Removals by Solar Energy:

Solar energy systems, particularly photovoltaic (PV) panels, play a crucial role in mitigating greenhouse gas (GHG) emissions. By harnessing solar energy, we can significantly reduce reliance on fossil fuels, thereby lowering the carbon footprint of energy production. The electricity generated from solar energy is clean and renewable, producing no direct GHG emissions during operation.

Table 10: GHG emissions by Electricity generated in 2023.

Parameter	Value	Unit
Total Solar Electricity Generated	62.70	MWh
Grid Emission Factor	0.716	tCO_2e/MWh
GHG Emissions Avoided	44.89	kg CO_2e

4.6.2. GHG Sequestration through Trees:

Tree planting and forest conservation are vital strategies for sequestering atmospheric carbon dioxide (CO_2). Trees absorb CO_2 during photosynthesis, storing carbon in their biomass and soil, thus acting as natural carbon sinks. Through the process of photosynthesis, trees take in CO_2 from the atmosphere and convert it into organic carbon, which is stored in their trunks, branches, leaves, and roots. This carbon remains sequestered for the life of the tree and can persist in the soil even after the tree dies.

Sampling of tree includes measuring Height and Girth at breast height (GBH). Later, the parameters like Volume, Mass, Wood density, Above and Below ground biomass, Total biomass and Total carbon were calculated as per the standard methods. The soil biomass in the top 30 cm zone was considered, based on previous studies for similar habitat. The top 30 cm is considered, based on previous studies for similar habitat, since it is a zone of highest microbial activity.

Table 11: Sequestration by Trees.

Sr. No.	Trees		Quantity	CO2	CO2	Total CO2
	Botanical Name	Common Name		Kg	Kg /yr	Kg /yr
1	*Mangifera indica (MI)*	Mango	1	62.78	12.56	12.56
2	*Helicteres isora*	Baichi sheng	1	158.27	31.65	31.65
3	*Nerium oleander*	Kanher	25	0.44	0.15	3.63
4	*Rosa*	Gulab	15	2.35	1.18	17.66
5	*Duranta repens*	Dhuranda	250	2.35	0.59	147.15
6	*Catharanthus*	Sadafuli	10	3.27	1.63	16.35
7	*Azadirachta indica*	Kadunimb	5	73.57	18.39	91.97
8	*Melia azedarach*	Bakan	2	165.79	33.16	66.31
9	*Hibiscus rosa-sinensis*	Jaswand	7	6.54	3.27	22.89
10	*Toddy palm*	SINDHI (neera)	4	12.26	4.09	16.35
11	*Lilium*	Lily	25	2.18	2.18	54.50
12	*Ficus racemosa*	Umbar	1	147.15	29.43	29.43
13	*Plumeria rubra*	Chafa	15	5.34	2.67	40.06
14	*Millettia pinnata*	Karanj	4	110.52	27.63	110.52
15	*Magnolia champaca*	Sonchafa	2	2.72	1.36	2.72
16	*Nyctanthes arbor-tristis*	Parijat	2	32.70	16.35	32.70
17	*Bougainvillea*	Bouganveil	4	21.80	10.90	43.60
18	*Swietenia*	Mahogany	3	78.48	15.70	78.48
19	*Senna spectabillis*	Golden wonder tree	76	70.63	128.42	9759.97
	Total		**452**			**10578.51**

As per the methodology of IISc Indian institute of Science Bangalore, we have calculated the year wise carbon sequestration of each species. For the proposed trees, the year of plantation when the sequestration is negligible to 40 years of age (period considered for CFP) the sequestration rate is calculated based on the methodology mentioned. It is seen that from 0 to 7-10 years the rate of sequestration per year goes on increasing with increase in biomass. For most of the species the rate of sequestration becomes constant after 10 years. For existing trees, every individual plant diameter or girth at breast height (GBH) and height was measured. Wood density as per species was considered. The Above ground and below ground biomass were calculated, from which the carbon content was determined. Thus, amount of carbon dioxide sequestered was calculated.

Tree planting and forest conservation can lead to significant carbon sequestration over time. For example, a mature tree can sequester approximately 22 kg of CO_2 annually, and forests collectively sequester billions of tons of CO_2 globally each year. Integrating GHG removals by solar energy and sequestration through trees into the GHG inventory highlights the organization's commitment to sustainability and climate action. These strategies not only reduce atmospheric CO_2 levels but also promote renewable energy adoption and biodiversity conservation.

CHAPTER 5: GHG PROTOCOL

5.1. Introduction to GHG Protocol

Greenhouse Gas Protocol Initiative is a multi-stakeholder partnership of businesses, non-governmental organizations (NGOs), governments, and others convened by the World Resources Institute (WRI), a U.S.-based environmental NGO, and the World Business Council for Sustainable Development (WBCSD), a Geneva-based coalition of 170 international companies. Launched in 1998, the Initiative's mission is to develop internationally accepted greenhouse gas (GHG) accounting and reporting standards for business and to promote their broad adoption.

Many governments are taking steps to reduce GHG emissions through national policies that include the introduction of emissions trading programs, voluntary programs, carbon or energy taxes, and regulations and standards on energy efficiency and emissions. As a result, companies must be able to understand and manage their GHG risks if they are to ensure long-term success in a competitive business environment, and to be prepared for future national or regional climate policies.

The emissions are classified in three scopes as per the GHG protocol standards.

5.2. Scoping

- **Scope 1: Direct GHG emissions**
  Direct GHG emissions occur from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled furnaces, vehicles, generators etc.; emissions from production process in owned or controlled process equipment. Direct CO_2 emissions from the combustion of biomass shall not be included in scope 1 but reported separately.

- **Scope 2: Indirect GHG emissions from Energy Purchased**
  It includes the indirect emission from energy purchased or acquired and consumed by the reporting company. Purchased electricity is defined as electricity that is purchased or otherwise brought into the organizational boundary of the company. Scope 2 emissions physically occur at the facility where electricity isgenerated.

- **Scope 3: Indirect GHG emissions from Prose's Value chain**
  It includes the indirect emission from the company's value chain. There are 15 categories in Scope 3 which gives systematic framework to measure, manage & reduce emissions across a company's value chain.

  First of all, the activities are segregated into upstream activities & downstream activities and also in 15 different categories based on GHG protocol. The 15 categories and emission consideration from it are as follows:

i. **Purchased Goods & Services**: It includes all upstream (i.e., cradle-to-gate) emissions from the production of products purchased or acquired by the company in the reporting year. Here the products used are both goods & services.

ii. **Capital Goods:** It includes all upstream (i.e., cradle-to-gate) emissions from the production of capital goods purchased or acquired by the reporting company in the reporting year. The emissions from the capital goods are generally from Scope 1 & Scope 2.

iii. **Fuel- Energy:** Here all the upstream (cradle-to-gate) emissions of purchased fuels (from raw material extraction up to the point of, but excluding combustion) are considered. For upstream emissions of purchased electricity, all upstream (cradle-to-gate) emissions of purchased fuels (from raw material extraction up to the point of, but excluding, combustion by a power generator) are considered. In T&D losses all upstream (cradle-to-gate) emissions of energy consumed in a T&D system, including emissions from combustion are included. For generation of purchased electricity that is sold to end users the emissions from the generation of purchased energy are to be considered.

iv. **Upstream transportation and distribution:** The scope 1 and scope 2 emissions of transportation and distribution providers that occur during use of vehicles and facilities (e.g., from energy use). The life cycle emissions associated with manufacturing vehicles, facilities, or infrastructure is optional.

v. **Waste generated in operations:** GHG emissions from disposal and treatment of waste generated in the reporting company's operations in the reporting year (in facilities not owned or controlled by the reporting company.

vi. **Business travel:** The GHG emissions from transportation of employees for business-related activities during the reporting year (in vehicles not owned or operated by the reporting company).

vii. **Employee commuting:** Transportation related emissions from daily commute of employees between their homes and their worksites during the reporting year (in vehicles not owned or operated by the reporting company).

viii. **Upstream leased assets:** GHG emissions from operation of assets leased by the reporting company (lessee) in the reporting year and not included in scope 1 and scope 2 – reported by lessee

ix. **Downstream transportation and distribution:** GHG Emissions from transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company

x. **Processing of sold products:** GHG emissions from processing of intermediate products sold in the reporting year by downstream companies (e.g., manufacturers).

xi. **Use of sold products:** GHG emissions from end use of goods and services sold by the reporting company in the reporting year.

xii. **End-of-life treatment of sold products:** GHG emissions waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life.

xiii. **Downstream leased assets:** GHG emissions operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in scope 1 and scope 2 – reported by lessor.

xiv. **Franchises:** GHG emissions operation of franchises in the reporting year, not included in scope 1 and scope 2 – reported by franchisor.

xv. **Investments:** GHG emissions operation of investments (including equity and debt investments and project finance) in the reporting year, not included in scope 1 or scope 2.

Figure 3: Scopes of GHG Protocol

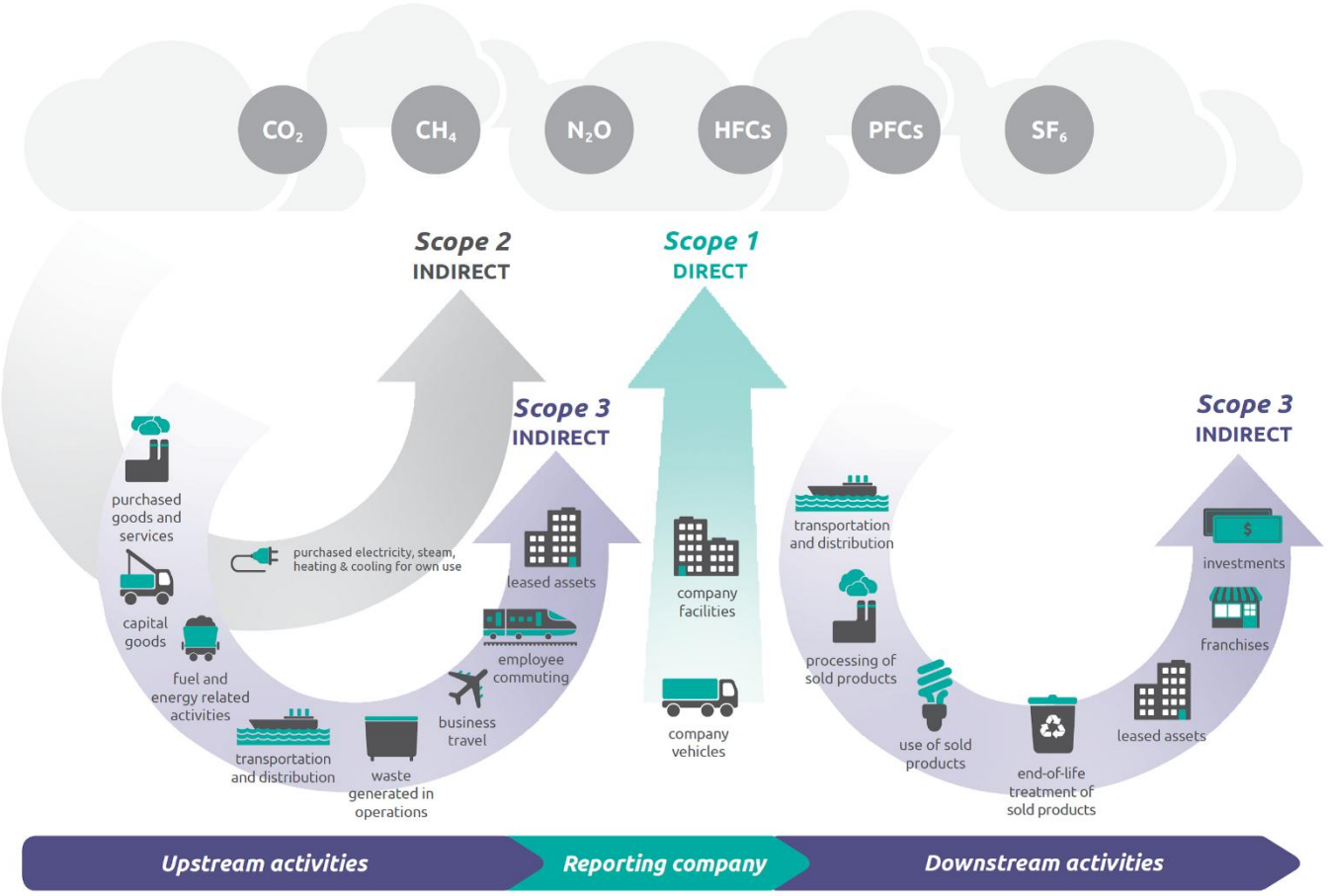


Table 12: GHG emission in 2023.

Scopes and categories	Metric tons CO_2e
Scope 1: Direct emissions from owned/controlled operations	33.86
Scope 2: Indirect emissions from the use of purchased electricity, steam, heating, and cooling	382.39
Upstream scope 3 emissions	
Category 1: Purchased goods and services	60,934.45
Category 2: Capital goods	138.33
Category 3: Fuel- and energy-related activities (not included in scope 1 or scope 2)	112.61
Category 4: Upstream transportation and distribution	66,446.49
Category 5: Waste generated in operations	1,007.47
Category 6: Business travel	143.31
Category 7: Employee commuting	245.98
Category 8: Upstream leased assets	7.26
Other	-
Downstream scope 3 emissions	
Category 9: Downstream transportation and distribution	3,071.60
Category 10: Processing of sold products	-
Category 11: Use of sold products	6.98E-28
Category 12: End-of-life treatment of sold products	46.13
Category 13: Downstream leased assets	-
Category 14: Franchises	-
Category 15: Investments	-
Other	-
Total	**1,32,569.86**

Notes to table 12

1. *The same inventory mentioned in Table 3 is given here as per GHG protocol scopes and respective categories are mentioned in the table above.*
2. *It is considered that 20% of the outbound transport is borne by clients and remaining 80% is borne by Prose. So as per GHG protocol, respective emissions of transportation and distribution of sold products, are considered in Scope 3 category 4.*

CHAPTER 6: INTERNAL REPORTING & PERFORMANCE

6.1. GHG Inventory for Year 2023

6.1.1. Category 1: Direct GHG emissions

Table 13: Category 1 GHG inventory for 2023

Fuel	Total Annual Consumption	Unit	CO_2	CH_4	N_2O	Total tCO_2e
Diesel	4558.68	kg	14.53	0.06	0.03	14.62
Refrigerant	10	kg	19.24			19.24
Direct Emission from Combustion						**14.62**
Fugitive Emissions (Refrigerant)						**19.24**
Annual Total tCO_2 e						**33.86**

Category 1 activities emit direct GHG such as CO_2, CH_4 and N_2O as well as ambient air pollutions. Emission of these gases from Category 1 sources depend upon fuel characteristics & technology used. Emissions also vary with operation and maintenance practices. This guidance only addresses direct emissions of the following types of GHG, i.e., CO_2, CH_4 and N_2O.

6.1.2. Category 2: Indirect GHG emissions from imported energy

Table 14: Category 2 GHG inventory for 2023

Energy Type	Annual consumption MWh	$kgCO_2$/ MWh	Annual tCO_2e
Electricity	534.06	0.716	**382.39**

**Source: Electricity Bills for the year 2023 and data given by the client*

We have only one WH nearby the factory, and for the purpose of only storing the final product till dispatch. Prose, Pune also have a unit “Aviza” which provides the raw material to Prose. This has subunit places at the site. There are total 3 units: Prose, Aviza and warehouse, are mentioned as Annual Consumption.

The main PROSE plant has significantly reduced its Scope 2 emissions through the integration of a grid-connected solar energy system. During the reporting period, the total electricity consumption for the plant was 438.612 MWh. This includes electricity imported from the grid. The on-site solar energy system generated 62.70 MWh, which directly offset the plant’s grid electricity consumption. To calculate the net grid electricity consumption, the following formula was applied:

Net Grid Electricity Consumption (kWh)=Grid Import (kWh)−Grid Export (kWh)

Net Grid Electricity Consumption = 438.61 MWh – 62.70 MWh = 375.91 MWh

The solar energy contribution of 62.701 MWh resulted in avoided emissions of 44.89 tCO_2, highlighting the critical role of renewable energy in reducing indirect emissions. By leveraging renewable energy sources, the main PROSE plant has made substantial progress in aligning with its sustainability goals and minimizing its carbon footprint. This demonstrates the organization's commitment to energy efficiency and sustainable operations, further underscoring its dedication to mitigating climate change impacts.

6.1.3. Category 3: Indirect GHG emissions from transportation

Table 15: Category 3 GHG inventory for 2023

Indirect GHG emissions from transportation		Annual Activity data	Unit	Annual Total emission tCO_2e
3.1	Emissions from Upstream transport and distribution of goods	40,11,60,770.43	tkm	**54,160.10**
3.2	Emissions from Downstream transport and distribution of goods	15,12,83,555.89	tkm	**15,357.99**
3.3	Emissions from Employee commuting	574000	km	**245.98**
3.4	Emissions from Business travels	2322762.6	km	**122.99**
	Hotel Stay	345	Room nights	**20.32**
Annual Total emission tCO_2e				**69,907.37**

Notes to table 15

1. *Prose's Upstream and Downstream transportation are from various modes like Road, Sea & Air. Separate and collective distances traveled and emissions are mentioned in the table above.*
2. *Prose's emissions from Employee commuting is only by road. Some are leased buses and some are owned vehicles.*
3. *Visitors to the Prose are responsible for their own transportation reimbursement. Prose expects this part of emissions to be below 1 percent of the total emissions*
4. *Prose's business travel expense record reimbursed Train, Bus, and cab expenditures. It also include the hotel stay occurred during the Business visits.*

6.1.4. Category 4: Indirect GHG emissions from products used by organization

Table 16: Category 4 GHG inventory for 2023

Indirect GHG emissions from products used by organization		**Annual tCO_2e**
Emissions from Purchased goods	Raw material	**60,933.62**
	Water Supply and Treatment	**2.20**
	T & D Losses	**109.19**
	WTT for Purchased Diesel	**3.41**
Emissions from Capital goods	Fixed assets	**138.33**
Emissions from the disposal of solid and liquid waste	Transportation and Disposal	**1,006.10**
Emissions from the use of assets	Use of Canteen LPG	**7.26**
	Annual Total emission tCO_2e	**62,200.11**

Notes to table 16

1. *Emissions from the disposal of solid and liquid waste contains emissions from Transportation and Disposal of the wastes.*
2. *Emissions from Air travel is taken from particular flight of the respective Airlines in tCO_2 per passenger.*

6.1.5. Category 5: Indirect GHG emissions associated with the use of products from the organization

Table 17: Category 5 GHG inventory for 2023

Indirect GHG emissions associated with the use of products from the organization	**Annual tCO_2e**
Emissions from use stage of the product	**6.98E-28**
Emissions from end of life stage of the product	**46.13**

Notes to Table 17

1. *Emissions from use stage of the product is very minimal <1% being Antenna it requires frequency to operate and not the electricity*
2. *Emissions from end of life stage of the product mentions the emissions from recycling the product after its use and considered to be E-waste.*

6.1.6. *Summary of GHG Emissions at Prose for the year 2023.*

Table 187: Summary of GHG Emissions at Prose for the year 2023

GHG Protocol Scope	ISO 14064 Category	Annual Emission tCO_2e	Percent share
Scope 1	Category 1	33.86	0.03%
Scope 2	Category 2	382.39	0.29%
Scope 3	Category 3	69,907.37	52.73%
	Category 4	62,200.11	46.92%
	Category 5	46.13	0.03%
	Total	**1,32,569.86**	**100%**

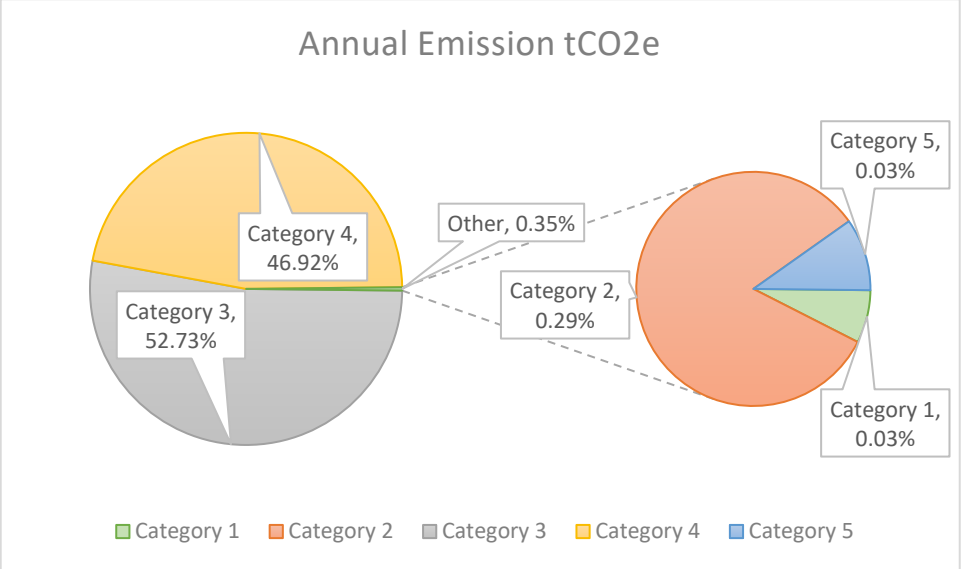


Figure 4: GHG Emission Profile for Prose Technologies India Pvt. Ltd.

The profile shows that the bulk of emissions is from Category 3 emissions which is Transportation. Category 2 emissions i.e. from electricity consumption are less than 1% of the total emissions.

6.2. Emissions Intensity Measures

CO_2e by Domestic Freight Road Transport

40,907.45 tons

CO_2e by International Sea Freight

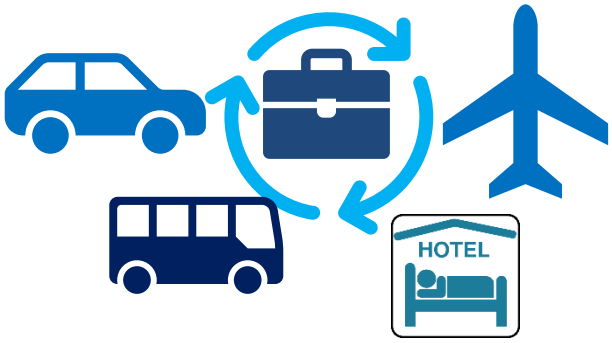
4,529.68 tons

CO_2e by International Air Freight

24,080.95 tons

CO_2e by Employee Commute

245.98 tons



CO_2e by Business Travel

143.31 tons

6.3. Performance Measures, Targets, and Benchmarks

Specific performance measures have not yet been set. Instead, it is intended that the insights offered here will provide a foundation for future decision-making to support the establishment of performance measures and the tracking of their progress.

6.4. Commitment to Sustainability

The 2023 emission inventory report for PROSE Technologies India Pvt. Ltd. provides a detailed analysis of greenhouse gas (GHG) emissions across various categories as per the ISO 14064 standard. The following table compares the current year's emissions to the 2022 baseline, highlighting significant changes and showcasing the company's efforts toward achieving its sustainability targets.

GHG Protocol Scope	ISO 14064 Category	2022 Emission tCO_2e	2023 Emission tCO_2e	Difference Emission tCO_2e	Impact
Scope 1	Category 1	9.31	33.86	-24.55	Increase
Scope 2	Category 2	567.24	382.39	184.86	Decrease
			44.89		Reduction due to Solar
Scope 3	Category 3	1,03,329.85	69,907.37	33,422.47	Decrease
	Category 4	52,102.76	62,200.11	-10,097.35	Increase
	Category 5	50.84	46.13	4.71	Decrease
	Total	**1,56,060.00**	**1,32,569.86**	**23,490.14**	**Decrease**

In 2023, the total emissions recorded were 1,32,569.86 tCO_2e, marking a notable reduction of 23,490.14 tCO_2e compared to the 2022 total of 1,56,060.00 tCO_2e. This progress is primarily attributed to substantial decreases in emissions in the following categories:

- Category 2: A reduction of 184.86 tCO_2e, achieved through overall reduction in consumption than base year 2022. Also 44.89 tCO_2e are reduced due to the use of the solar plant of 350 KW which was installed in the month of June 2023.
- Category 3: The most significant decrease of 33,422.47 tCO_2e, reflecting reduced emissions throughout the value chain due to a reduction in transportation-related activities.
- Category 5: A decrease of 4.71 tCO_2e, is due to sale of lightweight products in 2023 as compared to base year. It resulted in lowered emissions during the use phase and at the end of their lifecycle.

However, emissions increased in two categories:

- Category 1: An increase of 24.55 tCO_2e, due to higher diesel consumption and refrigerant top-up in the reporting year, which was not observed in the base year.
- Category 4: A rise of 10,097.35 tCO_2e, necessitating further analysis and action to address this trend.

These changes highlight the company’s progress in several areas while also identifying critical focus points for further improvements as part of its commitment to sustainable operations.

APPENDICES

Appendix 1 – ISO 14064-1:2018 Reporting Index

ISO Reporting	Section in this Report
9.3.1 (a)	1.3
9.3.1 (b)	1.4
9.3.1 (c)	1.6
9.3.1 (d)	2
9.3.1 (e)	3
9.3.1 (f)	4.1
9.3.1 (g)	NA
9.3.1 (h)	NA
9.3.1 (i)	3.4
9.3.1 (j)	6.1.6
9.3.1 (k)	4.4

ISO Reporting	Section in this Report
9.3.1 (l)	4.4
9.3.1 (m)	4.2
9.3.1 (n)	4.2
9.3.1 (o)	4.2
9.3.1 (p)	4.5
9.3.1 (q)	4.5
9.3.1 (r)	1.7
9.3.1 (s)	1.7
9.3.1 (t)	4.2

ISO Reporting	Section in this Report
9.3.2 (a)	1.3
9.3.2 (d)	NA
9.3.2 (f)	6.1.6
9.3.2 (g)	6.1.6
9.3.2 (h)	6.3
9.3.2 (i)	4.3
9.3.2 (j)	NA
9.3.2 (k)	NA

ISO Reporting	Section in this Report
9.3.3	NA

Appendix 2 – Calculations with emission factors

- Emission Factors for Category 1:

  - **Direct Emissions from combustion**

Fuel	CO_2 $kgCO_2e$	EF CO_2 (kg/TJ)	CH_4 $kgCO_2e$	EF CH_4 (kg/TJ)	N_2O $kgCO_2e$	EF N_2O (kg/TJ)	EF Source
Diesel	14525.32	74100	58.41	10 kg/TJ	32.11	0.6 kg/TJ	Emission_Factors_from_Cross_Sector_Tools_March_2017
Refrigerant	20880	74100 kg/TJ					Emission_Factors_from_Cross_Sector_Tools_March_2017
Direct Emission from Combustion (tCO_2e)							**14.62**
Fugitive Emissions (Refrigerant) tCO_2e							**19.14**
Annual Total tCO_2 e							**33.86**

  - **Emissions from Refrigerant**

Refrigerant Type	No.s	Refilled qty	Unit	GWP	Annual CO_2 Emission in ton	EF Source
R-410A	1	10	Kg	1924	19.24	https://www.fluorocarbons.org/news/ipcc-ar6-updated-gwp-values-for-hfcs-and-hfos/
Annual CO_2 Emission in ton					**19.24**	

➢ Emission Factors for Category 2:

Indirect emission category	Annual Consumption	Unit	Emission Factor tCO_2/MWh	Annual Total Emissions tCO_2e	Source
Electric power consumption for Pant + Aviza + Warehouse	534.06	MWh	0.716	**382.39**	Central Electricity Authority of India

➢ Emission Factors for Category 3:

- **Emissions from Upstream transport and distribution of goods**

Mode	Emission Factor	Unit	Total Annual emission tCO_2e	Source
For Indian road transport	0.08	kg CO_2/ton	54,160.10	WRI Freight Vehicles: HDV (>12 T) 0.7375 = (0.7375/12) +0.01787(WTT HGV Diesel 100% leaden)
For China road transport	0.0916	kg CO_2/ton		UK Government GHG Conversion Factors for Company Reporting, Freighting goods, WTT, delivery vehs & freight
Sea	0.016	kg CO_2		GHG emission factor General Cargo ship average + WTT General Cargo ship average
Air	1.0189	kg CO_2/ton*km		Freight flights: International, to/from non-UK

- **Emissions from Downstream transport and distribution of goods**

Mode	Emission Factor	Unit	Total Annual emission tCO_2e	Source
For Indian road transport	0.08	kg CO_2/ton	17,706.10	WRI Freight Vehicles: HDV (>12 T) 0.7375 = (0.7375/12) +0.01787(WTT HGV Diesel 100% leaden)
For China road transport	0.0916	kg CO_2/ton		UK Government GHG Conversion Factors for Company Reporting, Freighting goods, WTT, delivery vehs & freight
Sea	0.016	kg CO_2		GHG emission factor General Cargo ship average + WTT General Cargo ship average
Air	1.0189	kg CO_2/ton*km		Freight flights: International, to/from non-UK

- **Emissions from Employee commuting emissions**

Mode	Factor kg CO_2 /pax-km	Factor $kgCO_2$/ km	Source	Total Annual emission tCO_2e
Diesel bus	0.040101		WRI Bus +WTT Average bus (IPCC) =0.015161+0.02494	245.98
Diesel bus	0.015161		WRI Bus +WTT couch =0.015161+0.00646	
Petrol bus		0.22083	WRI Diesel: 1462 cc + WTT Large car Petrol (IPCC)= =0.142+0.07833	
Motorcycles	as per the engine type		WRI Bike+ WTT Bike (IPCC)	
Car			WRI Car+ WTT Car (IPCC)	

1. For motorcycle & Car, emission factors considered as per the engine type of the vehicle and its capacity.

- **Emissions from Business travels & Hotel stay**

Mode	Emission Factor	Unit	Source	Total Annual emission tCO_2e
Bus	0.040101	kg CO2 pax-km	WRI Bus +WTT Average bus (IPCC) =0.015161+0.02494	**143.31**
Car	0.16444	kg CO2/km	WRI Sedan <1600 CC Diesel +WTT small car diesel	
Train	0.01686	kg CO2 pax-km	https://indiaghgp.org/sites/default/files/Rail%20Transport%20Emission.pdf + WTT Rail, National rail	
Hotel stay	58.9	kg CO2e room per night	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023	

1. *Respective flight emission declaration & India GHG Program Emission Factors – India-specific Road Transport Emission Factors 2015*

➢ Emission Factors for Category 4:

- **Purchased goods: Embodied energy**

Item	Qty kg	Source	Total Emissions tCO_2e
Raw Material	9,381.16	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023	**60,933.62**

1. There are various types of Raw materials used, hence various emission factors are applied.

- **Water Supply & Treatment**

Item	Qty (litre)	Emission Factor	Unit	Source	Total Emissions tCO_2e
Water Supply	5588.00	0.149	kg/m3	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023	**0.83**
Water Treatment	5029.20	0.272	kg/m3	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023	**1.37**

- **Electricity T&D Losses**

Item	Qty MWh	Emission Factor	Unit	Source	Total Emissions tCO_2e
T&D Losses	534.06	0.20446	tCO_2/MWh	https://www.wri.org/sustainability-wri/dashboard/methodology#scope-1	**109.19**

- **WTT for Purchased Diesel**

Item	Qty L	Emission Factor	Unit	Source	Total Emissions tCO_2e
WTT of Diesel used for DG set	5,427.00	0.62874	$kgCO_2$/ l	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factor+s-2023 Diesel (100% Mineral)	**3.41**

- **Capital goods: Fixed Assets**

Item	Qty ton	Source	Total Emissions tCO_2e
Fixed Assets	24.96	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023	**138.33**

Emissions from the use of assets

Service	Quantity	Unit	Emission Factor	Unit	Source	Total Emissions tCO_2e
Canteen LPG	4651.49	Liter	1.56	kg CO_2/l	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factor+s-2023 Liquid Fuel: LPG	**7.26**

- **Waste transportation**

Vendor	Total tonn	Ton Km	Emission Factor Kg CO_2	Total emission tCO2e	Source
Ajmera plastic industries	21.98	8616.16	0.22733	**1.96**	WRI Freight Vehicles: LDV (>3.5 T) 0.3070 = (0.3070/3.5) + 0.13962 (WTT Vans-Average -up to 3.5 tonnes-Diesel)
Ambika metal enterprises	17.78	6969.76	0.22733	**1.58**	
G M polyplast limited	3.81	1104.90	0.22733	**0.25**	
Royal steel	24.54	3607.38	0.22733	**0.82**	
Sahyadri enterprises	251.63	4375320.46	0.22733	**994.66**	

- **Waste generated in operations**

Waste details	Annual weight in Tons	Ton Km	Disposal method	EF Kg CO_2	Total emission tCO2e	Source
Non Hazardeous	319.73	8616.16	Recycle / Reuse	21.28	**6.80**	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factor+s-2023
Hazardous-Oil soaked cotton waste	0.11	6969.76	Incineration	21.28	**0.002**	
Hazardous- Empty chemical lined containers / barrels	0.62	1104.90	Recycling	21.28	**0.013**	
E-waste	0.24	3607.38	Dismantling & Recycling	21.28	**0.005**	

➢ Emission Factors for Category 5:

- **Emissions from Use stage of product**

Qty Sold in year 2022	Total Frequency (Hz)	Electricity (Mw.h)	Emission Factor tCO_2/MWh	Total Emissions tCO_2e	Source
1,14,908	5.30E+15	9.75E-28	0.716	**6.98E-28**	Central Electricity Authority of India

- **Emissions from end of life of the product**

Product	Qty Ton	Emission Factor	Unit	Total Emissions tCO_2e	Source
Antena	2,167.83	21.28	$kgCO_2/ton$	46.13	https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023 Open loop

1. Emissions from end of life stage of the product mentions the emissions from recycling the product after its use and considered to be E-waste.