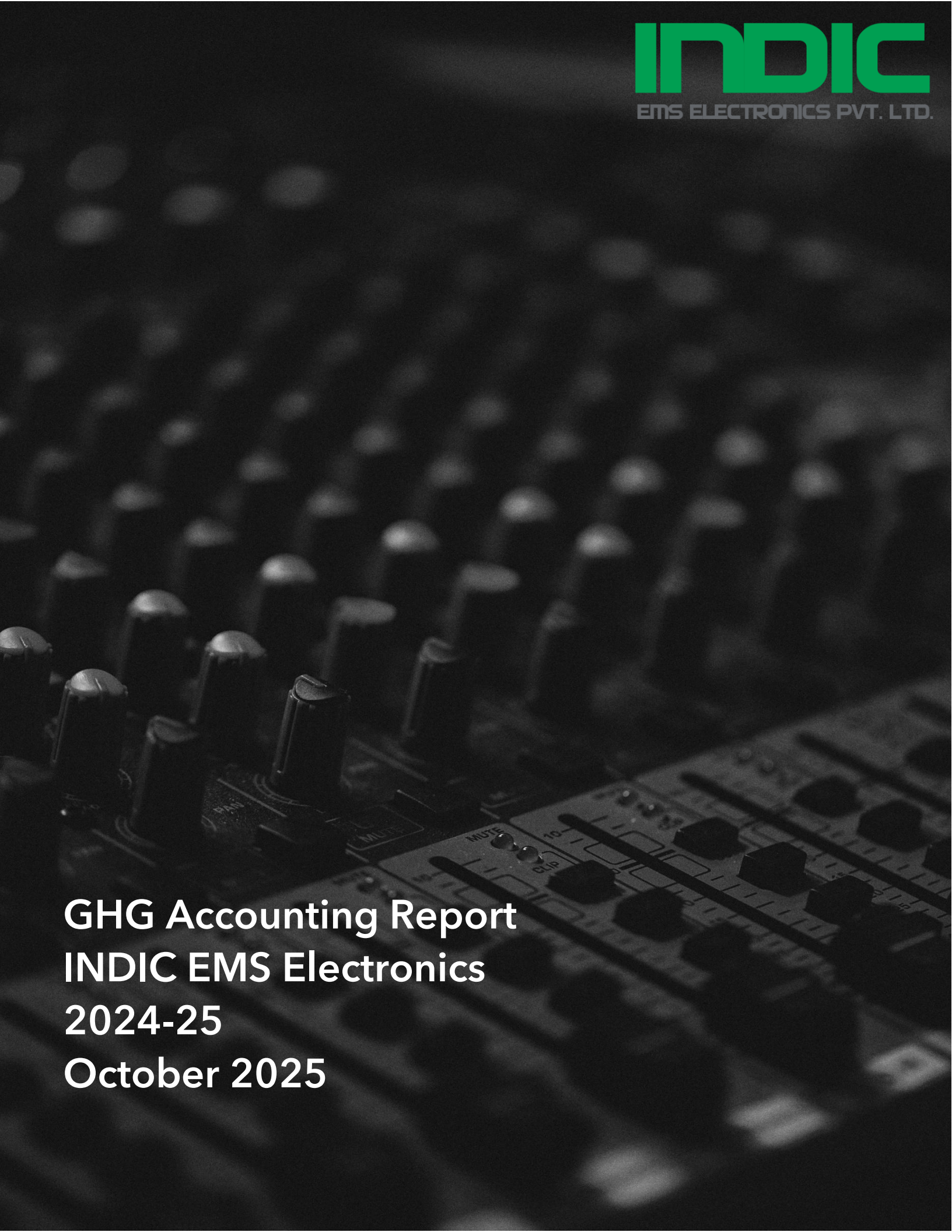

GHG Accounting Report
INDIC EMS Electronics
2024-25
October 2025

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We extend our heartfelt gratitude for the opportunity to conduct the GHG emissions inventory for Indic EMS

We sincerely acknowledge the support and cooperation of the Indic EMS's team, whose valuable insights, data, and information were instrumental in the success of this project.

Additionally, we express our sincere thanks to all employees within the plant premises for their assistance, cooperation, and willingness to share essential information during the site visit.

EXECUTIVE SUMMARY

Indic EMS Electronics Pvt. Ltd. is a global Electronics Manufacturing Services (EMS) provider specializing in PCB assembly, box-build solutions, and lifecycle support for sectors including automotive, energy, industrial, IoT, and renewables. As part of its sustainability commitment, a GHG inventory has been developed to assess emissions across operations and identify areas for reduction. A comprehensive site assessment was conducted to understand the different emission sources within the company's operational boundary, ensuring a systematic approach to emissions tracking and mitigation.

The GHG emissions inventory has been prepared for the financial year 2024-2025, with calculations based on GHG Protocol and ISO 14064-1:2018. This standardized methodology ensures transparency and accuracy in emissions accounting, allowing the company to track its environmental impact effectively.

As part of its sustainability commitment, the company has conducted a Greenhouse Gas (GHG) inventory to assess its Scope 1 and Scope 2 emissions, thereby understanding its carbon footprint and evaluating its emission intensity in relation to financial performance.

Total Emissions for FY 2024-25: **2248.51 tCO_2e**, which includes **Scope 1 Direct Emissions: 206.17 tCO_2e and Scope 2 Indirect Emissions (Purchased Electricity): 2042.35 tCO_2e**.

This inventory is aligned with GHG Protocol Corporate Standard and follows operational control approach for boundary setting.

Table 1: Breakdown of Scope 1 and Scope 2 GHG Emissions of Indic EMS (Unit tCO_2 e)

Year	Scope 1 Emissions			Scope 2 Emissions (Location Based)
2024-25	**206.17**			**2042.35**
	Stationary Emissions	Mobile Emissions	Fugitive Emissions	Purchased Electricity
	43.96	**60.49**	**101.72**	**2042.35**

The different emission intensities are also calculated based on revenue, employee and product.

Table 2: Emission Intensities of Indic EMS for FY 2024-25

Parameter	Value	Unit
Emission Intensity (Revenue *) ₹	0.035	tCO_2e per Rupees Lakhs Revenue
Emission Intensity (Revenue *) $	0.004	tCO_2e per USD Million Revenue
Emission Intensity (Employee)	2.81	tCO_2e per Employee
Emission Intensity (Product *)	1.12	Kg CO_2e per Product

* For more clarity, refer Table 6 in Section 4.1 of this report.

As an electronics assembly entity, Indic EMS plays a critical role in the PCB component supply chain, where energy consumption and material choices significantly influence its emissions profile. Acknowledging this responsibility, the company has committed to advancing sustainability through targeted initiatives aimed at reducing its carbon footprint while maintaining operational excellence.

One of the primary strategies focuses on improving energy efficiency across operations. Indic EMS has already transitioned from CFLs to LED lighting thereby reducing electricity consumption. This step not only lowers emissions but also contributes to long-term cost savings. Additionally, the company continues to explore process optimization measures to further reduce emission intensity without compromising productivity.

For refrigerant-related emissions, Indic EMS has replaced the high-GWP refrigerant R-32 with lower-emission alternative of R-410. This transition would contribute to emission reductions in cooling systems while ensuring compliance with evolving environmental regulations.

To address indirect emissions, Indic EMS is evaluating renewable energy opportunities, including solar PV installations, to generate clean electricity and reduce reliance on grid-based power.

Fuel switching is another area under review, particularly for logistics and transportation activities. Transitioning from conventional fuels to lower-carbon alternatives such as CNG or electric vehicles can significantly reduce emissions from mobile sources, supporting the company's broader decarbonization goals.

Indic EMS remains committed to enhancing its sustainability efforts by continuously evaluating and adopting innovative solutions for emissions reduction. By integrating best practices in energy efficiency, renewable energy adoption and fuel transition, the company is proactively aligning its operations with global decarbonization trends. Through these efforts, Indic EMS aims to strengthen its environmental stewardship, contribute to climate resilience, and drive sustainable growth while minimizing its carbon footprint.

1 INTRODUCTION

1.1 CLIMATE CHANGE

Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity (IPCC). A layer of greenhouse gases (GHGs) act as a thermal blanket for Earth, absorbing heat and warming the surface to a life-supporting average of 15 degree Celsius[1]. GHGs occur naturally and are essential for the survival of living being on Earth.

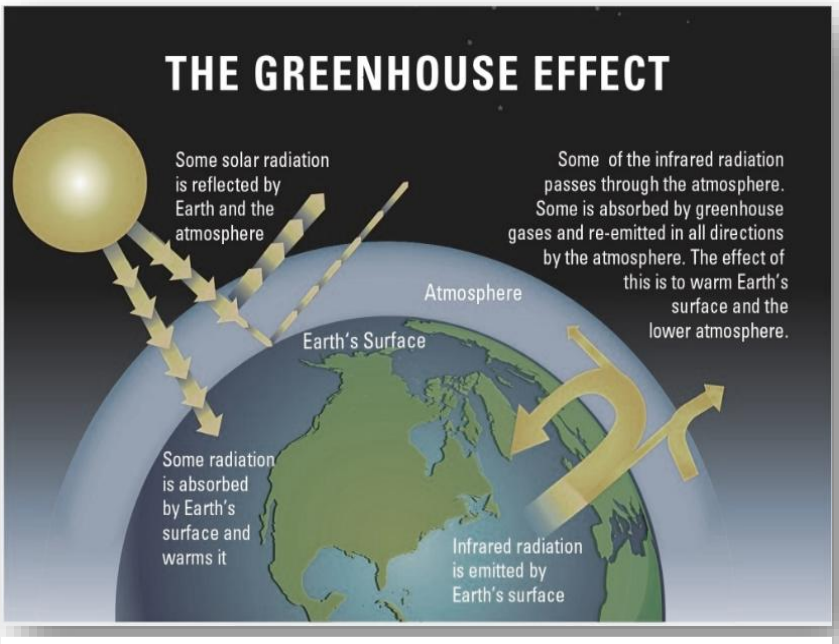


Figure 1: GHG Effect

However, anthropogenic emissions of GHGs have increased since the pre-industrial era, which was driven by large scale industrialization and agriculture, deforestation due to economic and population growth[2]. Therefore, the main cause of global warming and change in climate is the human expansion of greenhouse effect.

The concentration of GHGs in the earth's atmosphere is directly linked to the average global temperature on Earth which has been rising steadily. The most abundant GHG, accounting for about two-thirds of GHGs, is CO_2, is largely the product of burning fossil fuels.

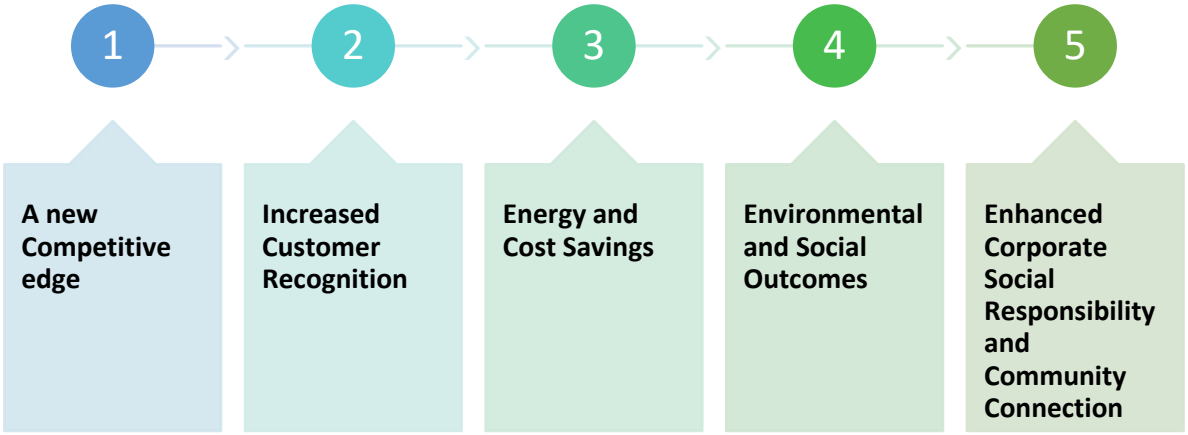
Climate change is one of the greatest threats of our time. The impacts of climate change are global in scope and unprecedented in scale. Some of the impacts of climate change are shifting weather patterns, extreme climate events, rising sea level, loss of agricultural produce, etc. Without drastic actions, adapting to such impacts in the future will be more difficult and expensive. There are two ways to act on climate change: mitigating the emissions of greenhouse gases from the atmosphere by measuring and reducing the GHG emissions; and adapting to the already changing climate by projecting future scenarios.

In this report we focus on mitigation of GHG emissions in RMP Bearings (0) facility and build a roadmap to decarbonization.

[1] https://climate.nasa.gov/causes/
[2] https://www.ipcc.ch/site/assets/uploads/2018/02/SYR_AR5_FINAL_full.pdf

1.2 Carbon Neutrality

Carbon neutrality is a "condition in which there is no net increase in the global emission of greenhouse gas to the atmosphere as a result of the greenhouse gas emissions associated with the subject (PAS 2060, BSI). The benefits of becoming Carbon Neutral are as follows:



- **A new Competitive edge –** Carbon neutrality results in Brand Differentiation and it is a useful Marketing tool to project to consumers about company carrying out responsible business.
- **Increased Customer Recognition** - Customers recognize and value organizations that lead on Climate Action.
- **Energy and Cost Savings** – Reducing GHG emissions reduce energy usage and cost.
- **Environmental and Social Outcomes** – Carbon offset projects deliver social, economic, environmental, and technological wellbeing.
- **Enhanced Corporate Social Responsibility and Community Connection:** Companies install renewable energy and other projects for becoming carbon neutral and these projects enhances community connection such as biomass-based cogeneration project will involve purchasing biomass from local communities resulting in their well-being.

1.3 GHG Emissions Inventory

In order to decarbonize an organization, greenhouse gas emissions need to be measured, monitored and managed. Carbon footprint is a measure of amount of greenhouse gases produced directly or indirectly by human activities. It is a tool to understand the impact of personal and organizational behavior on global warming.

Many companies have multiple objectives for GHG reporting, including emissions trading and public/voluntary reporting. These objectives are described in the below figure.

Figure 2: Objectives of GHG reporting

GHG Inventory is expressed in terms of annual amount of CO_2e emitted by an industry. The CO_2-equivalent emission is obtained by multiplying the emission of a GHG by its Global Warming Potential[3] (GWP). The GWP of the GHGs are mentioned in Annexure 1.

The seven GHGs considered are: carbon dioxide (CO2), methane (CH4), halocarbons (HFCs, PFCs), nitrous oxide (N2O), sulfur hexafluoride (SF6) and Nitrogen Trifluoride (NF3).

[3] GWP is the measure of how much heat a greenhouse gas traps in the atmosphere up to a specific time horizon, relative to carbon dioxide.

2 SCOPE OF WORK

The scope of work involved the following activities:

Boundary setting for calculating greenhouse gas emission inventory

Quantification of GHG emissions by considering the various GHG sources

Preparation of an excel-based GHG emissions inventory worksheet

Preparation of report detailing the methodology, results and the GHG emission inventory

GHG emissions inventory for Indic EMS was prepared as per ISO 14064-1:2018 standard which details the principles and requirements for designing, developing, managing and reporting organization level GHG inventories. It includes requirements for determining boundaries, quantifying emissions and removals, and identifying specific company actions or activities aimed at improving GHG management. It also includes requirements and guidance on quality management of the GHG inventory, reporting, and the organization's responsibilities for verification.

2.1 SETTING ORGANIZATIONAL BOUNDARY

Businesses vary in their legal and organizational structures. In selecting organizational boundary, a company selects an approach for consolidating GHG emissions and then consistently applies the selected approach to define those businesses and operations that constitute the company for the purpose of accounting and reporting GHG emissions. The different approaches are - Equity Share Approach and Control Approach.

Equity approach: Under this approach, a company accounts for GHG emissions from operations according to its share of equity in the operation.

Control approach: Under this approach, a company accounts for 100 percent of the GHG emissions from operations over which it has control. When using this approach, companies choose between either the operational control or financial control criteria.

- *Financial control approach*: The company has financial control over the operation if the former has the ability to direct the financial and operating policies of the latter with a view to gaining economic benefits from its activities.

- *Operational control approach*: A company has operational control over an operation if the former or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation.

If the reporting company wholly owns all its operations, its organizational boundary will be the same whichever approach is used.

2.2 Setting Operational Boundary

The operational boundary of the company involves identifying emissions associated with its operations, categorizing them as direct and indirect emissions, and choosing the scope of accounting and reporting for indirect emissions.

The direct and indirect GHG emissions of a company is categorized into three scopes:

1. *Scope 1 or Direct emissions*: These emissions occur from sources that are owned or controlled by the company. For example: fuel combustion, company-owned vehicles, process emissions, etc.
2. *Scope 2 or Energy indirect emissions*: This accounts for emissions from the generation of purchased electricity, heat or steam consumed by the company.
3. *Scope 3 or Other Indirect emissions*: These emissions are a consequence of the activities of the company but occur from sources not owned or controlled by the company. For example: production of purchased goods and materials, product use, outsourced activities, contractor owned vehicles, waste disposal, employee business travel, etc.

2.3 Methodology Used

The emissions inventory includes activity data of 2024-25 to estimate the emissions due to the operational activities of Indic EMS.

Quantification methodology adopted for GHG emissions inventory is calculation based on GHG activity Data multiplied by GHG Emission factor in accordance with ISO 14064-1:2018.

For Scope 1 emissions

The activity data is multiplied by appropriate emissions factor to obtain GHG emissions associated with the use of fuel.

CO_2 emissions = Activity data (HSD, CNG etc. consumed) x Emission Factor

Equivalent CO_2 emissions due to N_2O emissions from Fuel consumption is

N_2O emissions (tCO2e) = Quantity of Fuel x Density x calorific value x Emission Factor of N_2O x GWP of N_2O

Equivalent CO_2 emissions due to CH_4 emissions from Fuel consumption is

CH_4 emissions (tCO2e)	= Quantity of Fuel x Density x calorific value x Emission Factor of CH_4 x GWP of CH_4

Scope 2 emissions

The electricity consumed by the organization is recorded on monthly basis. The annual electricity consumed by the organization is multiplied by grid emission factor of Central Electricity Authority (CEA) to obtain GHG emissions from imported electricity.

CO_2 emissions	= Electricity consumed x grid emission factor

The Indirect GHG emissions due to purchased electricity are location based.

The GHG emissions are calculated based on primary data (such as amount of fuel consumed etc. or electricity imported) measured in the organization.

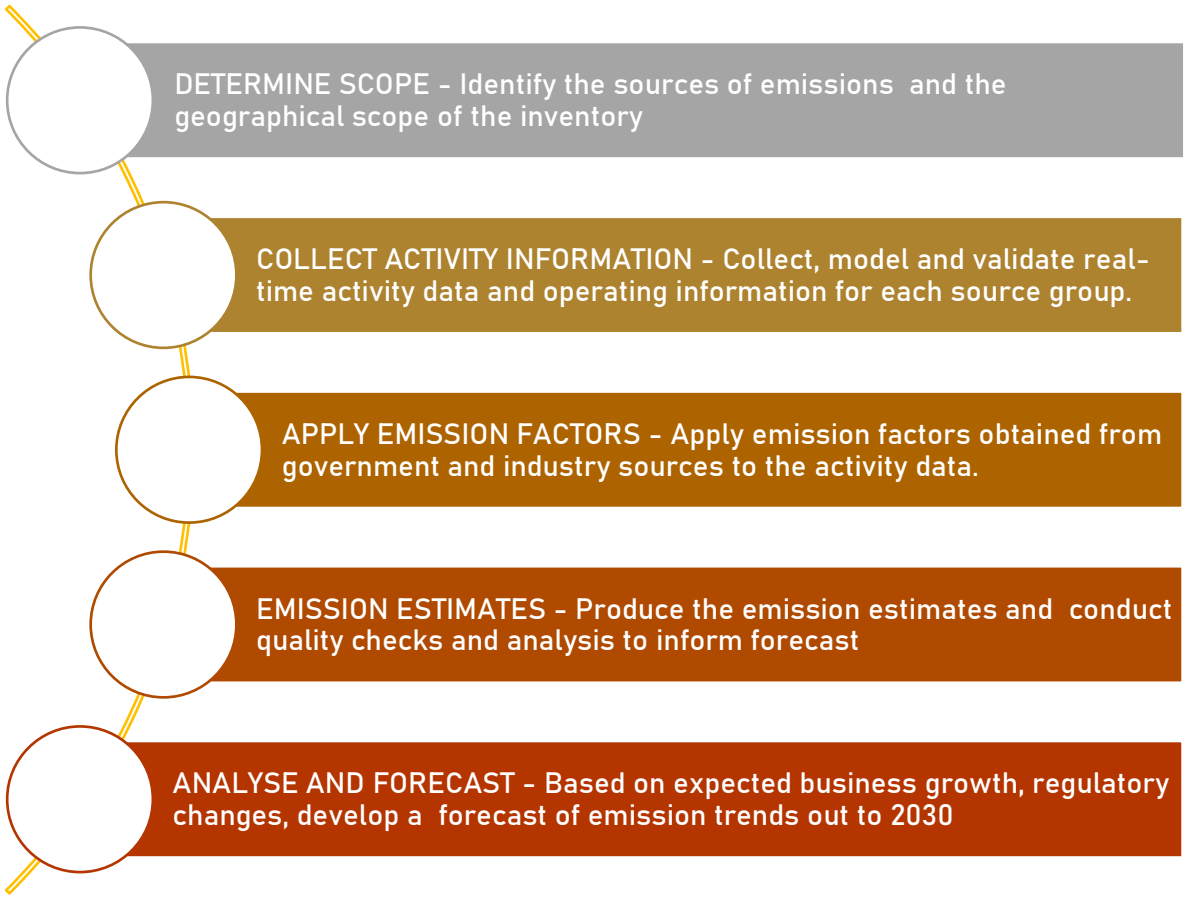


Figure 3: GHG Inventorization approach for Indic EMS as per ISO-14064:2018 Part

3 ACTIVITY DATA FOR INDIC EMS

Indic EMS Electronics Pvt. Ltd. is a global Electronics Manufacturing Services (EMS) provider specializing in PCB assembly, box-build solutions, and lifecycle support for sectors including automotive, energy, industrial, IoT, and renewables. The detailed activity required to build the Greenhouse Gas Inventory and the Carbon Neutrality strategy for the facility is discussed in this segment.

3.1 REPORTING PERIOD

The GHG emissions inventory and report for Indic EMS has been prepared for the period of 1st April 2024 to 31st March 2025. The same period has been decided as the Baseline Period for the organization for its GHG Emissions Accounting and to set the roadmap for GHG emission reduction.

3.2 BOUNDARY SETTING

As the inventory must be developed for the primary facility of Indic EMS, the boundary for the reporting period was set as the operational boundary Indic EMS's facility at Doddaballapura, Bengaluru.

For the defined reporting period, the GHG emissions associated with Indic EMS's operations were categorized into Scope 1 and Scope 2 emissions.

The sources of emissions considered for Indic EMS's GHG inventory are presented in the table below:

Table 2: Sources of GHG Emissions in 2024-25

Type of Emission	Source of Emission	Activity of Emissions
Scope 1	Mobile Emissions	Diesel consumption in Ambulance
		Diesel consumption in Forklifts
	Stationary Emissions	Diesel consumption in Diesel Generator
	Fugitive Emissions	Refrigerants leakage
		Use and Leakage of CO_2 from Fire Extinguisher
Scope 2	Purchased Electricity	Consumption of Electricity

4 EMISSION PROFILE

Reporting Period: *1st April 2024 – 31st March 2025*

This is also the baseline period hence the emissions shall be considered as baseline emissions.

Indic EMS Electronics Pvt. Ltd. is a global Electronics Manufacturing Services (EMS) provider specializing in PCB assembly, box-build solutions, and lifecycle support for sectors including automotive, energy, industrial, IoT, and renewables. As part of its sustainability commitment, the company has conducted a Greenhouse Gas (GHG) inventory to assess its **Scope 1 and Scope 2 emissions**, thereby understanding its carbon footprint and evaluating its emission intensity in relation to financial performance.

Total Emissions for FY 2024-25: **2248.51 tCO_2e**, which includes **Scope 1 Direct Emissions: 206.17 tCO_2e and Scope 2 Indirect Emissions (Purchased Electricity): 2042.35 tCO_2e.**

This inventory is aligned with GHG Protocol Corporate Standard and follows operational control approach for boundary setting.

Table 4: Breakdown of Scope 1 and Scope 2 GHG Emissions of Indic EMS (Unit tCO_2 e)

Year	Scope 1 Emissions			Scope 2 Emissions (Location Based)
2024-25	**206.17**			**2042.35**
	Stationary Emissions	Mobile Emissions	Fugitive Emissions	Purchased Electricity
	43.96	**60.49**	**101.72**	**2042.35**

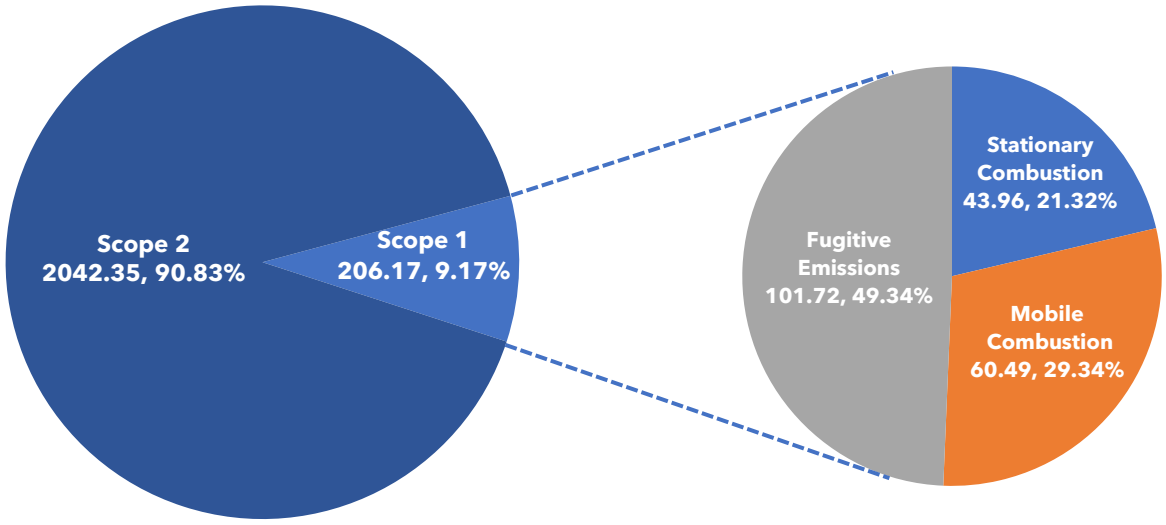


Figure 4: Breakdown of Scope 1 and Scope 2 GHG Emissions of Indic EMS (Unit tCO2 e) – FY 2024-25

Scope 1 Direct Emissions

Scope 1 emissions arise from fuel combustion in stationary and mobile sources, and fugitive emissions within Indic EMS's operations from use of CO2 based fire extinguishers.

Table 3:Breakdown of Scope 1 Emissions of Indic EMS

Emission Source	2024	
	Emissions (tCO_2e)	Share (%)
Stationary Combustion (Fossil Fuels in Boilers, Generators, etc.)	43.96	21.32%
Mobile Combustion (Company-Owned Vehicles, Forklifts, etc.)	60.49	29.34%
Fugitive Emissions (Refrigerants, Industrial Gases, etc.)	101.72	49.34%
Total Scope 1 Emissions	**206.17**	**100%**

Scope 2 Indirect Emissions

Scope 2 emissions account for the indirect carbon footprint associated with purchased electricity by the organization used in manufacturing processes and administrative operations. The total emissions due purchase grid electricity (location based) is **2042.35 tCO_2e** emissions in FY 2024-25.

The other sources of Scope 2 Indirect Emissions such as purchased heating, steam and cooling are not in applicable in this organization as there are no such procurement.

4.1 EMISSION INTENSITY

Carbon Emission Intensity is a key metric used to assess the environmental impact of a company in relation to its business activities. It is typically measured in terms of emissions per unit of revenue, per employee, per product or per unit of output.

The emission intensity is evaluated across three key dimensions:

1. **Revenue-Based Emission Intensity**

   This measures the total carbon emissions (CO_2e) relative to the company's turnover. It is expressed as:

   Emission Intensity = Total Carbon Emissions (tCO_2e) / Total Revenue

   A lower value indicates that the company is generating higher revenue with lower carbon emissions, showcasing efficiency in sustainable operations.

2. **Employee-Based Emission Intensity**

   This metric assesses the emissions produced per employee:

   Emission Intensity =Total Carbon Emissions (tCO_2e) / Total Number of Employees

   This helps understand the carbon footprint per employee and is useful for tracking sustainability improvements in workplace operations and energy efficiency.

3. **Product-Based Emission Intensity**

   This evaluates the carbon emissions per unit of product produced:

   Emission Intensity =Total Carbon Emissions (Kg CO_2e) / Total Number of Products

   In the calculation of Product-Based Emission Intensity, CO_2 emissions are measured in kilograms. However, due to the unavailability of data on the total physical weight of production, it was not possible to determine the physical emission intensity based on weight.

   A lower emission intensity per product signifies a more sustainable production process with optimized resource use and reduced environmental impact.

By tracking and analyzing these metrics, company can develop strategies to lower its carbon footprint, improve efficiency, and align with sustainability goals. Reducing emission intensity not only enhances environmental responsibility but also strengthens brand value and regulatory compliance.

Table 6: Emission Intensities of Indic EMS for FY 2024-25

Parameter	Value	Unit
Total Scope 1 & 2 Emissions (tCO_2e)	2248.51	tCO_2e
Annual Turnover (FY 2024-24)	62,542	₹ Rupees Lakhs
Emission Intensity (Revenue *) ₹	0.035	tCO_2e per Rupees Lakhs Revenue
Emission Intensity (Revenue **) $	0.004	tCO_2e per USD Million Revenue
Emission Intensity (Employee)	2.81	tCO_2e per Employee
Emission Intensity (Product #)	1.12	Kg CO_2e per Product

* Revenue intensity in rupee is calculated using the audited annual turnover amount in rupee for respective financial year.
** Revenue intensity in USD is calculated converting the amount of rupee to USD (I USD = INR 82.3867).
# Number of products include total number of PCB components

5 CONCLUSION

The GHG accounting assessment for Indic EMS has provided a detailed understanding of the company's Scope 1 and Scope 2 emissions, establishing a baseline for future emissions reduction strategies. While the company has not yet set formal decarbonization targets, the analysis presents a clear trajectory for potential reductions based on feasible interventions in energy efficiency, fuel switching, and renewable energy adoption.

Furthermore, aligning with global climate goals and evolving regulatory landscapes, Indic EMS can proactively explore opportunities for emissions mitigation to enhance its operational sustainability. The findings of this assessment provide a foundation for informed decision-making regarding future climate action initiatives. While no specific commitments are in place, these projections demonstrate the potential benefits of proactive sustainability measures and support the company's long-term growth with reduced environmental impact.

As industries worldwide transition towards low-carbon operations, companies that integrate sustainability into their business models are better positioned to mitigate regulatory risks, improve resource efficiency, and enhance their market competitiveness. Should Indic EMS choose to pursue decarbonization efforts, further analysis and stakeholder engagement would be essential to refining these projections and establishing realistic, science-based targets tailored to its operational realities.

6 ANNEXURE

6.1 EMISSION FACTORS AND GLOBAL WARMING POTENTIALS

India specific emission factors were selected to the extent available. In cases where GHG emission factors were not available, IPCC emission factors were used. The emission factors used in calculating GHG emission inventory are detailed in the below table.

PARAMETER	VALUE	UNIT	SOURCE
Global Warming Potential of CH4 (fossil)	29.8		IPCC Sixth Assessment Report, AR6 (GWP values: Section 7.6.1.1): Page No 2 of Link
Global Warming Potential of N2O	273	-	IPCC Sixth Assessment Report, AR6 (GWP values: Section 7.6.1.1): Page No 2 of Link
Global Warming Potential of R-22	1960	-	IPCC Sixth Assessment Report, AR6 (GWP values: Section 7.6.1.1): Page No 5 of Link
Global Warming Potential of R-32	771	-	IPCC Sixth Assessment Report, AR6 (GWP values: Section 7.6.1.1): Page No 2 of Link
Global Warming Potential of R-134	1260	-	IPCC Sixth Assessment Report, AR6 (GWP values: Section 7.6.1.1): Page No 2 of Link
Density of Diesel	0.8263	Kg/L	IPNG Annual Report 2022-23 (mopng.gov.in) Page No 220, (X) Product Conversion Factor, High Speed Diesel
Net Calorific Value of Diesel	0.000043	TJ/Kg	2006 IPCC Guidelines for National GHG Inventories (Page No 1.18, TABLE 1.2, Volume 2: Energy, Chapter 1: Introduction)
Stationary Combustion			
CO2 Emission Factor for Diesel Combustion	74100	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Page No 2.16, TABLE 2.2, Volume 2: Energy, Chapter 2: Stationary Combustion)
CH4 Emission Factor for Diesel Combustion	3	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Page No 2.16, TABLE 2.2, Volume 2: Energy, Chapter 2: Stationary Combustion)
N20 Emission Factor for Diesel Combustion	0.6	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Page No 2.16, TABLE 2.2, Volume 2: Energy, Chapter 2: Stationary Combustion)
Mobile Combustion			

PARAMETER	VALUE	UNIT	SOURCE
CO2 Emission Factor for Diesel Combustion	74100	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Page No 3.16, TABLE 3.2.1, Volume 2: Energy, Chapter 3: Mobile Combustion)
CH4 Emission Factor for Diesel Combustion	3.9	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Page No 3.21, TABLE 3.2.2, Volume 2: Energy, Chapter 3: Mobile Combustion)
N20 Emission Factor for Diesel Combustion	3.9	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Page No 3.21, TABLE 3.2.2, Volume 2: Energy, Chapter 3: Mobile Combustion)
Density of Petrol	0.7475	Kg/L	IPNG Annuan Report 2022-23(Table No.(XVII) Petroleum Specific Gravity Ranges, Pg No. 225, Chaper: Appendix)
Net Calorific Value of Petrol	0.0000443	TJ/Kg	2006 IPCC Guidelines for National GHG Inventories (Page No 1.18, TABLE 1.2, Volume 2: Energy, Chapter 1: Introduction)
Mobile Combustion			
CO2 Emission Factor for Petrol Combustion	69300	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Page No 3.16, TABLE 3.2.1, Volume 2: Energy, Chapter 3: Mobile Combustion)
CH4 Emission Factor for Petrol Combustion	3.8	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Motor Gasoline – Low Mileage Light Duty Vehicle Vintage 1995 or Later; Page No 3.21, TABLE 3.2.2, Volume 2: Energy, Chapter 3: Mobile Combustion)
N20 Emission Factor for Petrol Combustion	5.7	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Motor Gasoline – Low Mileage Light Duty Vehicle Vintage 1995 or Later; Page No 3.21, TABLE 3.2.2, Volume 2: Energy, Chapter 3: Mobile Combustion)
Mobile Combustion			
CO2 Emission Factor for CNG Combustion	56100	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Mobile Combustion – Road Transport; Vol. 2, Table 3.2.1, p. 3.21, Energy, Chapter 3: Mobile Combustion)
CH4 Emission Factor for CNG Combustion	3.8	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Mobile Combustion – Road Transport; Vol. 2, Table 3.2.2, p. 3.23, Energy, Chapter 3: Mobile Combustion)
N20 Emission Factor for CNG Combustion	0.1	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Mobile Combustion – Road Transport; Vol. 2, Table 3.2.2, p. 3.23, Energy, Chapter 3: Mobile Combustion)
Net Calorific Value (NCV) of CNG	0.000478	TJ/kg	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 1.2, p. 1.18,Energy, Chapter 1: Introduction)

PARAMETER	VALUE	UNIT	SOURCE
Grid Emission Factor	0.727	tCO2/MWh	Table S, Page No 1; CEA database Version 20.0 (FY 23-24): Weighted average emission factor
LPG Emission Factor (HEATING ANNEALING)			
CO_2 Emission Factor of LPG	63100	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 2.3, p. 2.18,Energy, Chapter 1: Introduction)
CH_4 Emission Factor LPG	5	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 2.3, p. 2.18,Energy, Chapter 1: Introduction)
N_2O Emission Factor LPG	0.01	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 2.3, p. 2.18, Energy, Chapter 1: Introduction)
Net Calorific Value (NCV) of LPG	0.000473	TJ/kg	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 1.2, p. 1.18, Energy, Chapter 1: Introduction)
LPG Emission Factor (CANTEEN)			
CO_2 Emission Factor of LPG	63100	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 2.5, p. 2.22, Energy, Chapter 1: Introduction)
CH_4 Emission Factor LPG	5	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 2.5, p. 2.22, Energy, Chapter 1: Introduction)
N_2O Emission Factor LPG	0.1	Kg CO2/TJ (on a net calorific basis)	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 2.5, p. 2.22, Energy, Chapter 1: Introduction)
Net Calorific Value (NCV) of LPG	0.000473	TJ/kg	2006 IPCC Guidelines for National GHG Inventories (Derived Gases - Gas Works Gas; Vol. 2, Table 1.2, p. 1.18, Energy, Chapter 1: Introduction)

Other References:

1. U.S. Department of Energy (2023). "Biodiesel and Renewable Diesel." https://www.energy.gov
2. International Energy Agency (2022). "Energy Efficiency 2022 Report." https://www.iea.org
3. IPCC Guidelines (2021). "Greenhouse Gas Inventory Methodology." https://www.ipcc.ch
4. International Renewable Energy Agency (IRENA) (2023). "Renewable Energy Benefits." https://www.irena.org

5. International Council on Clean Transportation (ICCT) (2023). "Hybrid and Electric Vehicles Impact Report." https://theicct.org

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