Sahasra

SAHASR ELECTRONICS PVT. LTD.
129-G, NSEZ , NOIDA-201305, U.P.
• CARBON FOOT PRINT/ GHG MITIGATION PLAN
AUDIT REPORT – F.Y. 2024 to F.Y. 2025

16. FMT-EHS-018/2-00-GHG MONITORING

Sahasra

CARBON FOOTPRINT MITIGATION PLAN: SEPL

(Updated April 2025)

The net-zero carbon emission achievement plan for 2050 across all three scopes was reviewed on 5th April 2025 along with the revision of the Strategic Plan of Sahasra Electronics Pvt. Ltd. (SEPL). SEPL endeavors to adhere to high targets of carbon emission and has consciously put in place a carbon audit and mitigation. Our conscious effort to do an annual audit is a testimony to this.

✓ **Sahasra is committed to :-**

1. Comply Local, National and International regulatory requirements with respect to emission.
2. Set monthly and yearly emission Target as per Paris agreement.
3. Reduce GHG emission at least 50% by F.Y. Year 2030.
4. Achieve Net –Zero Emission target by F.Y. 2050 with the help of all stake holders, Management and employee/ worker participation.
5. Enhance natural Carbon Sinks.

✓ **We are and shall set Emission Targets:-**

1. Acceptable – As per GHG protocol
2. Acceptable- As per SBTI guidelines
3. Acceptable – As per RBS code of conduct (current applicable revision)

✓ **We shall take care of stake holder's expectations in :-**

1. Procurement Criteria – e.g. restrictions of conflict materials including but not limited to cobalt and restricted countries etc.
2. Product Certifications - Such as BIS, ROHS, REACH, UL etc.
3. Investments based on ESG (Environmental, Social & Governance) criteria.

✓ **Approach to achieve target:-**

1. Corporate Level commitment and strategy
2. Facility level emission reductions initiatives

✓ **Role of facility :-**

1. Accurate accounting of Emissions at our facility
2. Reduction efforts taken place at facility
3. Facility personnel drive the cultural shift towards a climate conscious organization.

The analysis and mitigation plan that follows is embedded in the mission component of the company's socially responsible and holistic mission.

We started monitoring Green House Gases w,e,f. F.Y. 2022-23 for scope 1 & 2, however we were complying required regulatory, QMS & EHS norms as per applicable standards to us. We added monitoring of scope 3 w.e.f. F.Y. 2024-25 . We have achieved our target to reduce emmission by 10 % yearly.

Exhibit 1: Audited Data of the Emission (Tables refer to the tables in the Carbon audit report)

F.Y.	2022-23	2023-24	2024-25
	Emission (tCO2e)	Emission (tCO2e)	Emission (tCO2e)
SCOPE 1			
Table 4 DG	529.45	234.17	399.65
Table 5 LPG	0.78	0.68	0.48
Table 6: Refrigerant leakage	608.06	805.49	529.10
Table 7: Owned Vehicles	90.56	48.00	14.02
SCOPE 1 Total	1228.85	1088.34	943.24
Scope-2			
Table 8: Purchased Electricity	121.51	113.74	109.27
SCOPE 2 Total	121.51	113.74	109.27
Total- Scope 1 & 2	**1350.36**	**1202.08**	**1052.52**

F.Y.	2022-23	2023-24	2024-25
SCOPE 3			Emission in tCO2e
Table 9: Transmission and distribution losses	**O/S**	**O/S**	**2.67**
Table 10: Emissions from Waste Generation	**O/S**	**O/S**	**34.87**
Table 11 Emission from water supplied	**O/S**	**O/S**	**1.13**
Table 12: Emissions from purchased Goods/ Material use	**O/S**	**O/S**	**238.04**
Table 13: Emissions from All air transportation and travel	**O/S**	**O/S**	**6.29**
Table 14: Emissions from All travel accommodation	**O/S**	**O/S**	**3.31**
Table 15: Emissions from Business travel Land & Sea	**O/S**	**O/S**	**6.2**
Table 16: Emissions from Freighting Goods up stream & Down stream	**O/S**	**O/S**	**729.06**
Table 17: Emissions from Employee commuting	**O/S**	**O/S**	**0.74**
Table 18: Emissions from Food	**OS**	**OS**	**54.21**
Emissions from Home office/ wfh	**O/S**	**O/S**	**0**
SCOPE 3	**Total Emission**		1076.52

16. FMT-EHS-018/1-00-GHG MONITORING

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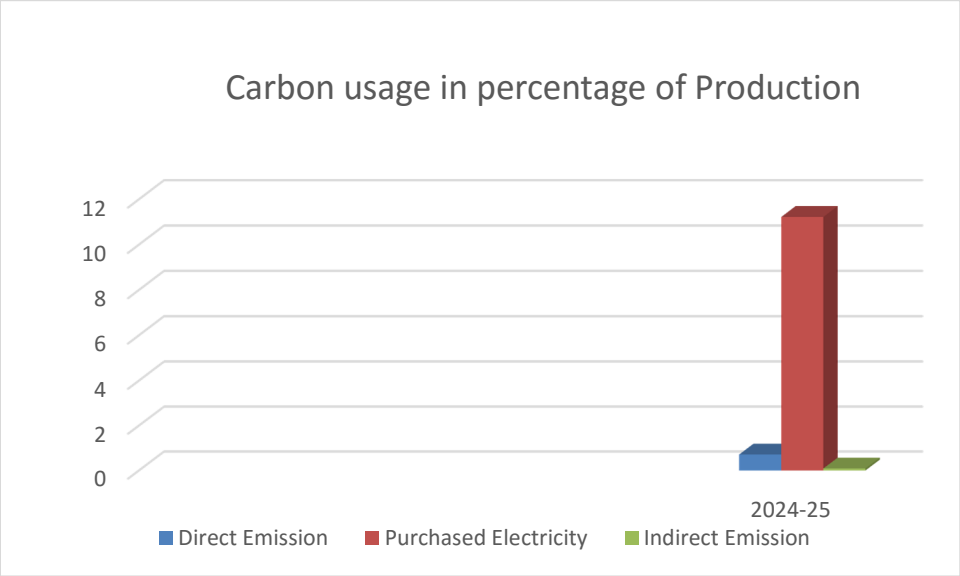
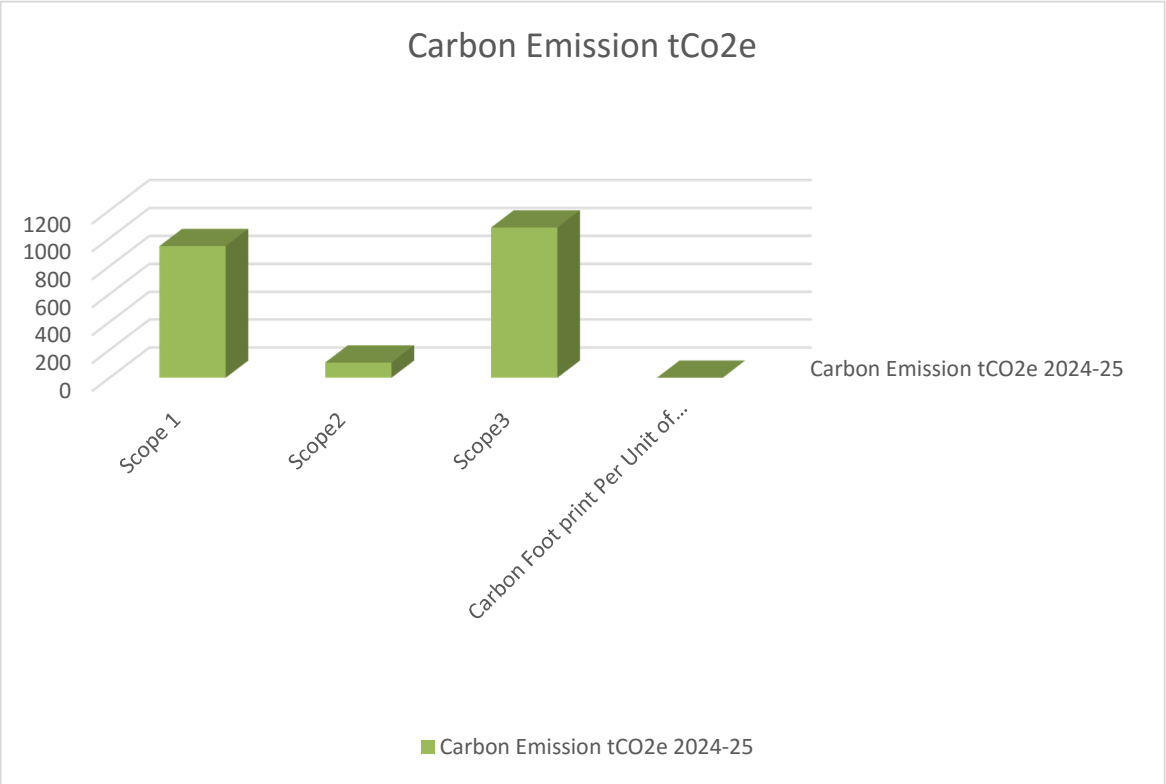
	Period of Reporting	F.Y. 2024-25	Location: 129-G NSEZ, NOIDA-201305, U.P.INDIA
Category	Emission source category		t CO2e
GHG Protocol Standards: Corporate Scope - 1 and 2, Value Chain - Scope 3	Scope 1	Direct emissions arising from owned or controlled stationary sources that use fossil fuels and/or emit fugitive emissions	Fuels	400.13
			Refrigerants	529.09
		Direct emissions from owned or controlled mobile sources	Passenger/ Owned vehicles	14.02
			Delivery vehicles	-
	Scope 2	Location-based emissions from the generation of purchased electricity, heat, steam or cooling	Electricity	109.27
			Heat and steam	-
			Electricity for Evs	-
			District cooling	-
	Scope 3		All other fuel- and energy related activities	-

		Fuel- and energy-related activities	Transmission and distribution losses	2.67
		Waste generated in operations	Waste water	-
			Waste	34.087
		Purchased goods	Water supplied	1.13
			Material use	238.04
		Business travel	All transportation by air	6.29
			Emissions arising from hotel accommodation associated with business travel	3.31
			All transportation by sea	-
			All transportation by land, public transport, rented/leased vehicle and taxi	6.20
		Upstream / downstream transportation and distribution	Freighting goods	729.84
		Employees commuting		0.74
		Food		54.21
		Home office		-
Total Emissions				**2129.03**

Exhibit 2 : Carbon Usage in Percentage



	Carbon usage in percentage of Production		
	2022-23	**2023-24**	**2024-25**
Direct Emission	0.83	0.78	0.71
Purchased Electricity	35.1	24.57	11.22
Indirect Emission	o/s	o/s	0.09



	Carbon Emission tCO2e		
	2022-23	**2023-24**	**2024-25**
Scope 1	1228.85	1088.336	943.245
Scope2	121.52	113.74	109.274
Scope3	0	0	1076.51
Carbon Foot print Per Unit of Product-Equivalent Co2-Ton/month(tCo2e)-Scope1,2 &3	0.0032	0.00213	0.00179

Exhibit 3-Time Series Analysis – Absolute emission (F.Y. 2022-23 to F.Y.2024-25)

Time series analysis of all 3 scopes are represented graphically using absolute emission

Figure 1: Scope 1 Absolute Emissions (Details below the graph)

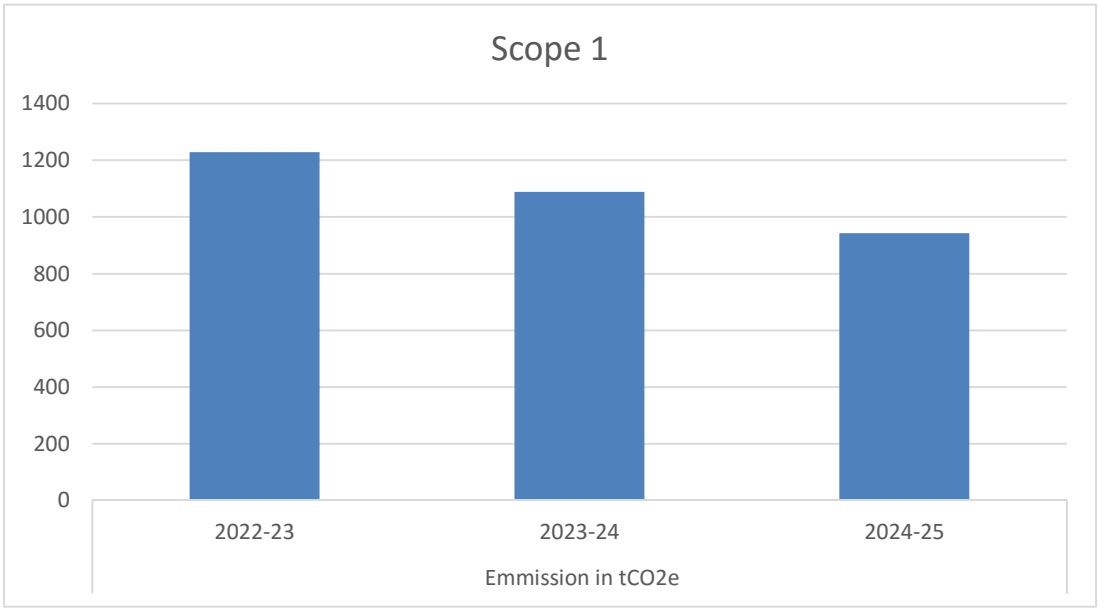


Figure 2: Scope 2 Absolute Emissions (Details below the graph)

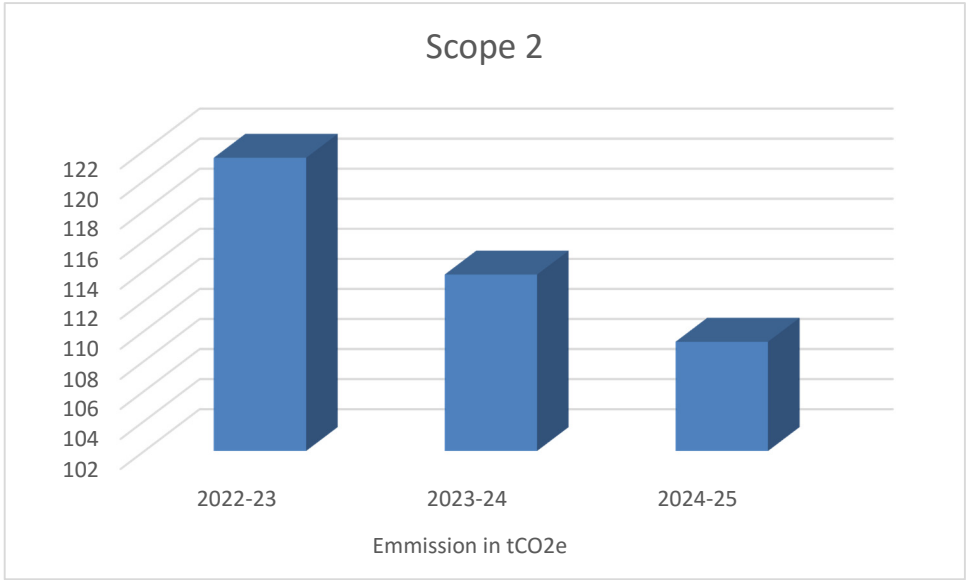


Figure 3: Scope 3 Absolute Emissions (Details below the graph)

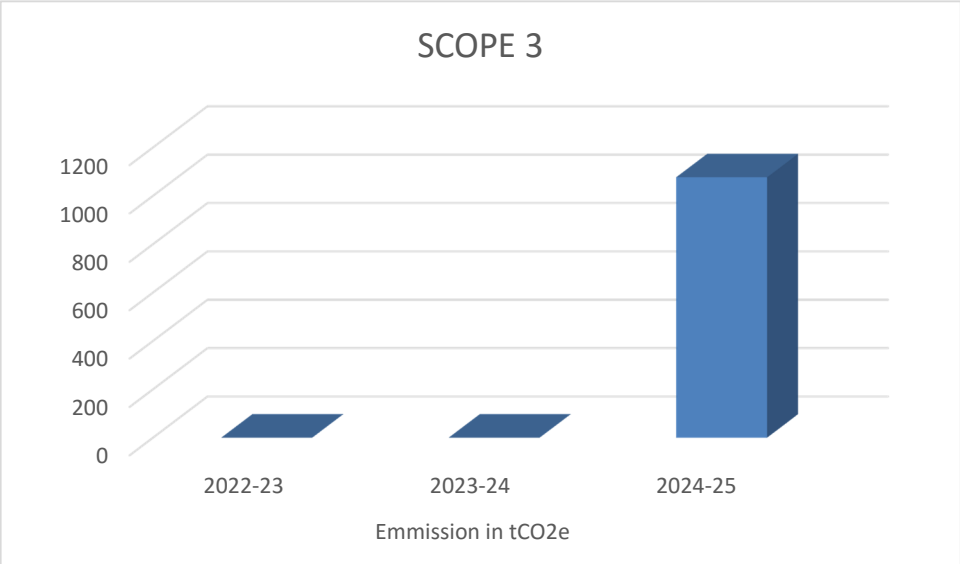
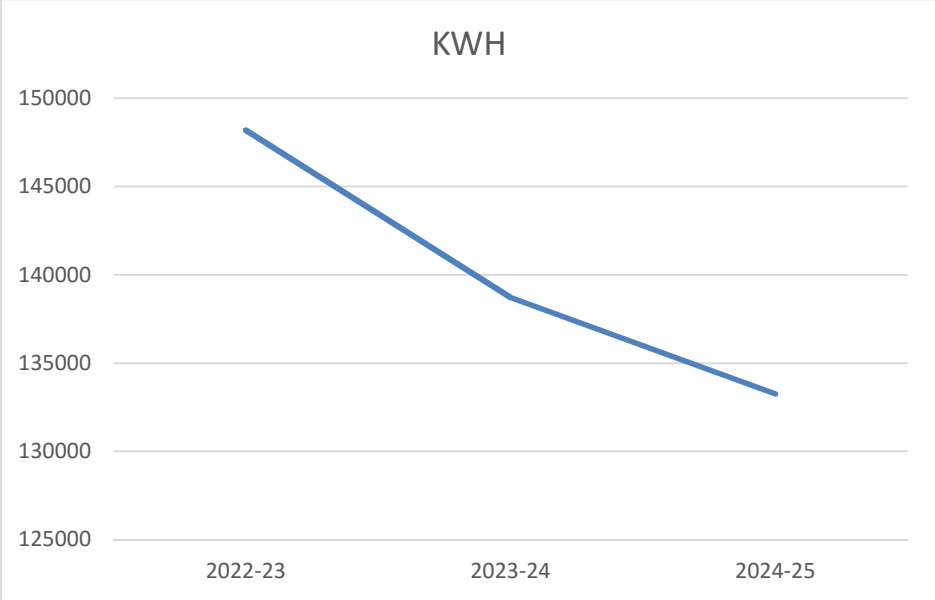


Figure 4: Scope 2 - Purchased Electricity- Time Series Analysis



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Net Zero Goals

Till now the effort was to achieve net zero by passive measures or reducing the usage. This has led to reduction in emission (see Table above). In F.Y. 2025, evaluation, a decision was taken to move to active methods to achieve net zero.

				Percentage reduction target per Year Scope 1,2 &3						
	Scope -1&2	Scope -1&2	Scope1,2+ 3 started							
Equivalent Co2- Ton/Year(tCo2e	F.Y. 2022-23	F.Y. 2023-24	F.Y. 2024-25	F.Y. 2025-26	F.Y. 2026-27	F.Y. 2027-28	F.Y. 2028-29	F.Y. 2029-30	Total-Estimated Reduction %	
SCOPE 1										Remarks/ Actions to be taken
4 DG	529.45	234.17	399.65							Since the land and building area is extremely restricted, the generation of adequate electricity to reach net zero is not practical. However, solar facility is to be put in other locations of SEPL to offset the use in the city. In addition we are moving towards clean fuel as directed by Authorities
LPG	0.78	0.68	0.48							We shall move to Solar energy for cafeteria
Refrigerant leakage	608.06	805.49	529.10							New Energy efficient systems, strict rules for switch off at non-productive time/

										requirement
2-Wheeler	0.00	0.00	0.55							Shall switch to EV
3-Wheeler	20.00	48.00	0.55							Shall switch to EV
4-Wheeler	70.56	0.00	12.91							Shall switch to EV/ CNG-FY23-24-All outsourced
Total	1228.85	1088.34	943.24							
% Reduction		11.43	13.33	10.00	10.00	10.00	10.00	10.00	63.33	
SCOPE 2										
Purchased Electricity	**121.51**	**113.74**	**109.27**							New Energy efficient systems, strict rules for switch off at non-productive time/ requirement. Solar option for offices
% Reduction		**27.91**	**17.66**	**10.00**	**10.00**	**0.00**	**0.00**	0.00	65.58	After a time it will not be possible to further reduction. Offset shall be arranged by carbon credits
SCOPE 3										
Transmission & Distribution Loss			2.67							We shall control as per GHG protocol, use energy efficient equipment, machines and utilities, Take carbon credit and move towards cleaner fuel and renewable energy.
Water Supply			**1.13**							
Material Use			238.04							

Waste Disposal			24.09							
Flight & Acomodation			**9.60**							
Business Travel			6.20							
Freighting goods			729.84							
Employee Commuting			0.74							
Food			54.21							
Home office			0.00							
Total Scope 3			1076.52							
Total Emission	1350.36	1202.07	2129.03							
% Reduction		10.98		10	10	10	10	10	50%	

Conclusion

Sahasra endeavors to adhere to high targets of carbon emission and has consciously put in place a carbon audit and mitigation. The slight increase shown in F.Y .2024-25 is the result of addition of scope 3 emissions and should not be a cause for alarm. However, the Company recognizes its location in the heart of the industrial area in Noida SEZ and limited area to operationalize solar energy and has thus begun to embrace tree plantation and possibly carbon credit purchase, is absolutely necessary.

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GHG Audit Report-2024-25

Sahasra Electronics Pvt. Ltd.(SEPL)

Noida unit-129-G, NSEZ, NOIDA

Reporting Period- 1st April 2024 to 31st March 2025

Prepared By:
Sushil Kumar

Approved By : Director

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ABBREVIATIONS

AC - Air Conditioning
AR- Assessment Report
BEE- Bureau of Energy Efficiency
CH_4- Methane
CDM- Clean Development Mechanism
EF- Emission Factor
GHG- Greenhouse Gas
GJ- Gigajoule
GRI- Global Reporting Initiative
GWP- Global Warming Potential
HFCs- Hydrofluorocarbons
IPCC- Intergovernmental Panel on Climate Change
Kg- Kilogram
KPI- Key Performance Indicator
LCA- Life Cycle Assessment
m^2 - Square Metre
m^3 - Cubic Metre
MWh- Megawatt Hour
N_2O- Nitrous Oxide
PFCs- Perfluorocarbons
SF_6- Sulphur Hexafluoride
t- Tonne
tCO_2e- Tonne of Carbon Dioxide Equivalent

ACKNOWLEDGEMENT

Sahasra GHG audit team would like to extend its sincere appreciation to the management and staff of Sahasra Electronics Pvt. Ltd (SEPL**), Noida SEZ unit** for their unwavering cooperation and support throughout the audit process. The commitment to transparency and openness demonstrated by the management team facilitated a thorough examination of records, internal controls, and operational processes.

We are grateful for the prompt provision of requested information and the willingness of SEPL Management to address queries and provide clarification as needed.

Furthermore, we would like to express our gratitude to all employees involved in the audit for their professionalism and dedication. Their cooperation greatly contributed to the efficiency and effectiveness of the audit engagement. Additionally, we acknowledge the assistance received from other relevant stakeholders who played a role in the successful completion of this audit.

AUDIT TEAM

From Sahasra Following team members conducted the GHG Audit.

Table 1 Audit Team

Team Member	Designation
Mr. Sushil Kumar **Certified Internal Auditor: ISO 45001:2018(OH&S); ISO13485:2016(Medical); ISO/TS 22163:2017 (IRIS); RBA-VAP/CAP/FL**	G.M. Logistics & Govt. Relations Head EHS,
Mr. Dinesh Pratap Singh **Certified Internal Auditor: ISO 9001:2015;IATF 16949:2016 ISO13485:2016(Medical); ISO/TS 22163:2017 (IRIS); RBA-VAP/CAP/FL**	G.M. Quality
Mr. Yogesh Kumar **Certified Internal Auditor: ISO 9001:2015; ISO-14001 & 45001:2018; ISO 27001:2022; EN 9100:2018**	Asst. Manager-QMS
Ms. Meenu Gupta **M.B.A.**	Asst. Manager-HR
External Member: **Mr. J.P. Tripathi** **Ex. Officer- Indian Army**	Manager Admin-SESL

EXECUTIVE SUMMARY

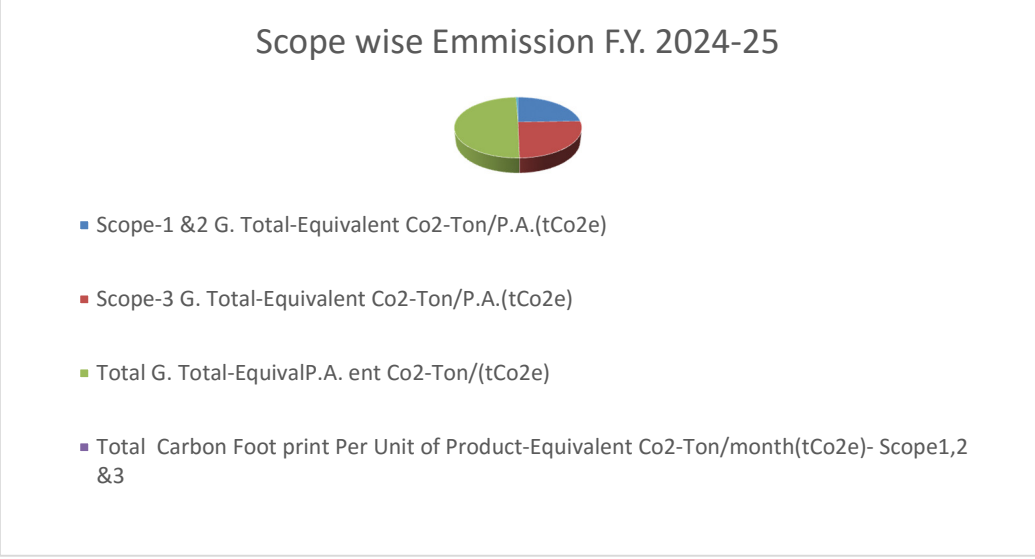
GHG EMISSION ACCOUNTING

The objective of this report is to outline the greenhouse gas (GHG) accounting of facility for the Period of 1st April 2023 to 31st March 2024. The total GHG footprint of Sahasra Electronics Pvt. Ltd. (SEPL), NSEZ, Noida is 2129.03 tCO_2e (Metric Tons of Carbon Dioxide equivalent).
Following Table gives an overview of the Scope-wise GHG emissions.

Table 2 Emission Summery

Scope-1 &2	**G. Total-Equivalent Co2-Ton/P.A.(tCo2e)**	**1052.52**	**From: All direct sources**
Scope-3	**G. Total-Equivalent Co2-Ton/P.A.(tCo2e)**	**1076.51**	**From: All indirect sources**
Total	**G. Total-Equivalent P.A. Co2-Ton/(tCo2e)**	**2129.03**	
	Carbon Foot print Per Unit of Product-Equivalent Co2-Ton/month(tCo2e)-Scope1,2 &3	**0.00179**	
	Carbon Foot print Per Unit of INR CR. Value-Equivalent Co2-Ton/month(tCo2e)	**26.09660**	

Graph 1 Scope Wise Emission



OBJECTIVE OF GHG AUDIT

The objective of a Greenhouse Gas (GHG) Audit report is to assess and report on an organization's greenhouse gas emissions and their management strategies. The primary goals of a GHG Audit report include:

Emission Assessment: Identify and quantify the organization's greenhouse gas emissions across various scopes (Scope 1, 2 & 3), including direct and indirect emissions associated with its operations, energy consumption, and supply chain.

The goal is to measure, analyze, and verify the amount of greenhouse gases, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), emitted directly and indirectly by the organization's activities. GHG audits are integral to understanding an organization's environmental impact and implementing strategies for emission reduction.

Here are the key steps involved in a typical GHG audit:

1. **Establish the Scope and Boundaries:**
    - Define the organizational and operational boundaries of the audit, including the scope of emissions to be considered.
2. **Define the Reporting Period:**
    - Determine the time period for which emissions will be measured and reported (e.g., annual reporting).
3. **Identify Emission Sources:**
    - Identify and categorize sources of greenhouse gas emissions, distinguishing between direct (Scope-1) and indirect (Scope-2 & Scope-3) emissions.
4. **Data Collection:**
    - Gather relevant data on energy consumption, fuel usage, and other activities contributing to emissions.
    - Collect data on purchased electricity and heat.
5. **Select Emission Factors:**
    - Choose appropriate emission factors to convert activity data into greenhouse gas emissions.
    - Emission factors are specific to the type of activity and the greenhouse gas in question.
6. **Calculate Emissions:**
    - Use the collected data and emission factors to calculate the total greenhouse gas emissions for each category (Scope 1, 2 & 3)
7. **Quality Assurance and Quality Control (QA/QC):**
    - Implement QA/QC procedures to ensure data accuracy, completeness, and reliability.
    - Verify calculations and resolve any discrepancies.
8. **Documentation and Reporting:**
    - Document the methodology, data sources, emission factors, and calculations used in the audit.
    - Prepare a comprehensive GHG audit report, including a summary of findings, emission trends, and recommendations.

FACILITY INTRODUCTION

The Sahasra Electronics Pvt. Ltd. is a well-known and prestigious EMS company located in Noida SEZ **Noida, U.P. India**. Sahasra" was conceived in the year 2000, the new millennium and since then has been one of the most successful and fastest growing electronic companies in India. The group comprises of 6 businesses providing end-to-end electronic solutions from design to manufacturing to distribution.

Sahasra commenced its EMS operations in 2001. We provide electronics manufacturing services by leveraging low cost, highly skilled Indian resources. We provide local support (import/export, sales, distribution, quality, and contact) through our US, Europe, Canada, Rwanda and India offices.

Sahasra an ISO 9001:2015, ISO 14001:2015, ISO 18001:2007, IATF 16949:2016, ISO 45001:2018, ISO 13485:2016, ISO/TS 22163:2017 as well as ANSI ESD S20.20-2014 Certified company assembles boards as per RoHS and REACH compliances at its 3 manufacturing plants (SEZ & DTA) equipped with 8 state of the art high speed SMT lines with a total capacity of 400,000 CPH. Besides SMT, BGA, uBGA and TH assembly the company provides customers with a gamut of value added services such as wire harnesses, plastic injection moulding and system assembly.

Subject audit was performed at 129-G NSEZ, Noida-201305, U.P. India.
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Geo Location of the Facility 1

METHODOLOGY

WHAT IS GLOBAL WARMING

Global warming refers to the long-term increase in Earth's average surface temperature due to human activities, primarily the emission of greenhouse gases into the atmosphere. While Earth's climate has naturally varied over geological time scales, the current trend of global warming is largely attributed to human activities that release large amounts of greenhouse gases, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases.

The main contributors to human-induced global warming include:

1. **Burning of Fossil Fuels:** The combustion of fossil fuels (coal, oil, and natural gas) for energy production releases large amounts of CO_2 into the atmosphere. This is a significant source of greenhouse gas emissions.
2. **Deforestation:** The clearing of forests for agriculture, logging, or other purposes reduces the number of trees that can absorb CO_2 from the atmosphere. Trees act as carbon sinks, and their removal contributes to increased greenhouse gas concentrations.
3. **Industrial Processes:** Certain industrial activities release greenhouse gases as byproducts. For example, cement production releases CO_2 during the chemical transformation of limestone into clinker.
4. **Agricultural Practices:** Agricultural activities, such as rice cultivation and livestock farming, produce methane and nitrous oxide, both potent greenhouse gases.
5. **Waste Management:** Improper waste disposal and waste treatment processes can lead to the release of methane, a potent greenhouse gas, from landfills.

The enhanced greenhouse effect resulting from these activities traps more heat in the Earth's atmosphere, leading to a rise in global temperatures. The consequences of global warming include:

- **Rising Sea Levels:** The melting of glaciers and polar ice caps contributes to rising sea levels, which can lead to coastal erosion and increased flooding.
- **Extreme Weather Events:** Changes in temperature patterns can lead to more frequent and severe weather events, such as heatwaves, droughts, hurricanes, and heavy precipitation.
- **Shifts in Ecosystems:** Changes in temperature and precipitation patterns can affect ecosystems, leading to shifts in the distribution of plant and animal species.
- **Ocean Acidification:** Increased CO_2 levels in the atmosphere also contribute to higher levels of carbon dioxide being absorbed by the oceans, leading to ocean acidification, which can harm marine life, particularly organisms with calcium carbonate shells or skeletons.

Efforts to mitigate global warming include international agreements such as the Paris Agreement, which aims to limit the global temperature increase to well below 2 degrees Celsius above pre-industrial levels, with efforts to limit the increase to 1.5 degrees Celsius. This requires substantial reductions in greenhouse gas emissions and the transition to more sustainable and low-carbon energy sources.

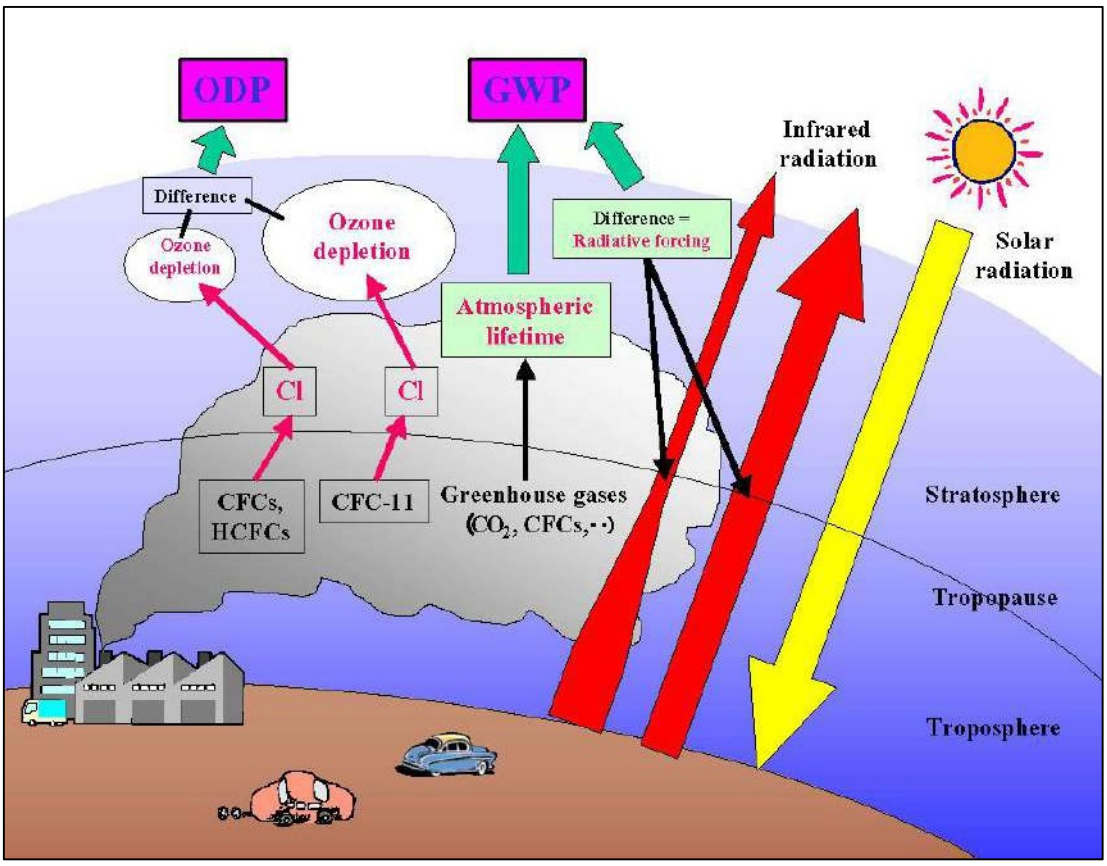
GLOBAL WARMING POTENTIAL (GWP)

Global Warming Potential (GWP) is a measure used to assess the relative impact of different greenhouse gases on global warming over a specific period, usually 100 years. It is expressed as a factor relative to carbon dioxide (CO_2), which is assigned a GWP of 1. The concept of GWP is important for comparing the warming potential of different greenhouse gases and developing strategies to mitigate climate change.

Table 3 Global Warming Potential

GHG	GWP (100 Years)
Carbon dioxide (CO_2)	1
Methane (CH_4)	25
Nitrous oxide (N_2O)	298
Hydro fluorocarbons (HFCs)	See IPCC AR4 – Table 2.14
Per fluorocarbons (PFCs)	See IPCC AR4 – Table 2.14
Sulphur hexafluoride (SF_6)	22,800

Figure 1 GHG Emission Concept



SCOPE AND BOUNDARIES

SCOPE

As per RBA code of conduct 8.0 the assessment scope is limited to Scope 1, Scope 2 and Scope-3. GHG Accounting Team identified following scope for GHG Emission in mentioned boundary.

SCOPE-1 (DIRECT)

GHG Accounting team identified following Scope-1 Emissions in the defined boundary.

1. Emission due to Diesel used in DG.
2. Emission by LPG Consumption by owned cafeteria
3. Emission by Petrol/ Electric Consumption by owned vehicles
4. Emission due to Refrigerant leakage from AC.

SCOPE-2 (INDIRECT)

1. Indirect Emissions due to Grid Electricity used in the facilty

SCOPE-3 (INDIRECT)

1. Employee Commute
2. Air Travel & accommodation
3. Waste Disposal
4. Purchasing Goods/Stationary/Raw material and its usage
5. Transmission and distribution losses of Electricity purchased
6. Supply water usage
7. Business travel- Local By Air/ sea/ Road
8. Freighting goods- upstream and down stream
9. Food consumed within the facility
10. Home office/ work from home

BOUNDARIES

This GHG Accounting limited to Sahasra Electronics Pvt. Ltd. NSEZ Campus including its operational activities, Electricity and fuel used and GHG Emissions. etc.

SCOPE- 1

GHG EMISSION DUE TO DIESEL COMBUSTION IN DIESEL GENERATOR

Facility has DG set with current applicable regulatory norms, which is used as a back-up energy source in case of Grid Failure. As per data received, GHG Emissions from DG set is as follow.

Table 4 DG Emissions

Parameter	UoM	Value
Diesel Consumption by DG Set in Reporting Period	Liters	5376
Emission Factor	$kgCO_2e$/Litre/2.68 tCo2e/0.07434	2.68/0.07434
Emission due to DG Set in Reporting Period	tCO_2e	399.65184
Ref. for Emission Factor: IPCC 2006 Guidelines, India GHG Program		

Table 4.1 LPG Emissions

Parameter	UoM	Value
LPG Consumption in Reporting Period	KGS	161
Emission Factor	$kgCO_2e$/kg	2.983
Emission due to DG Set in Reporting Period	tCO_2e	0.480263
Ref. for Emission Factor: IPCC 2006 Guidelines, India GHG Program/IGL resources		

GHG EMISSIONS BY OWN VEHICLES

Facility has some owned Vehicles. Audit Team checked the consumption records for these vehicles.

Table 5 Emissions due to owned Vehicles

Parameter	Type	Emission factor/ Kg CO2e	Distance K.M.	Emission factor/ Kg CO2e
Large Car	**Diesel**	**0.21**	**10296**	**2162.16**
Small Car	**Petrol**	**0.14836**	**3120**	**462.8832**
Medium Car	**Petrol**	**0.18659**	**32448**	**6054.47232**
Three Wheeler	**EV**	**0.17571**	**3120**	**548.2152**
SUV	**Diesel**	**0.21**	**6864**	**1441.44**
Motor bike	**Petrol**	**0.356**	**15600**	**555.36**
Large Car	**EV**	**0.17571**	**10296**	**1809.11016**
Medium Car	**EV**	**0.595**	**16536**	**983.892**
		Total ton CO2e		**14.02**
Ref. for Emission Factor: GHG Protocol v2.6 / IPCC 2006				

GHG EMISSIONS DUE TO REFRIGERANT LEAKAGES

Facility has large capacity of Air-Conditioning system for premises. Facility uses R-410A as refrigerant in Air-Conditioning System. As per data available of Refrigerant Refilling, GHG emissions due to R-410A leakages is as follow.

Table 6 Emissions due to Refrigerant Leakage

Parameter	UoM	Value
Refrigerant Name	-	R-410A
Emission Factor	1ton/1Hr	0.542857
Emission due to Refrigerant Leakage in Reporting Period	tO_2e	529.095
Ref. for Emission Factor: IPCC Fifth Assessment Report (AR5)		

SCOPE-2 (INDIRECT EMISSIONS)

Scope 2 emissions refer to indirect greenhouse gas (GHG) emissions associated with the generation of purchased electricity, heat, or steam consumed by a company. These emissions occur outside of a company's organizational boundaries but are a consequence of its activities.
For SEPL -NSEZ unit Purchased Electricity can be defined as a source of indirect emissions. As per available Energy Billing Data, Scope-2 Emissions will be as following.

Table7 Emissions from Purchased Electricity

Parameter	UoM	Value
Electricity Consumption in Reporting Period	kWh	133262
Emission Factor	Tco2e	0.00082
Emission due to Purchased Electricity in Reporting Period	$kgCO_2e$	109.27484
Ref. for Emission Factor: CEA Baseline Carbon Emission Database, Version 19, 2023		

SCOPE-3 (INDIRECT EMISSIONS)

EMISSIONS DUE TO COMMUTATION

As Facility process inputs to convert outputs. Audit team accounted the emissions due to this as follows.

Ref. for Emission Factor: UK DEFRA GHG Conversion Factors 2023, adjusted for India

Table 8 Emissions due to Transmission and distribution

Transmission and distribution

Emissions associated with grid losses (the energy loss that occurs in getting the electricity from the power plant to the organisations that purchase it).

Please enter the amount

Activity	Unit	Factors	Amount	tON CO2e
T&D-electricity	kWh	0.02005	133262	2.67

Table 9 Emissions due to water supply

Water supply

Water delivered through the mains supply network.

Please enter the amount

Type	Unit	Factors	Amount	kg CO2e
Water Supply	cubic metres/KLD	0.34400	1800	619.2

Water treatment

Water returned into the sewage system through mains drains

Please enter the amount

Type	Unit	Factors	Amount	kg CO2e
Water Treatment	cubic metres/kld	0.70800	720	509.76
			Total ton CO2e	1.13

Table 10 Emissions due to Material use

Material use

All materials consumed in the reporting period.
The emissions cover the extraction, primary processing, manufacturing and transporting materials to the point of sale.
Entered the amounts in tonnes for each of the material applicable to the organisation

Activity	Waste type	Factors	Amount (tonnes)	kg CO2e
Construction	Aggregates	7.77	0	0
Construction	Average construction	79.27	0	0
Construction	Asbestos	27.00	0	0
Construction	Asphalt	39.21	0	0
Construction	Bricks	241.77	0	0
Construction	Concrete	131.77	0	0
Construction	Insulation	1,861.77	0	0
Construction	Metals	3,894.22	0	0
Construction	Mineral oil	1,401.00	0	0
Construction	Plasterboard	120.05	0	0
Construction	Tyres	3,335.57	0	0
Construction	Wood	312.61	0	0
Other	Glass	843.00	0	0
Other	Clothing	22,310.00	0.025	557.75
Other	Food and drink	3,701.40	11.25	41640.75
Organic	Compost derived from garden waste	113.31		0
Organic	Compost derived from food and garden waste	116.13	3	348.39
Electrical items	WEEE - fridges and freezers	3,814.37		0
Electrical items	WEEE - large	537.24		0
Electrical items	WEEE - mixed	1,148.42	0.13	149.2946
Electrical items	WEEE - small	1,759.60	38.68572	68071.39291
Electrical items	Batteries	12,119.21	0.15	1817.8815

Metal	Metal: aluminium cans and foil (excl. forming)	9,122.64		0
Metal	Metal: mixed cans+Hardwares	5,204.56	0.25	1301.14
Metal	Metal: scrap metal	3,567.60		0
Metal	Metal: steel cans	3,000.64		0
Plastic	Plastics: average plastics	3,116.29		0
Plastic	Plastics: average plastic film	2,574.16		0
Plastic	Plastics: average plastic rigid	3,276.71		0
Plastic	Plastics: HDPE (incl. forming)	3,269.84		0
Plastic	Plastics: LDPE and LLDPE (incl. forming)	2,600.64		0
Plastic	Plastics: PET (incl. forming)	4,032.39		0
Plastic	Plastics: PP (incl. forming)	3,104.73		0
Plastic	Plastics: PS (incl. forming)	3,777.95		0
Plastic	Plastics: PVC (incl. forming)	3,413.08	0.269	918.11852
Paper	Paper and board: board	750.26		0
Paper	Paper and board: mixed-(Corr. Box+ Pkg Mateial)	853.57	144	122914.08
Paper	Paper and board: paper-(Printing Paper)	919.40	0.35334	324.860796
			Total	238.04

Table 11 Emissions due to waste Disposal

Waste disposal

All waste disposed in the reporting year.

Waste type	Factors	Amount (tonnes)	kg CO2e
Aggregates	1.2489	0	0
Asbestos	5.9277	0	0
Asphalt	1.2489	0	0
Batteries	85.4344	0	0
Bricks	1.2489	0	0
Clothing	444.9759	0.025	11.1243975
Commercial and industrial waste	458.1763	0.0522	23.91680286
Concrete	1.2489	0	0
Glass	8.9344	0	0
Household residual waste	437.3719	0	0
Insulation	1.2489	0	0
Metal: aluminium cans and foil (excl. forming)	8.9344	0	0
Metal: mixed cans	8.9344	0	0
Metal: scrap metal	8.9344	0	0
Metal: steel cans	8.9344	0	0
Metals	1.2643	0	0
Organic: food and drink waste	626.9073	11.25	7052.707125
Organic: garden waste	578.9916	0	0
Organic: mixed food and garden waste	587.3768	30	17621.304
Paper and board: board	1041.8361	9	9376.5249

Paper and board: mixed	1041.8361	0	0
Paper and board: paper	1041.8361		0
Plasterboard	71.95		0
Plastics: average plastic film	8.9344		0
Plastics: average plastic rigid	8.9344		0
Plastics: average plastics	8.9344		0
Plastics: HDPE (incl. forming)	8.9344		0
Plastics: LDPE and LLDPE (incl. forming)	8.9344		0
Plastics: PET (incl. forming)	8.9344		0
Plastics: PP (incl. forming)	8.9344		0
Plastics: PS (incl. forming)	8.9344		0
Plastics: PVC (incl. forming)	8.9344		0
Soils	17.5923		0
WEEE - fridges and freezers	8.9864		0
WEEE - large	8.9864		0
WEEE - mixed	8.9864	0.13	1.168232
WEEE - small	8.9864		0
Wood	828.0647		0
		Total Ton CO2e	34.087

Table 12 Emissions due to Flight & Hotel

Flights & Hotel

Based on ICAO calculator

Emissions associated with overnight hotel stays for work purposes & Flights

Flights:

Origin (city or IATA code)	Destination (city or IATA code)	Class	Single way / return	kg CO2e
Del	London	Economy	Return	550
Del	London	Economy	Return	550
Del	Taipei	Economy	Return	502
Del	Taipei	Economy	Return	502
Del	Shanghai	Economy	Return	758
Del	Shanghai	Economy	Return	759
Del	Shanghai	Economy	Return	760
Del	Shanghai	Economy	Return	761
Del	Blr	Economy	Return	118
Del	Blr	Economy	Return	118
Del	Blr	Economy	Return	118
Del	Blr	Economy	Return	118
Del	Chennai	Economy	one way	119
Chennai	Blr	Economy	one way	37
Blr	Del	Economy	one way	118
Del	Udaipur	Economy	Return	110
Del	Udaipur	Economy	Return	111
Del	Hyd	Economy	Return	180
			Total Ton Co2e	6.29

Stays:

Country	Number of occupied rooms	Number of nights per room	Factors	kg CO2e
U.K.	1	2	50	100.00
U.K.	1	12	50	600.00
TWN	1	2	29	58.00
TWN	1	4	29	116.00
CHINA	1	2	53.2	106.40
CHINA	1	4	53.2	212.80
CHINA	1	2	53.2	106.40
CHINA	2	2	53.2	212.80
INDIA	1	30	60	1800.00
			Total Ton Co2e	3.31

Table 13 Emissions due to Business Travel

Business travel: land and sea

Travel for business purposes in assets not owned or directly operated by a business. This includes mileage for business purposes in, for example, cars owned by employees, public transport and hire cars.

Vehicle	Type	Fuel	Unit	Factors	Total distance	kg CO2e
Bus	Local bus	CNG	passenger.km	0.11950	0	0
Bus	Local London Bus	Unknown	passenger.km	0.07856		0
Bus	Average local bus	Unknown	passenger.km	0.10312		0
Bus	Coach	Unknown	passenger.km	0.02732		0
Car	Small car	Diesel	km	0.13721		0
Car	Medium car	Diesel	km	0.16637		0
Car	Large car	Diesel	km	0.20419		0

Car	Average car	Diesel	km	0.16844		0
Car	Small car	Petrol	km	0.14836	24000	3560.64
Car	Medium car	Petrol	km	0.18659		0
Car	Large car	Petrol	km	0.27807		0
Car	Average car	Petrol	km	0.17430		0
Car	Small car	Hybrid	km	0.10275		0
Car	Medium car	Hybrid	km	0.10698		0
Car	Large car	Hybrid	km	0.14480		0
Car	Average car	Hybrid	km	0.11558		0
Car	Medium car	CNG	km	0.15935		0
Car	Large car	CNG	km	0.23680		0
Car	Average car	CNG	km	0.17621		0
Car	Medium car	LPG	km	0.17847		0
Car	Large car	LPG	km	0.26606		0
Car	Average car	LPG	km	0.19754		0
Car	Small car	Unknown	km	0.14449		0
Car	Medium car	Unknown	km	0.17571		0
Car	Large car	Unknown	km	0.22321		0
Car	Average car	Unknown	km	0.17140		0
Car	Small car	Plug-in Hybrid Electric	km	0.05860		0
Car	Medium car	Plug-in Hybrid Electric	km	0.09251		0
Car	Large car	Plug-in Hybrid Electric	km	0.10515		0
Car	Average car	Plug-in Hybrid Electric	km	0.09712		0
Car	Small car	Battery Electric	km	0.04637		0
Car	Medium car	Battery Electric	km	0.05563		0
Car	Large car	Battery Electric	km	0.06646	30000	1993.8
Car	Average car	Battery Electric	km	0.05728		0

Ferry	Foot passenger	Foot passenger	passenger.km	0.01874		0
Ferry	Car passenger	Car passenger	passenger.km	0.12952		0
Ferry	Average passenger	Average passenger	passenger.km	0.11286		0
Motorbike	Small	Unknown	km	0.08277		0
Motorbike	Medium	Unknown	km	0.10086	6000	605.16
Motorbike	Large	Unknown	km	0.13237		0
Motorbike	Average	Unknown	km	0.11337		0
Rail	National rail	Unknown	passenger.km	0.03694	1105.2	40.826088
Rail	International rail	Unknown	passenger.km	0.00497		0
Rail	Light rail and tram	Unknown	passenger.km	0.02991		0
Rail	London underground	Unknown	passenger.km	0.02750		0
Taxi	Regular	Unknown	passenger.km	0.20369		0
Taxi	Black cab	Unknown	passenger.km	0.31191		0
				Total ton CO2e		6.20

Table 14 Emissions due to Freighting of goods upstream & down stream

Freighting goods

Shipment of goods over land, by sea or by air through a third-party company.

(Resource :IATA/ICAO/Maritime calculator)

Vehicle	Type	Fuel	Factors	Ton (km)-In	Ton (km)-Out	Ton CO2e
Vans	Class I (up to 1.305 t)	Diesel	0.15			0
Vans	Class II (1.305 to 1.74 t)	Diesel	0.19			0
Vans	Class III (1.74 to 3.5 t)	Diesel	0.27			0

Vans	Average (up to 3.5 t)	Diesel	0.25			0
Vans	Class I (up to 1.305 t)	Petrol	0.21			0
Vans	Class II (1.305 to 1.74 t)	Petrol	0.21			0
Vans	Class III (1.74 to 3.5 t)	Petrol	0.33			0
Vans	Average (up to 3.5 t)	Petrol	0.22			0
Vans	Average (up to 3.5 t)	CNG	0.307	834.8894	952.226	548.6443971
Vans	Average (up to 3.5 t)	LPG	0.27			0
Vans	Average (up to 3.5 t)	Unknown	0.25	263.28	201.172	116.1129
Vans	Class I (up to 1.305 t)	Battery Electric	0.04			0
Vans	Class II (1.305 to 1.74 t)	Battery Electric	0.06			0

Vans	Class III (1.74 to 3.5 t)	Battery Electric	0.08			0
Vans	Average (up to 3.5 t)	Battery Electric	0.06			0
HGV	Rigid (>3.5 - 7.5 t)	Diesel	0.48			0
HGV	Rigid (>7.5 t-17 t)	Diesel	0.59			0
HGV	Rigid (>17 t)	Diesel	0.96			0
HGV	All rigids	Diesel	0.8			0
HGV	Articulated (>3.5 - 33t)	Diesel	0.78			0
HGV	Articulated (>33t)	Diesel	0.92			0
HGV	All artics	Diesel	0.92			0
HGV	All HGVs	Diesel	0.87			0
HGV refrigerated	Rigid (>3.5 - 7.5 t)	Diesel	0.57			0

HGV refrigerated	Rigid (>7.5 t-17 t)	Diesel	0.7			0
HGV refrigerated	Rigid (>17 t)	Diesel	1.15			0
HGV refrigerated	All rigids	Diesel	0.95			0
HGV refrigerated	Articulated (>3.5 - 33t)	Diesel	0.9			0
HGV refrigerated	Articulated (>33t)	Diesel	1.07			0
HGV refrigerated	All artics	Diesel	1.06			0
HGV refrigerated	All HGVs	Diesel	1.01			0
					Total tonCo2e	664.76

Vehicle	Type	Unit	Factors	Tonne.km-In	Tonne.km-Out	kg CO2e
Freight flights	Domestic	tonne.km	2.52			0
Freight flights	Short-haul-International mixed	tonne.km	1.17	0	475.96	556.8732

Freight flights	Long-haul-International Mixed	tonne.km	0.6	78017.5	29442.2	64475.8068
Freight flights	International	tonne.km	0.6			0
Rail	Freight train	tonne.km	0.03			0
Sea tanker	Crude tanker; 200,000+ dwt	tonne.km	0			0
Sea tanker	Crude tanker; 120,000–199,999 dwt	tonne.km	0			0
Sea tanker	Crude tanker; 80,000–119,999 dwt	tonne.km	0.01			0
Sea tanker	Crude tanker; 60,000–79,999 dwt	tonne.km	0.01			0
Sea tanker	Crude tanker; 10,000–59,999 dwt	tonne.km	0.01			0
Sea tanker	Crude tanker; 0–9999 dwt	tonne.km	0.03			0
Sea tanker	Crude tanker; Average	tonne.km	0			0
Sea tanker	Products tanker ; 60,000+ dwt	tonne.km	0.01			0

Sea tanker	Products tanker ; 20,000–59,999 dwt	tonne.km	0.01			0
Sea tanker	Products tanker ; 10,000–19,999 dwt	tonne.km	0.02			0
Sea tanker	Products tanker ; 5000–9999 dwt	tonne.km	0.03			0
Sea tanker	Products tanker ; 0–4999 dwt	tonne.km	0.05			0
Sea tanker	Products tanker ; Average	tonne.km	0.01			0
Sea tanker	Chemical tanker ; 20,000+ dwt	tonne.km	0.01			0
Sea tanker	Chemical tanker ; 10,000–19,999 dwt	tonne.km	0.01			0
Sea tanker	Chemical tanker ; 5000–9999 dwt	tonne.km	0.02			0
Sea tanker	Chemical tanker ; 0–4999 dwt	tonne.km	0.02			0
Sea tanker	Chemical tanker ; Average	tonne.km	0.01			0
Sea tanker	LNG tanker; 200,000+ m3	tonne.km	0.01			0

Sea tanker	LNG tanker; 0–199,999 m3	tonne.km	0.01			0
Sea tanker	LNG tanker; Average	tonne.km	0.01			0
Sea tanker	LPG Tanker; 50,000+ m3	tonne.km	0.01			0
Sea tanker	LPG Tanker; 0–49,999 m3	tonne.km	0.04			0
Sea tanker	LPG Tanker; Average	tonne.km	0.01			0
Cargo ship	Bulk carrier; 200,000+ dwt	tonne.km	0			0
Cargo ship	Bulk carrier; 100,000–199,999 dwt	tonne.km	0			0
Cargo ship	Bulk carrier; 60,000–99,999 dwt	tonne.km	0			0
Cargo ship	Bulk carrier; 35,000–59,999 dwt	tonne.km	0.01			0
Cargo ship	Bulk carrier; 10,000–34,999 dwt	tonne.km	0.01			0

Cargo ship	Bulk carrier; 0–9999 dwt	tonne.km	0.03			0
Cargo ship	Bulk carrier; Average	tonne.km	0			0
Cargo ship	General cargo; 10,000+ dwt	tonne.km	0.01	4598.63	0	45.98632
Cargo ship	General cargo; 5000–9999 dwt	tonne.km	0.02			0
Cargo ship	General cargo; 0–4999 dwt	tonne.km	0.01			0
Cargo ship	General cargo; 10,000+ dwt 100+ TEU	tonne.km	0.01			0
Cargo ship	General cargo; 5000–9999 dwt 100+ TEU	tonne.km	0.02			0
Cargo ship	General cargo; 0–4999 dwt 100+ TEU	tonne.km	0.02			0
Cargo ship	General cargo; Average	tonne.km	0.01			0
Cargo ship	Container ship; 8000+ TEU	tonne.km	0.01			0

Cargo ship	Container ship; 5000–7999 TEU	tonne.km	0.02			0
Cargo ship	Container ship; 3000–4999 TEU	tonne.km	0.02			0
Cargo ship	Container ship; 2000–2999 TEU	tonne.km	0.02			0
Cargo ship	Container ship; 1000–1999 TEU	tonne.km	0.03			0
				Total Ton co2e		65.079

Working: Illustrations

Road Transport-km/kg	Local DTA-Sale-Nos	Local-Purchase+couriers-Nos	Import-Exworks to port-Nos	Import Port to Plant-Nos	Export-Plant to Port-Nos	Export - Port to dest.-Nos
Apr-24	7	62	70	10.00	25	25
May-24	12	205	57	8.14	49	49
Jun-24	11	317	62	8.86	36	36
Jul-24	2	438	65	9.29	40	40
Aug-24	5	570	54	7.71	32	32
Sep-24	5	685	69	9.86	47	47
Oct-24	0	809	61	8.71	37	37
Nov-24	1	930	53	7.57	19	19
Dec-24	4	1033	34	4.86	34	34
Jan-25	6	1145	44	6.29	51	51
Feb-25	3	1228	38	5.43	53	53
Mar-25	5	1354	40	5.71	40	40
Total	61	8776	647	92.43	463	463
Km/Ton	305.875	263.28	201.1716	482.81	952.2259	529.0144

Exp-Air	USA	NETHERLANDS	S.KOREA	U.K.	Total
	288229.73	5841.375	248.144	102.51	294421.762

Table 15 Emissions due to Employee commuting

Employees commuting

Transportation of employees between their homes and their worksites.

Source : India GHG Protocol

Vehicle	Type	Fuel	Unit	Factors	Total distance	kg CO2e
Bus	Local bus	Unknown	passenger.km	0.11950		0
Bus	Local London Bus	Unknown	passenger.km	0.07856		0
Bus	Average local bus	CNG	passenger.km	1.06560	600	639.36
Bus	Coach	Unknown	passenger.km	0.02732		0
Car	Small car	Diesel	km	0.13721		0
Car	Medium car	Diesel	km	0.16637		0
Car	Large car	Diesel	km	0.20419		0
Car	Average car	Diesel	km	0.16844		0
Car	Small car	Petrol	km	0.11100	162	17.982
Car	Medium car	Petrol	km	0.18659	162	30.22758
Car	Large car	Petrol	km	0.27807		0
Car	Average car	Petrol	km	0.17430		0
Car	Small car	Hybrid	km	0.10275		0
Car	Medium car	Hybrid	km	0.10698		0
Car	Large car	Hybrid	km	0.14480		0
Car	Average car	Hybrid	km	0.11558		0
Car	Medium car	CNG	km	0.15935		0
Car	Large car	CNG	km	0.23680		0
Car	Average car	CNG	km	0.17621		0
Car	Medium car	LPG	km	0.17847		0

Car	Large car	LPG	km	0.26606		0
Car	Average car	LPG	km	0.19754		0
Car	Small car	Unknown	km	0.14449		0
Car	Medium car	Unknown	km	0.17571		0
Car	Large car	Unknown	km	0.22321		0
Car	Average car	Unknown	km	0.17140		0
Car	Small car	Battery Electric	km	0.12317		0
Car	Medium car	Battery Electric	km	0.14781		0
Car	Large car	Battery Electric	km	0.17661		0
Car	Average car	Battery Electric	km	0.15217		0
Motorbike	Small	Unknown	km	0.08277		0
Motorbike	Medium	Unknown	km	0.10086		0
Motorbike	Large	Unknown	km	0.13237		0
Motorbike	Average	Unknown	km	0.11337		0
Rail	National rail	Unknown	passenger.km	0.03694		0
Rail	International rail	Unknown	passenger.km	0.00497		0
Rail	Light rail and tram	Unknown	passenger.km	0.02991		0
Rail	London underground	Unknown	passenger.km	0.02750		0
Taxi	Regular	Unknown	passenger.km	0.20369		0
Taxi	Black cab	Unknown	passenger.km	0.31191		0
Car	Small car	Plug-in Hybrid Electric*	km	0.09631		0
Car	Medium car	Plug-in Hybrid Electric*	km	0.05950		0
Car	Large car	Plug-in Hybrid Electric*	km	0.07825		0
Car	Average car	Plug-in Hybrid Electric*	km	0.07219		0
Car	Small car	Plug-in Hybrid Electric (Petrol)	km	0.02235	0	0

Car	Medium car	Plug-in Hybrid Electric (Petrol)	km	0.07012	0	0
Car	Large car	Plug-in Hybrid Electric (Petrol)	km	0.07570	0	0
Car	Average car	Plug-in Hybrid Electric (Petrol)	km	0.06995	0	0
	Bilke	petrol	km	0.03870	150	5.805
	scooter	Petrol	km	0.03680	150	5.52
	Metro		km	0.00798	300	2.3928
	other/ three wheeler	cng	km	0.10768	345	37.1496
					Total ton CO2e	0.73843698

Table 16 Emissions due to Food consumption in facility

Food consumption

Food provided by the organization to be consumed by the employees (e.g. canteens)

Please mind the units for each type of food

Vehicle	Unit	Factors	Amount	kg CO2e
1 standard breakfast	breakfast	0.84		0
1 gourmet breakfast	breakfast	2.33		0
1 cold or hot snack	hot snack	2.02	6000	12120
1 average meal	meal	4.70		0
Non-alcoholic beverage	litre	0.20		0
Alcoholic beverage	litre	1.87		0
1 hot snack (burger + frites)	hot snack	2.77		0
1 sandwich	sandwich	1.27		0
Meal, vegan	meal	1.69		0

Meal, vegetarian	meal	2.85	13875	39543.75
Meal, with beef	meal	6.93		0
Meal, with chicken	meal	3.39	750	2542.5
			Total Ton Co2e	54.20625

Table 17 Emissions due to Home office/ work from home:

N.A.

Ref. for Emission Factor: ICAO Carbon Emissions Calculator

Ref. for Emission Factor: IPCC Guidelines and India GHG Program

Ref. for Emission Factor: USEPA EEIO Database, adjusted for local economic intensity (India proxy)

RECOMMENDATIONS TO MITIGATE GHG EMISSIONS

SCOPE 1: DIRECT EMISSIONS (3%)

Table 17 Mitigation Plan for Scope-1 Emissions

Source	Recommendation
Diesel (DG Sets)	Upgrade to fuel-efficient or hybrid DG sets.
Facility Vehicles (Diesel & Petrol)	Shift to electric or hybrid vehicles. Promote carpooling and optimize travelling routes.
Refrigerant Leakage	Implement a refrigerant management and leak detection system.

SCOPE 2: PURCHASED ELECTRICITY (29%)

Table 18 Mitigation Plan for Scope-2 Emissions

Source	Recommendation
Electricity	• Adopt energy-efficient lighting (LED), HVAC, and office equipment. • Conduct regular energy audits. • Install Energy Monitoring System. • Transition to renewable energy via Green Power Purchase Agreements or Open Access Solar/Wind.

SCOPE 3: INDIRECT EMISSIONS (68%)

Table 19 Mitigation Plan for Scope-3 Emissions

Source	Recommendation
Daily Commutation	Encourage public transport, cycling, or electric shuttle services. Implement remote or hybrid work policies.
Air Travel	Replace physical meetings with virtual platforms. Offset emissions through Certified Carbon Credits.
Solid Waste Disposal	Improve waste segregation and composting. Partner with recyclers or EPR vendors.
Goods Purchase	Source from local, low-carbon, and Certified Green Suppliers. Apply green procurement policies.

STRATEGIC MEASURES

• GHG Policy: Create an internal sustainability/GHG reduction policy with targets.
• ISO 14001/ ISO 45001:2018 /RBA Implementation: Use ISO-compliant systems for emission tracking.
• Employee Engagement: Run awareness drives and reward low-carbon practices.
• Offsetting: Consider verified carbon offsetting (e.g., forestry, renewable credits) for hard-to-abate emissions.

OFFSET MECHANISM

A carbon emission offset mechanism is a way for organizations to compensate for their greenhouse gas (GHG) emissions by investing in projects that reduce or remove an equivalent amount of emissions elsewhere. This mechanism is often used as part of a broader strategy to achieve carbon neutrality or to meet sustainability goals. The concept is based on the principle of balancing emissions by investing in activities that either prevent emissions from occurring or remove existing emissions from the atmosphere.

Here's an overview of how carbon emission offset mechanisms typically work:

1. **Identification of Carbon Offset Projects:**
    - Organizations can invest in various types of projects that result in emissions reductions or removals. Common project types include renewable energy projects (e.g., Wind, Solar), afforestation and reforestation, methane capture from landfills, and energy efficiency initiatives.
2. **Quantification of Emissions Reductions:**
    - Each project undergoes a rigorous process to quantify the emissions reductions or removals it achieves. This involves establishing a baseline for emissions that would have occurred without the project and comparing it to the actual emissions with the project in place.
3. **Verification and Certification:**
    - Carbon offset projects are often subject to third-party verification to ensure the accuracy and legitimacy of the claimed emissions reductions. Certification standards, such as the Verified Carbon Standard (VCS) or the Gold Standard, are used to verify and certify the emission reductions.
4. **Issuance of Carbon Credits:**
    - Once a project is verified, it is issued a certain number of carbon credits or offsets. One carbon credit typically represents the reduction or removal of one metric tonne of CO_2 equivalent.
5. **Purchase of Carbon Credits:**
    - Organizations seeking to offset their emissions can purchase these carbon credits on the voluntary or compliance market. The funds from the sale of carbon credits help finance the ongoing operation and maintenance of the offset project.
6. **Retirement or Cancellation of Carbon Credits:**
    - To ensure that the emissions reductions are not double counted, the purchased carbon credits are typically retired or cancelled in a public registry. This step confirms that the emissions reduction is attributed to the organization that purchased the offsets.

By participating in carbon offset mechanisms, organizations can take responsibility for their unavoidable emissions while supporting projects that contribute to sustainable development and environmental protection. It's important for organizations to carefully select credible and verifiable offset projects and to view carbon offsetting as part of a broader strategy that includes efforts to reduce emissions directly.

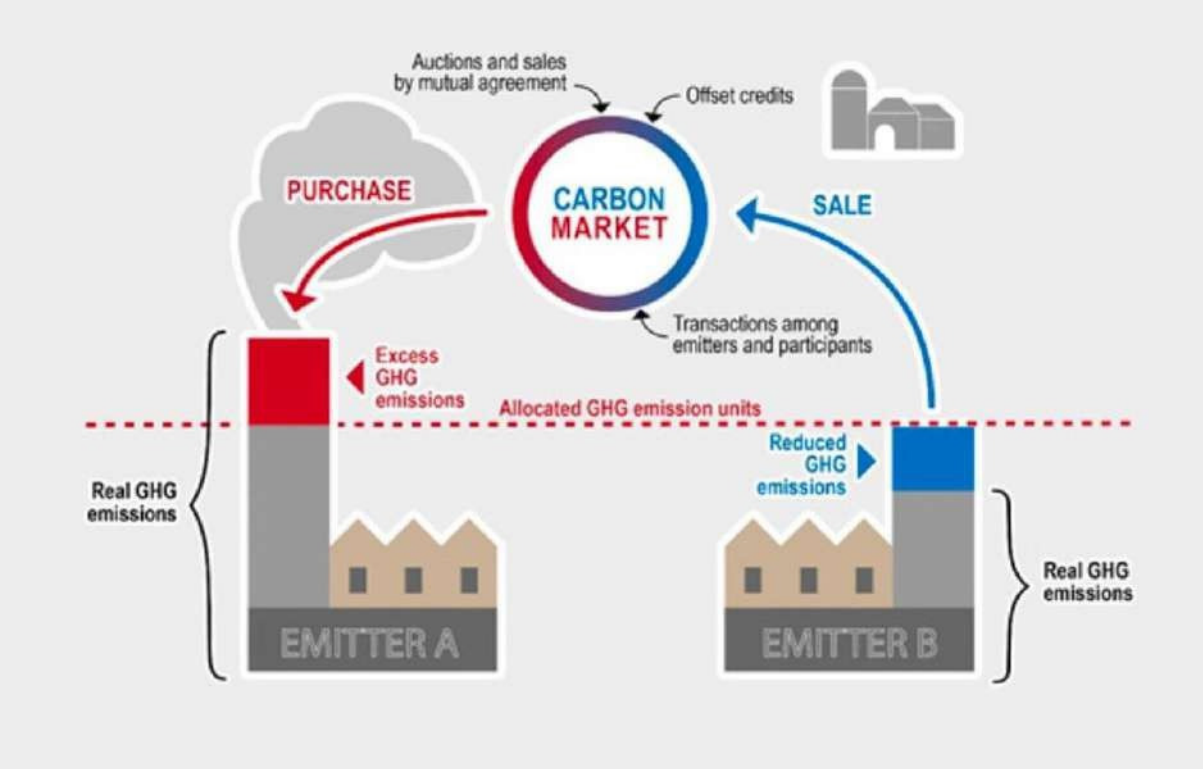


Figure 2 Carbon Market Mechanism

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