Greenhouse Gas Inventory Report 2022

Our Mission:

To provide innovative, clean and efficient energy solutions for a better tomorrow.

For the period: January 1, 2022 to December 31, 2022

Scope: Delta Electronics (Thailand) PCL.

Delta Electronics India Private Limited.

Delta Electronics (Slovakia) s.r.o.

Contents

Greenhouse Gas Inventory Report

Our Mission:

To provide innovative, clean and efficient energy solutions for a better tomorrow

For the period: January 1, 2022 to December 31, 2022
Published in: March, 2023 by Delta Electronics (Thailand) PCL.

Reported by: Mr. Saroj Ruangsakulraj

Introduction

The global financial crisis is causing massive economic upheaval, but with the world's governments working together, recovery is now in sight. Yet the threat posed by global warming still requires a major breakthrough in international negotiations and a change in modern lifestyles to slow the rate of warming and avert an ecological catastrophe.

With our corporate mission of "To provide innovative, clean and efficient energy solutions for a better tomorrow", DET strive to do our utmost to help slow global warming and reduce our environmental impact and also believe in fulfilling Delta's CSR goals through sound corporate governance, balancing stakeholder interests and social participation.

Responding to climate change is not only a corporation's social responsibility. How to respond to the threat it poses; and take advantage of the opportunities it offers; is something that businesses must look at seriously in their corporate strategies.

Carbon emissions reporting becoming an important topic, there is an increasing move towards greenhouse emissions reporting and disclosure. DET is looking towards best practice in the area of sustainability reporting. Sometimes the information is included in Annual Reports or in annual Sustainability and Corporate Responsibility reports. The format and composition of the information varies widely.

Greenhouse Gas report illustrates for a typical company the strategy, targets, performance, and benchmarking of how the company is working to reduce its impact on and adapt to climate change. Clearly, in order to produce reliable information for such reporting, and to monitor emissions performance and management actions to achieve reductions during the year, companies will need to consider carefully processes, systems, controls and internal reporting requirements.

Contents

1. Company Profile

Delta Electronics (Thailand) Public Company Limited (hereafter DET) was established in 1988. DET is the world's leading manufacturers and distributors; design and development of: Power Conversion Products (such as Switching Power Supply, Adaptor & Charger, AC-DC / DC-DC converter, Telecommunication / Server Power Supply) ; Magnetic products (such as Transformer, Line Filter, Coil) ; Electronic control units / Vision system for Automotive; EMI Filter; Cooling Fan; MTS (Molding, Tooling and Stamping); Solenoid product; PWB Assembly and Transformer. Its operation has now covered several regions i.e. Europe, Middle East, South America and Asia with a total consolidated sales turnover of approximate USD 1 billion.

Delta Electronics (Thailand) Public Company Limited had approximately 20,851 workers during the 2022-year in its Bangpoo Plant 1 & 3 & 5 & WHC3, Wellgrow Plant 6 &7 and Delta Green Industrial Thailand Company Limited.

Plant	Location	No. of Employee
DET Plant 1 & 3 & 5 & WHC3	Bangpoo	13,635
DET Plant 6 & 7	Wellgrow	7,181
DGIT	Bangkok	35
Total		20,851

2. GHG Management

2.1 Guideline of the report

This emissions inventory report has been prepared and written in accordance with the principles set out by the International Standards Organization (ISO) for the quantification and reporting of Greenhouse Gas Emissions and Removals (ISO14064-1).

2.2 Report Principle and Criteria

According to the report complete, consistent, accurate, relevant and transparent information complied principles.

2.3 Base Year

Setting and Adjustment the base year

Set the base year

Base-year Greenhouse Gas Inventory is annually thereafter, DET shall report the inventory of the preceding calendar year. In 2014, DET had built up several areas which consume high amount of electricity. So DET decided the chosen new base year calculated for this report from January 1, 2014 to December 31, 2014.

Adjust the base year

Amendments to the base year by the implementation team by adjustment the internal and external situation, and report to Top management for approval.

Recalculation of the base year's emission

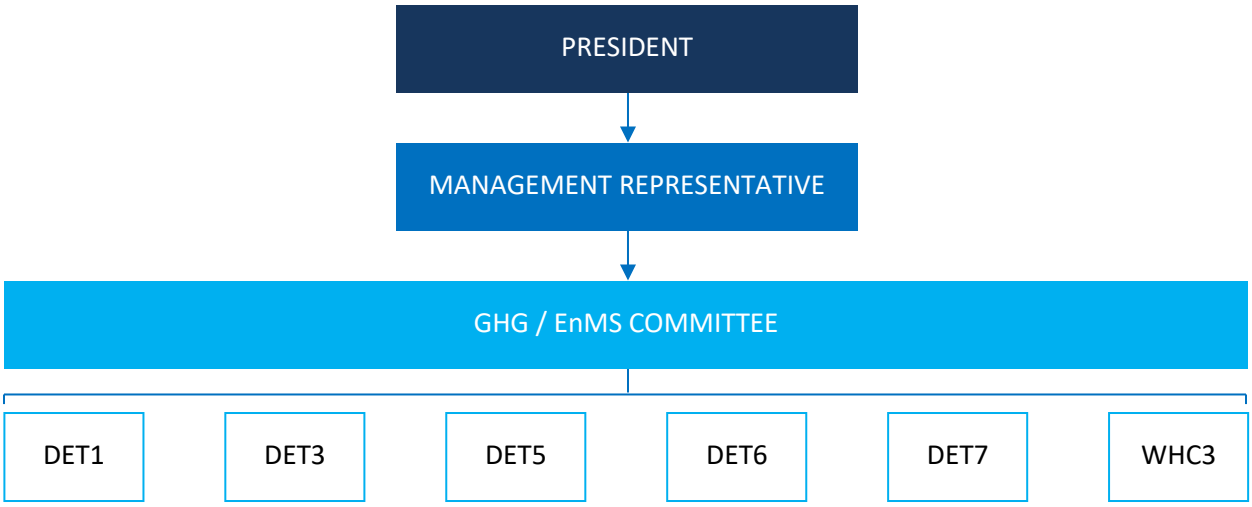
The base year emissions recalculation base-year inventory in the following cases should be re-calculated emissions for more than 5% significance threshold totally:

- When the operation of boundary changes;
- When the source of equity stakeholders / transfer;
- When a change in calculation method.

2.4 Organizational and Operational Boundaries

The company used the operational control-based approach to defining organizational boundaries. Due to the control prescribed nature of the core company, the application of either the control or equity approach is likely to have the same effect. The activity data is gathered from Delta factories in Thailand. The organizational boundary of Delta Electronics (Thailand) PCL. is defined by the purposes of the greenhouse gas (GHG) inventory include core business activities only.

2.5 GHG Organization and Responsibility



Responsibility:

Executive Management Team (Management Representative & GHG / EnMS Committee)

DET's Executive Management Team shall review and ultimately approve DET's annual GHG inventory and Carbon Footprint Report / Strategy. Members of the Executive Management Team will also be responsible for the communication of the Report / Strategy at their plant through meetings and discussions where necessary.

Plant Manager

DET's Plant Manager shall oversee the development of DET's annual GHG inventory and Carbon Footprint Report / Strategy. They shall review DET's annual GHG inventory and Carbon Footprint Report / Strategy, and assume ultimate responsibility for the achievement of targets set.

Concern Department Manager

DET's Manager shall oversee the day-to-day development of DET's annual GHG inventory. They will develop and manage the projects annual communications strategy, arrange documentation to communicate inventory and strategy, arrange and coordinate the project's annual external verification and assurance process.

The Manager shall also provide support to the EMR in the development of DET's annual GHG inventory.

EMR and Plant Representative

DET's EMR, together with members of the Plant Representative Team will gather data from facilities, finance and related dept; and develop an annual GHG inventory with Management Representative. They shall also work cooperatively with external verification and assurance team to allow smooth implementation of process.

DET's Plant Representative shall assist in the provision of data wherever applicable. The team shall ensure the collection of data for annual inclusion in DET's GHG inventory.

2.6 Management Review

As the new base year was set as 2014 for DET reported detailed greenhouse gas emissions, Management Representatives or his assignee shall review and approve Greenhouse Gas Inventory Report. On an annual basis, it shall be reviewed the relevance of DET's performance and the effectiveness of existing monitoring / measurement systems to provide accurate, complete and timely information sets to management team. The latest management review was held in February 1, 2023.

2.7 Verification of Greenhouse Gas Inventory Report

This Greenhouse gas Emissions report has been verified by SGS auditor. A positive assurance report has been given over the assertions and quantifications included in this report.

3. Primary Statement of GHG Inventory

3.1 Greenhouse Gas Emissions Sources

Emissions sources were identified with reference to the methodology described in the Greenhouse Gas Protocol and ISO14064-1:2018. Emissions sources Identification was achieved using specific guidance on Scope 3 factors included in ISO14064-1 Annex B and in the Greenhouse Gas Protocol (WBCSD).

These emissions have then been classified into 3 categories. The definition of each has been adapted from the Greenhouse Gas Protocol; the 3 types of emissions are:

- Direct Emissions (Scope 1 – Category 1): from sources that are owned or controlled by DET and DGIT
- Indirect Emissions (Scope 2 – Category 2): from generation of purchased electricity consumed by DET and DGIT
- Indirect Emissions (Scope 3 – Category 3, 4, 5 and 6): Emissions that occur as a consequence of the activities of DET, but occur from sources not owned or controlled by DET and DGIT. Inclusions of these are determined on DET's aims of the programme.

Actual Emissions

Scope	Emission Sources
Scope 1	Category 1: Direct GHG Emission
	1.1 Stationary Combustion
	- Generator and Fire Pump (Diesel)
	1.2 Mobile Combustion
	- Forklift (Diesel)
	- Company Car (Gasoline) / Company Van (Diesel)
	- Transportation for Sale Activities (Gasoline)
	1.3 Direct process emissions from industrial processes
	- Injection LPG Cylinder
	- Welding LPG Cylinder
	1.4 Direct fugitive emissions arise from the release of GHG in anthropogenic systems
	- Septic Tank (CH_4)
	- Fire Extinguisher (CO_2 type & HFC227ea / FM200 type & FK-5-1-12/Novec1230 type)
	- Cooling System (HFC134a/R134a & HFC404/R404a & HFC23/R23 & HFC410A/R410A & HFC407c/R407c & HFO514A/R514A)
	- Air Compressor System (HFC407C/R407C)
	- Water Drinking Dispenser (HFC134a/R134a)
	- Circuit Breaker (SF_6)
Scope 2	Category 2: Indirect GHG Emission from purchased electricity
	2.1 Electricity purchased from other organization
	2.2 Electricity from renewable energy sources purchased from other organization (Unbundled Energy Attribute Certificates (REC), Green Electricity Products, Directly Procured from RE Generators (PPA)) used in:
	- Delta Electronics (Thailand) PCL. (Plant 1)
	- Delta Electronics (Thailand) PCL. (Plant 3)
	- Delta Electronics (Thailand) PCL. (Plant 5)
	- Delta Electronics (Thailand) PCL. (Plant 6)
	- Delta Electronics (Thailand) PCL. (Plant 7)
	- Delta Electronics (Thailand) PCL. (WHC3)
	- Delta Green Industrial (Thailand) CO., LTD.
Scope 3	Category 3: Indirect GHG Emission from transportation
	3.1 Transportation of Raw material (Ocean and Air Freight only)
	3.2 Transportation of Finished Goods (Ocean and Air Freight only)
	3.3 Transportation of Business trip by Air Freight
	3.4 Transportation of Bus/Van for Employee
	3.5 Emission from transportation that are not described in the above subcategories (Transportation of Food & Waste Management Entrepreneur, Ambulance)
	Category 4: Indirect GHG Emission from product used by organization
	4.1 Canteen (Liquefied Petroleum Gas)
	4.2 Industrial and Normal Waste (from Production / Garbage)

Scope	Emission Sources
Scope 3	Category 5: Indirect GHG Emission associated with the use of products from the organization 5.1 Emissions or removals from the use stage of the product 5.2 Emission from downstream leased assets 5.3 Emissions from end of life stage of the product 5.4 Emission from investments Category 6: Indirect GHG Emission from other sources

Remark:

- No biomass is used in DET operations and therefore no emissions from the combustion of biomass are included.
- No generated electricity from fuel combustion, heat or stream is used in DET operations and therefore no emissions from these sources are included.

3.2 Greenhouse Gas Emissions Inclusions & Exclusions

Scope of Emissions		Emission Sources
Scope 3	Inclusions:	Category 3: Indirect GHG Emission from transportation 3.1 Transportation of Raw material (Ocean and Air Freight only) 3.2 Transportation of Finished Goods (Ocean and Air Freight only) 3.3 Transportation of Business travel
	Exclusions:	Category 3: Indirect GHG Emission from transportation 3.4 Transportation of Bus/Van for Employee 3.5 Emission from transportation that are not described in the above subcategories (Transportation of Food & Waste Management Entrepreneur, Ambulance) Category 4: Indirect GHG Emission from product used by organization 4.1 Canteen (Liquefied Petroleum Gas) 4.2 Industrial and Normal Waste (from Production / Garbage) Category 5: Indirect GHG Emission associated with the use of products from the organization 5.1 Emissions or removals from the use stage of the product 5.2 Emission from downstream leased assets 5.3 Emissions from end of life stage of the product 5.4 Emission from investments Category 6: Indirect GHG Emission from other sources

Indirect Emissions (Scope 3)

The emissions are occurred as a consequence of the activities of DET, but occur from sources not owned or controlled by DET; therefore some Indirect Emissions (Scope 3) have been ignored.

3.3 Summary of Greenhouse Gas Emissions

Type of Emissions (Tones CO2e*)	Plant 1	Plant 3	Plant 5	Plant 6	Plant 7	WHC3	DGIT	2022 Performance
Direct (Scope 1) Emissions: Category 1: Direct GHG Emission								
1.1 Stationary Combustion								
- Generator (Diesel)	0.31	0.48	3.79	0.14	0	0.95	0	5.67
- Fire Pump (Diesel)	0	3.14	0.89	0.81	0.14	0	0	4.98
1.2 Mobile Combustion								
- Forklift (Diesel)	65.50	9.11	28.16	39.60	21.10	0	0	163.47
- Company Car (Gasoline)	0	0	11.87	0	0	0	0	11.87
- Company Van (Diesel)	0	0	22.31	0	0	0	0	22.31
- Transportation for Sale Activities	0	0	0	0	0	0	59.81	59.81
1.3 Direct process emissions from industrial processes								
- Injection LPG Cylinder	0	0	0	0	0.37	0	0	0.37
- Welding LPG Cylinder	0	0	0	0	0	0	0	0
1.4 Direct fugitive emissions arise from the release of GHG in anthropogenic systems								
- Septic Tank (CH_4)	81.24	127.95	211.78	96.00	55.77	13.24	0	585.98
- Fire Extinguisher (CO_2 type)	0	0	0	0	0	0	0	0
- Fire Extinguisher (HFC227ea / FM200 type)	0	0	0	0	0	0	0	0
- Fire Extinguisher (FK-5-12 / Novec1230 type)	0	0	0	0	0	0	0	0
- Cooling System (HFC134a / R134a)	0	275.40	356.49	0	0	0	0	631.89
- Cooling System (HFC404a / R404a)	0	0	0	0	0	0	0	0
- Cooling System (HFC23 / R23)	0	0	0	0	0	0	0	0
- Cooling System (HFC410a / R410a)	0	0	0	0	0	0	0	0
- Cooling System (HFC407c / R407c)	0	0	0	0	0	0	0	0

Type of Emissions (Tones CO2e*)	Plant 1	Plant 3	Plant 5	Plant 6	Plant 7	WHC3	DGIT	2022 Performance
Direct (Scope 1) Emissions:								
Category 1: Direct GHG Emission								
- Cooling System (HFC514a / R514a)	0	0	0	0	0	0	0	0
- Air Compressor System (HFC407c / R407c)	0	0	0	0	0	0	0	0
- Water Drinking Dispenser (HFC143a / R134a)	0	0	0	0	0	0	0	0
- Circuit Breaker (SF6)	0	0	0	0	0	0	0	0
Total Direct (Scope 1) Emissions	147.05	416.08	635.29	136.55	77.38	14.19	59.81	1,486.35
Indirect (Scope 2) Emissions:								
Category 2: Indirect GHG Emission from purchased electricity								
2.1 All purchased electricity in owned buildings.	9,689.49	7,100.44	20,788.21	6,335.02	13,180.16	2,770.04	2.17	59,865.53
2.2 Unbundled Energy Attribute Certificates (3,800 RECs)	0	0	1,899.62	0	0	0	0	1,899.62
Total Indirect (Scope 2 – Location based) Emissions	9,689.49	7,100.44	20,788.21	6,335.02	13,180.16	2,770.04	2.17	59,865.53
Total Indirect (Scope 2 – Market based) Emissions	9,689.49	7,100.44	18,888.59	6,335.02	13,180.16	2,770.04	2.17	57,965.91
Total Gross Controlled Emissions (Scope 1 and Scope 2) – Location based	**9,836.54**	**7,516.52**	**21,423.50**	**6,471.57**	**13,257.54**	**2,784.23**	**61.98**	**61,351.88**
Total Gross Controlled Emissions (Scope 1 and Scope 2) – Market based	**9,836.54**	**7,516.52**	**19,523.88**	**6,471.57**	**13,257.54**	**2,784.23**	**61.98**	**59,452.26**
Indirect (Scope 3) Emissions:								
Category 3: Indirect GHG Emission from transportation								
3.1 Transportation of Raw material (Ocean and Air Freight only)								17,286.98
3.2 Transportation of Finished Goods (Ocean and Air Freight only)								149,780.30
3.3 Transportation of Business trip by Air Freight			243.22				11.75	254.97
Total Indirect (Scope 3) Emissions								167,322.25
Total Gross Controlled Emissions (Scope 1 - Scope 3) – Location based								**228,674.13**
Total Gross Controlled Emissions (Scope 1 - Scope 3) – Market based								**226,774.51**

**Data expressed in carbon dioxide equivalent units.*

Quantity of Greenhouse Gas separated by type of emissions

Area		CO_2	CH_4*	N_2O*	HFCs*	PFCs*	SF_6*	Ton. CO_2-e
Scope 1 Category 1: Direct GHG Emission	**Total**	**263.60**	**587.28**	**3.53**	**631.89**	**0**	**0**	**1,486.35**
	Plant 1	64.84	81.34	0.93	0	0	0	
	Plant 3	12.59	127.97	0.14	275.40	0	0	
	Plant 5	65.89	212.02	0.87	356.49	0	0	
	Plant 6	39.96	96.07	0.56	0	0	0	
	Plant 7	21.1533	55.81	0.30	0	0	0	
	WHC3	0.945	13.24	0.002	0	0	0	
	DGiT	58.22	0.03	0.003	0	0	0	
Scope 2 (Location based) Category 2: Indirect GHG Emission from purchased electricity	**Total**	**59,865.53**	**0**	**0**	**0**	**0**	**0**	**59,865.53**
	Plant 1	9,689.49	0	0	0	0	0	
	Plant 3	7,100.44	0	0	0	0	0	
	Plant 5	20,788.21	0	0	0	0	0	
	Plant 6	6,335.02	0	0	0	0	0	
	Plant 7	13,180.16	0	0	0	0	0	
	WHC3	2,770.04	0	0	0	0	0	
	DGiT	2.17	0	0	0	0	0	
Scope 2 (Market based) Category 2: Indirect GHG Emission from purchased electricity	**Total**	**57,965.91**	0	0	0	0	0	**57,965.91**
	Plant 1	9,689.49	0	0	0	0	0	
	Plant 3	7,100.44	0	0	0	0	0	
	Plant 5	18,886.69	0	0	0	0	0	
	Plant 6	6,335.02	0	0	0	0	0	
	Plant 7	13,180.16	0	0	0	0	0	
	WHC3	2,770.04	0	0	0	0	0	
	DGiT	2.17	0	0	0	0	0	
Scope 3 Category 3: Indirect GHG Emission from transportation	**Total**	**167,322.25**						**167,322.25**
	DET	167,310.50	0	0	0	0	0	
	DGIT	11.75						
Total Gross Controlled Emissions (Location based)		**227,451.38**	**586.48**	**2.80**	**631.89**	**0**	**0**	**228,614.32**
Total Gross Controlled Emissions (Market based)		**225,551.76**	**586.48**	**2.80**	**631.89**	**0**	**0**	**226,774.51**

Note: Greenhouse Gas Emissions Rate follows Global Warming Potential from IPPC GWP2021 AR6

3.4 Data Collection Quantification of Methodologies

The next table is shown the details of the sources, the relevant data, and the emission factors, which have been used. All factors have been approved by DET. The amount of CO_2e has been calculated by multiplying the activity data sources by DET by the relevant emission factors. As this is the first year that DET has produced these figures, there are no changes in methodology to report.

Emission or Removal Sources	Data Unit	Emission Factors	Global Warming Potential	Factor Sources
Electricity - Location-based: Local grid mix - Market-based: (Local grid mix - Unbundle Energy Attribute Certificates (REC))	kWh	0.4999	1.00	TGO Database updated April, 2022 with reference Thai National LCI Database, TIISMTEC-NSTDA, AR5 (with TGO electricity 2016-2018)
Diesel (Stationery Combustion)	Liter	CO2 = 2.70 CH4 = 0.000109 N2O = 0.0000219 CO2e = 2.7078	1.00	TGO Database updated April, 2022 with reference to IPCC Vol.2 table 2.2, 3.2.1, 3.2.2, DEDE, AR5
Diesel (Mobile Combustion)	Liter	CO2 = 2.70 CH4 = 0.000142 N2O = 0.000142 CO2e = 2.7406	1.00	
Gasoline (Mobile Combustion)	Liter	CO2 = 2.18 CH4 = 0.00104 N2O = 0.000101 CO2e = 2.2394	1.00	
Truck 10 wheels / B5 / 16 tons (0% load)	Km	0.6053	1.00	TGO Database updated July, 2022 with reference Thai National LCI Database,TIIS-MTEC-NSTDA (with TGO electricity 2016-2018)
Truck 10 wheels / B5 / 16 tons (100% load)	Ton-km	0.0489	1.00	
Truck 6 wheels / B5 / 11 tons (0% load)	Km	0.4923	1.00	
Truck 6 wheels / B5 / 11 tons (100% load)	Ton-km	0.0613	1.00	
Pick-up 4 wheels / 7 tons (0% load)	Km	0.3131	1.00	
Pick-up 4 wheels / 7 tons (100% load)	Ton-km	0.1411	1.00	
LPG (Stationery Combustion)	Kg	CO2 = 3.11 CH4 = 0.0000493 N2O = 0.00000493 CO2e = 3.1134	1.00	TGO Database updated April, 2022 with reference to IPCC Vol.2 table 2.2, 3.2.1, 3.2.2, DEDE, AR5 LPG 1 litre = 0.54 kg
LPG (Mobile Combustion)	Kg	CO2 = 3.11 CH4 = 0.00306 N2O = 0.00000986 CO2e = 3.2049	1.00	
Ship Container	Ton-km	0.0107	1.00	TGO Database updated July, 2022 with reference Ecoinvent 2.2, IPCC 2007 GWP 100a
Air (Outbound)	Ton-km	0.57	1.00	HP Global Citizenship Report 2009 (World Resource Institute GHG Protocol)
Sea (In Land)	Ton-km	0.0107	1.00	TGO Database updated July, 2022 with reference Thai National LCI Database,TIIS-MTEC-NSTDA (with TGO electricity 2016-2018)
Refrigerant (HCFC22 or R22) Refrigerant (HFC134a or R134a) Refrigerant (HFC404a or R404a) Refrigerant (HFC23 or R23) Refrigerant (HFC407c or R407c) Refrigerant (HFC32 or R32) Refrigerant (HFO514 or R514) Fire Extinguisher (HFC227ea or FM200)	Kg	1.00	HCFC22 = 1,960 HFC134a = 1,530 HFC404a = 4,728 HFC23 = 14,600 HFC407c = 1,908 HFC410a = 2,256 HFC32 = 771 HFO514 = 2 HFC227 = 3,600	IPCC, 2021, AR6 Chapter 7 Supplementary Material - 7.SM.6 - Tables of GHG Lifetimes, Radiative Efficiencies and Metrics.
Circuit Breaker (SF_6)	Kg	1.00	24,300	
Waste (Paper)	Kg	2.93	1.00	CFP Guideline; 3rd Edition
Waste Water (Industrial)	m3	0	1.00	IPCC Volume 5 : Wastewater Treatment and Discharge
Waste Water (Domestic) for CH_4 (fugitive)	m3	0.48	29.8	IPCC, 2021, AR6 Climate Change 2022 Mitigation of Climate Change Annex II, Table 9 GWP100 values and atmospheric lifetimes for a range of GHGs

3.5 References for Emission Factors

- CO_2 Emission Factor Sourced from: Thailand National Data Base
- CO_2 Emission Factor Sourced from: Electricity Generating Authority of Thailand (EGAT) 2011
- ISO14064-1 GHG Part 1: Specification for Quantification, Monitoring and Reporting of Entity Emissions and Removal
- Google Map (http://map.google.co.th/maps?hl=th&tab=wl)
- ISO14040 Environmental Management – Life Cycle Assessment – Principles and Framework
- ISO14044 Environmental Management – Life Cycle Assessment – Requirements and Guidelines
- Carbon Footprint Product Guideline (TGO) – February 2020
- Carbon Footprint Organization Guideline (TGO) – April 2020
- Carbon Footprint Organization Guideline (TGO) – April 2021
- AA1000: A Standard for Ethical Performance
- PAS2050: Assessing the Life Cycle Greenhouse Gas Emissions of Goods & Services
- ISO26000: Guidance on Social Responsibility
- IPCC Volume 5: Wastewater Treatment and Discharge
- The Global Warming Potential (GWP) Sourced from: IPCC AR6 (Sixth Assessment Report) Climate change 2021 The Physical Science Basis

  IPCC AR6 (Sixth Assessment Report) Climate Change 2022 Mitigation of Climate Change

- http://www.searates.com/reference/portdistance
- http://www.timeanddate.com/
- https://www.prokerala.com/travel/airports/distance/
- http://ports.com/sea-route

3.6 Uncertainty Management

This Greenhouse Gas Inventory report has been assessed and evaluated the uncertainty rating. The rating is 24 points which focus on Electricity consumption (98% of Greenhouse Gas Inventory). The rating is 18 points which focus on Transportation system (Company's car and van). The rating is 16 points which focus on Septic Tank (Domestic Wastewater). The rating is 12 points which focus on Fire Fighting System, Diesel used in Electricity Backup System, Refrigerant, LPG used in Welding & Injection Process and Transportation for Sale Activities which has been shown the activity data is moderated data quality which comes from the regular measurement eq. Meter Reading, Purchase Order, etc.; and Emission factors is uncertainty of data quality which comes from Manufacturer to provide coefficient. And the rating is 6 points which focus on Transportation system (Forklift).

Explanation: Greenhouse Gas Inventory and the estimated operation itself on the scientific uncertainty, to achieve the purpose of continuous improvement of data quality, therefore, uncertainty is evaluated. IPCC uncertainty is used in more complex calculation. DET adapts Delta Group Guideline for the model of uncertainty which provided by the way of class distinction specify below.

The uncertainty of inventory operations can be divided into model uncertainty and parameter uncertainty. Since the pattern is more complex uncertainty, therefore, not be included in this assessment of the range of uncertainty. Parameter uncertainty refers to the uncertainty of quantitative parameters. Activity data and Emission factors include the uncertainty of activity data differentiate the following 3 levels:

- Automatic Continuous Measurement
- Regular Measurement (Meter reading, Purchase order)
- Own Estimation

Note: Order of score is 6-1; the higher score the better the response data, the lower score the uncertainty; will Emission Factors in 6 categories:

- Measurement / Material and Energy balance coefficient
- Manufacturer to provide coefficient
- Regional Emission Factors
- National Emission Factors
- International Emission Factors

Value Type	Data Quality Level		
Activity Data	**X=6-5 Points**	**Y=4-3 Points**	**Z=2-1 Points**
	Automatic Continuous Measurement	Regular Measurement (Meter Reading, Purchase Order)	Own Estimation
Emission Factors	**A=6-5 Points**	**B=4-3 Points**	**C=2-1 Points**
	- From Measurement / Quality Factor - Manufacturer to provide coefficient	- Regional Emission Factors - National Emission Factors	International Emission Factors

The qualitative analysis of uncertainty assessment method adopted, in the following table will be divided into 6 overall data quality as the following table:

Rating	Overall Level of Scoring Data	Explanation
First Class	1 - 9	High uncertainty, Data quality is very poor.
Second Class	10 - 18	Uncertainty, Moderate data quality.
Third Class	19 - 27	Slightly uncertainty, Data quality is good.
Fourth Class	28 - 36	Uncertainty is very low, Excellent data quality.

3.7 Compare GHG with Base year

DET use electricity as a main power and fuel to operate our business. These are non-renewable energy sources and lead to GHG emissions in Scope 1 and 2.

At our Thailand's sites, DET has set the target to reduce Scope 1 and 2 GHG emissions 56.6% per MUSD output value by 2025 from a 2014 base year. The latest statistics shows that the direct emissions (Scope 1 - Category 1) of 2022 were 1,486 tonsCO_2e, indirect emissions (Scope 2 – Category 2) were 59,866 tons CO_2e for location based and 57,966 tonsCO_2e for market based and other indirect emissions (Scope 3 – Category 3, 4, 5 and 6) were 167,322 tonsCO_2e separately, that mean the GHG intensity (Thailand's sites) of 2022 (scope1 and 2) was 22.41 tonsCO_2e/ MUSD for location based and 21.71 tonsCO_2e/MUSD for market based. This represents a 44% and 46% reduction for location-based and market-based emissions, respectively, from our base year of 2014, and a 3% and 6% decrease, respectively, from 2021.

For GHG scope3, major global distribution centers cooperate with logistics providers to implement transportation cost optimization, consolidated delivery, full-truck load, packaging design, container packaging and selection of optimal delivery routes. Since Delta attained ISO/IEC 27001 Information Security Management System (ISMS), we encourage our suppliers to utilized e-invoice and e-document as much as possible to save natural resource and mitigate greenhouse gas from distance transportation.

To respond to the circumstances of climate change and align with the target 56.6% of decreasing Scope 1 and 2 GHG emission intensity by 2025. DET has been participating and registering in T-VER since 2014. There are total 8 projects had been registered in T-VER and it is proximately accredited 5,600 tons CO2e carbon credits that had been reduced from those projects. In additional, Delta group (Delta Electronics, Inc., its subsidiaries including Delta Electronics (Thailand) PCL.) have joined the RE100, a global initiative bringing together the world's most influential businesses committed to 100% renewable electricity which DET has set the target 35% of increasing renewable energy intensity by 2025 compared with base year 2020.

4. Future Opportunity

4.1 Performance Overview and Monitoring

DET shall review the future targets and ensure the remain appropriate for the business and industry, therefore continuous to drive DET's performances and associated management reward by planning, implementing and documenting the actions; to monitor Greenhouse Gas Inventory through the meeting to maintain GHG information management quality and; to reduce or prevent Greenhouse Gas Emissions which is apart of Energy Saving project.

The target information is base on estimates and assumptions that are subject to significant inherent uncertainties, which may be difficult to predict and may be beyond control. As with most forward looking information, there can be no assurance that targets will be realized.

4.2 Greenhouse Gas Reduction and Removal

DET will have a management plan in place for managing and reducing emissions by early 2014 with the aim to be carbon emissions reduction by the end of 2025. DET reflects to the Energy Saving Action Plan to reduce the scope 1 and scope 2 by 56.6% per million USD output value (a measurement of product sale price x production quantity) based on 2014 actual by 2025.

5. Reference

5.1 Unbundle Energy Attribute Certificates (REC)

THE INTERNATIONAL REC STANDARD

This Redemption Statement has been produced for

DELTA ELECTRONICS (THAILAND) PUBLIC COMPANY LIMITED

by

INNOPOWER COMPANY LIMITED

confirming the Redemption of

3 800.000000

I-REC Certificates, representing 3 800.000000 MWh of electricity generated from renewable sources

This Statement relates to electricity consumption located at or in

Delta Electronics (Thailand) PCL. Plant 5: 909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z.), Pattana 1 Road, Tambol Phraksa, Amphur Muang, Samutprakarn, 10280 Thailand

in respect of the reporting period

2022-01-01 to 2022-12-31

The stated Redemption Purpose is

Green House Gas Protocol Scope 2 Reporting

Evident

QR Code Verification

Verify the status of this Redemption Statement by scanning the QR code on the left and entering in the Verification Key below

Verification Key

4 8 0 9 2 8 2 8

https://evident.app/public/certificates/en/D/3G26C60DBv5fkt9barOee5nmxEFW0a0OKsiK1yx0AidDmMf9Sffms

GHG Emission Report – 2022
(as per ISO 14064-Part 1: 2018)

Report No.: DELTA/INDIA/GHG/2022
Revision No.: 02
Issue Date: 5th May 2023
Total Pages: 27

DELTA ELECTRONICS INDIA PVT LTD
GURUGRAM & RUDRAPUR

GHG Emission Report – 2022

Table of Content

GHG Emission Report – 2022

1.0 Preface

Climate Change is a serious global environmental and economic challenge and threat. Increasing concentration of Green House Gases (GHG) due to anthropogenic activities contributes to global climate change. Rapid industrialization increases emission of GHG into the atmosphere through the burning of fossil fuels. An effective solution to mitigate climate change is to control GHG emission at micro level. Considering the growing impacts of climate change, countries around the world are becoming more aware of the risks involved and Governments are taking preventive measures through appropriate policy interventions as response to climate change. Organizations too have started to measure, quantify and report GHG emissions.
Delta Electronics India Pvt Ltd have quantified GHG emissions across our business operations and has developed its GHG inventory report to demonstrate its commitment towards sustainable development and addressing the environmental challenge. The GHG report highlights objectives and strategies, and describes the GHG inventory framework. This GHG report is prepared accord to the requirements of ISO 14064 -1:2018 and provides information on emissions of inventory for the year of 2022. The GHG accounting for Delta has been carried out accord to the guidelines of ISO14064-1:2018 and "Corporate GHG Accounting and Management Protocol" developed by World Resource Institute (WRI) and World Business Council for Sustainable Development (WBCSD) and IPCC assessment report.

The report demonstrates commitment to Corporate mission of Delta Group Worldwide
i.e. "*To provide innovative, clean and energy-efficient solutions for a better tomorrow"*

1.1 Acknowledgement

This report has been prepared for Delta Electronics India Pvt Ltd, Gurugram and Rudrapur with the sole purpose of reporting of Green House Gas (GHG) emission as per ISO 14064 -1:2018.

1.2 Limitations

This report is based upon the application of professional judgment to certain facts with resultant subjective interpretations. Professional judgments expressed herein are based on the facts currently available within the limits of the scope of work, information available at the two units viz. Delta Electronics India Pvt Ltd, Gurugram and Rudrapur, or its representative, prevailing secondary data, budget and schedule.

The focus on the GHG Footprint Assessment was based on ISO 14064 -1:2018 (Specification with Guidance at the Organization Level for Quantification and Reporting of Green House Gas Emissions and Removals)

1.3 Organization

The report represents the data related to Delta Electronics India Pvt. Ltd, Gurugram and Rudrapur, as per the scope, inclusions and exclusions, as detailed out in the report.

1.4 Responsible Party

Mr. Niranjan Nayak, Managing Director
E-Mail: Mkt-serv@deltaww.com

1.5 Project Team Members

S No	Name	Functions & Location	Responsibility
1	Mr. Manogya Kumar	Head-Operations (Team Leader)	Final Approver & Representation the Detailed report to board meeting based on the requirements
2	Mr. NC Sahoo	Quality Assurance - Rudrapur	Final Reviewer of the GHG Report
3	Mr. Thomas T	Operations-Gurugram	Initial Review of the GHG Report.
4	Mr. Sumit Jangra	Quality Assurance, Rudrapur	Report compilation by collection of the Data from the Concern Team
5	Mr. Anil Chowdhury	Quality Assurance - Rudrapur	
6	Mr. Rameshwar Dayal	Facilities - Gurugram	Collection & Timely Updation of the Data as per requirements
7	Mr. Raghav Dubey	Administration – Gurugram	
8	Mr. Paramjeet	Commercial and Logistics – Gurugram/Rudrapur	
9	Mr. Manish Singh	Commercial and Logistics - Rudrapur	
10	Mr. Kashish Chopra	Commercial and Logistics - Gurugram	
11	Mr. Kamal Tiwari	Facilities - Rudrapur	
12	Mr. Sunil Singh	Administration – Rudrapur	
13	Ms. Sukanya Gogoi –	Admin (Centralize Travel data)	

2.0 About the Report

2.1 Objective of the Report

Although the overall objective of the report as stated in the “Declaration Statement” is to demonstrate its commitment to Corporate mission of Delta Group Worldwide i.e. “To provide innovative, clean and energy-efficient solutions for a better tomorrow”, the immediate objective of this Report of Delta Electronics India Pvt. Ltd. Gurugram and Rudrapur and its validation is to provide “limited verified information” regard its GHG emissions to the intended user, namely Delta Electronics Thailand (hereinafter referred as “DET”) that proposes to use this report input for improving its rating of Carbon Disclosure Project (CDP) submission.

Delta has developed this GHG inventory to measure, manage and report its GHG emission and to identify opportunities for reduction.

2.2 Intended Use and Intended Users of the Report

This report is a voluntary communication to various stakeholders of Delta Electronics India Pvt. Ltd. including Customers, Management, Investors, Financiers, Government and the public at large. Stakeholders can obtain necessary information on GHG performance of the facility/company and track the performance with respective to organization’s objectives with respect to GHG performance. This report will further serve as the launching pad for more detailed and inclusive studies of all the installations and operations. Since GHG emission and energy /fuel costs have a direct correlation, this may serve as an ideal platform to identify GHG hotspots for any future GHG

emission/fuel consumption reduction program. This report will also be the reference point for any verification of GHG inventory to be estimated in future, should the management so decide. As ESG Program is governed by Delta Corp MGT & We are submitted data to them & after that they publish it for public. We are providing the report to intended users based on demand as well.

2.3 Reporting Period

2.3.1 Frequency and base year selection

Delta Electronics India Pvt. Ltd. assessing GHG performance on an annual basis. Hence Inventorization of GHG emissions will be taken up on an annual frequency. The present study period includes data from year 2022 (1st Jan to 31st Dec. The base year is 2017 (1st Jan to 31st Dec).

2.3.2 Period of validity

This report is valid until a future revision of this report is published which supersedes this present version or publishes any report which modifies the approach and calculation rationale presented in this report, whichever is earlier.

3.0 Terms and Definitions

The terms and definitions used in this Report are as follows

- **Green House Gas (GHG):** Gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by Earth's surface, the atmosphere, and clouds
- **GHG Source:** Physical unit or process that releases a GHG into the atmosphere
- **GHG Sink:** Physical unit or process that removes a GHG from the atmosphere
- **GHG Emission:** Total mass of a GHG released to the atmosphere over a specified period of time
- **Direct GHG Emission:** GHG emission from GHG sources owned or controlled by the organization.
- **Energy Indirect GHG emission:** GHG emission from the generation of imported electricity, heat or steam consumed by the organization.
- **Other Indirect GHG emission:** GHG emission, other than energy indirect GHG emissions, which is a consequence of an organization's activities, but arises from GHG sources that are owned or controlled by other organizations.
- **GHG activity data:** Quantitative measure of activity that results in a GHG emission or removal.
- **GHG Assertion:** Declaration or Factual and objective statement by the responsible party

- **GHG Inventory:** An Organization's GHG sources, GHG sinks, GHG emissions and GHG removals
- **GHG Report:** Standalone document intended to communicate an organization's or project's GHG-related information to its intended users. Intended user is Delta Electronics Thailand (DET) that would like to use this report input for improving its rating of CDP submission.
- **Global Warming Potential (GWP):** Factor describing the radiative forcing impact of one mass-based unit of a given GHG relative to an equivalent of carbon dioxide over a given period of time.
- **Carbon dioxide equivalent (CO2e):** unit for comparing the radiative forcing of a GHG to carbon dioxide.
- **Base Year (CO2e):** Historical period specified for the purpose of comparing GHG emissions or removals or other GHG-related information over time.
- **Facility:** Single installation, set of installations or production processes (stationary or mobile), which can be defined within a single geographical boundary, organizational unit of production process
- **Organization:** Company, Corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public, or private, that has its own functions and administration.
- **Responsible Party:** Person or Persons responsible for the provision of GHG assertion and the supporting GHG information.
- **Intended User:** Individual or organization identified by those reporting GHG-related information as being the one who relies on that information to make decisions.
- **Level of Assurance:** Degree of assurance the intended user requires in a validation or verification.
- **Monitoring:** Continuous or periodic assessment of GHG emissions and removals or other GHG-related data.
- **Uncertainty:** Parameter associated with the result of quantification which characterizes the dispersions of the values that could be reasonably attributed to the quantified amount.
- **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;
  — 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 (B.2) as direct emissions

- **Category 4: Indirect GHG emissions from products and services used by an 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:
  — extraction of raw materials, agricultural activities;
  — transportation of raw materials/products between suppliers;
  — manufacturing and processing of raw materials.
  Attention should be paid to not double count with other categories/subcategories, such as indirect GHG emissions from transportation and services purchased by the organization.

- **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. In most cases, the organization does not know the product’s exact destiny through its life stages and, thus, should define plausible scenarios for each life stage.

- **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

4.0 Declaration Statement by Reporting Organization

Delta Electronics India Pvt Ltd, Gurugram and Rudrapur collectively acting as “Reporting Organization” for the purpose of this report, do hereby declare that the Inventorization of GHG Emissions and reporting has been done in accordance with ISO 14064-1: 2018 (Specification with Guidance at the Organization Level for Quantification and Reporting of Green House Gas Emissions and Removals).

Delta commit that this report is intended to be verified by third party to “Reasonable level of assurance” and a “Statement of Assurance” from the same would be annexed to the report after the assessment.

Delta started collating the data and reporting it in a structured form as per the specifications laid down in ISO 14064-1: 2018.

4.1 Principles

Delta declare that the contents of this report are true and fair account to the best of our knowledge.

4.2 Relevance

The intended users of this report are namely Delta Electronics Thailand (hereinafter referred as "DET") that proposes to use this report input for improving its rating of Carbon Disclosure Project (CDP) submission.

4.3 Completeness

The report is complete with all respects within the scope defined. This was verified based on the data collated by team and also assessed based on the data evaluation.

4.4 Consistency

All efforts have been made to collate the data on a monthly basis for the reporting period of the report. Exemptions if any, are highlighted and clearly marked in the report. Inconsistencies, if any, are not expected to lead to material discrepancy so as to affect the decisions of intended users.

The data has been presented in a manner so as to facilitate meaningful comparison and ability to transpose and/or change the reporting year, if required, in future (e.g. change of financial year or reporting period)

4.5 Accuracy

The organization has made all reasonable and practical efforts to remove bias and uncertainties by involving process owners and engaging external facilitators.

4.6 Transparency

The organization has made all reasonable and practical efforts to ensure the transparency as data was transferred directly from the user departments to the external facilitators and no filters were introduced prior to its inclusion in the report.

5.0 Quantification of GHG Emission

Total GHG emissions for the Reporting year 2022 (1st Jan to 31st Dec) is **4883.72** tCO2e

Type of Emission	**Scope/Category**	**Overall emission** tCO2e
Direct	Scope 1/ Category 1	163.50 tCO2e
Indirect	Scope 2/ Category 2	1856.54 tCO2e
Other Indirect	Scope 3/ Category 3,4,5,6	2863.67 tCO2e

5.1 Direct Emissions (Scope 1 / Category 1)

Emissions caused by sources that are owned or controlled by organization (e.g. generation of electricity, Company owned vehicle, Use of refrigerant).

5.2 Indirect Emissions (Scope 2 / Category 2)

Emissions from the indirect sources (e.g. emissions from the generation of purchased electricity consumed by the organization).

5.3 Other Indirect Emissions (Scope 3 / Category 3,4,5,6)

Emissions from the following other indirect GHG sources (e.g. Transportation of RM, Business Travel ,Employee Commuting.

Based on the Assessment/ Evaluation of above emissions ,this verified data will get integrated with the Corporate GHG Inventory report of Delta Electronics Thailand (DET)

6.0 Organizational Boundaries

6.1 About the Group

Delta, founded in 1971, is a global leader in power and thermal management solutions. Delta's businesses include Power Electronics, Automation, and Infrastructure. It is providing following solutions.


Display and Monitoring Solutions


Datacenter Solutions


Telecom Energy Solutions


Renewable Energy Solutions


Industrial Automation Solutions


Building Automation Solutions


PQCE-Railways


EV Charging Solutions

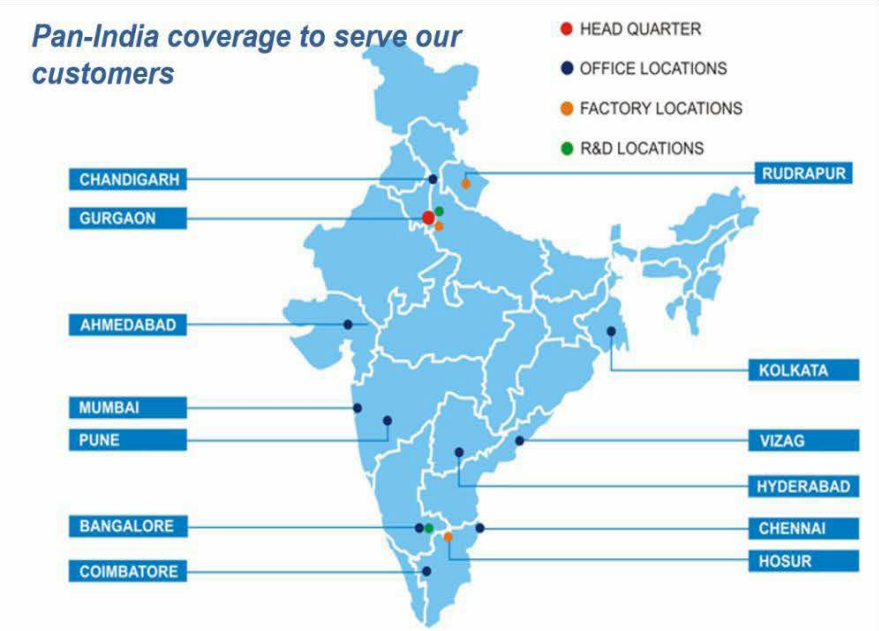

Energy Storage Solution

Power Solutions	Automation	Infrastructure
Components	Industrial Automation • Equipment Control and Visual Network Control • Drive and Motion • Field Devices	CIS Infrastructure • Telecom Power Systems • Networking Systems • UPS and Datacenter Infrastructure
Embedded Power	Building Automation • Building Management and Control • LED Lighting • Intelligence Surveillance	Energy Infrastructure • EV Charging • Energy Storage Systems • Renewable Energy • High Power Motor Drives
Fan and Thermal Management		
Automotive Electronics		
Merchant and Mobile Power • Display and Visualization • Healthcare Devices • Mobile Power • Industrial Power • Medical Power		
Regional Business • Control Cubicles for railways • Power Quality Compensation Equipment		

6.2 About Delta India Region

Delta India Region Operations that reports to Delta Electronics Thailand (hereinafter referred to as “DET”) started its operations in India in 2003 and is currently providing Video Display Units under its Display Systems Business Unit, DSBU that is part of Display and Monitoring Solutions; Mission Critical Infrastructure Systems or MCIS like Uninterrupted Power Supply (UPS) that fall under Datacenter Solutions; Telecom Power Systems that fall under Telecom Energy Solutions; Industrial Automation Drives that fall under Industrial Automation Solutions; and Wind Power Converters, EV chargers, Control Cubicles for Railway Rolling Stock, Solar Inverters and Solar Power Plants under Renewable Energy Solutions.

Delta India Region Operations



- R&D 2
- Manufacturing 3
- Branch Offices 10
- Service 70+
- Warehouse Hub 20+

6.3 About the Reporting Organizations

The reporting organizations for this report are Delta Electronics India Pvt Ltd, Gurugram and Rudrapur.

Delta Electronics India Pvt Ltd, Gurugram has a Corporate Office for Delta India Region Operations. It has senior management team of Industrial Automation Solutions, Building Automation Solutions, Datacenter Solutions, Telecom Energy Solutions, Renewable Energy Solutions and Display and Monitoring Solutions.

Delta Electronics India is located at Gurugram, Haryana. We Manufacturing, Supply, Repair, Installation and Servicing of high quality Video Display Solutions, High end Power solutions and Sales, Repair and Servicing of Industrial Automation Products.

Delta Electronics India is located at Rudrapur, Uttarakhand. We Manufacture, Supply, Repair, Installation and Servicing of high quality Telecom Power Solutions, Power solutions, Power Backup Solutions, Battery Chargers, and Uninterrupted power supplies. Also manufacturing and supply of wind power convertors and Electric Vehicle Chargers, Control Cubicles for Railway Rolling Stock. And In-house calibration of measuring equipment's.

Reporting Organizations under Scope

Gurgaon Facility

Rudrapur

Table 2.1 – Salient Features of Delta Electronics India, Gurugram and Rudrapur

Name and address of the Company	Delta Electronics India Pvt. Ltd. Plot No. 42 & 43, Sector- 35, HSIIDC, Gurugram, 122001, Haryana, India	Delta Electronics India Pvt. Ltd. Plot No. 11,12,13A, 37B, 38 & 39A, Sector – 5, IIE Pantnagar, Rudrapur, 263153 District Udham Singh Nagar, Uttarakhand, India
Year of Establishment	2010	2008
Corporate Office	Delta Electronics India Pvt. Ltd. Plot No. 43, Sector- 35, HSIIDC, Gurugram, 122001, Haryana, India	
Type of Shareholding	100% owned by Delta Energy System Singapore (DESS)	100% owned by Delta Energy System Singapore (DESS)
Site Co-orates of Delta Electronics Private Limited	Latitude: 28.4162° N Longitude: 77.0017° E	Latitude: 29.0090° N Longitude: 79.4161° E
Nearest Highway	NH 48 (earlier NH8)	National Highway-109 (Earlier NH 87)
Nearest Railway Station	Gurugram station at a distance of about 15 km	Rudrapur Station at a distance of about 10 km
Nearest Airport	New Delhi at a distance of about 25 km	Pantnagar at a distance of about 12 km
Land Area	Total Land Area: 6,060 square meters. Built-up floor area: 2,500 square meters	Total Land Area: 37,000 square meters. Shop floor area: 20,000 square meters
Source of Energy	Indian National Grid	Indian National Grid
Products	Video Display solutions, High end power solutions and Industrial Automation products (Drives)	Telecom Power Systems , Uninterrupted Power Supply (UPS) , Wind Power Converters (WPC) and Electric vehicle chargers Control Cubicles for Railway Rolling Stock

Based on the overall context explained above, the Organizational Scope can be defined as follows:

Location 1 (Gurugram)	Location 2 (Rudrapur)
• Delta Electronics India is located at Gurugram, Haryana. We Manufacturing, Supply, Repair, Installation and Servicing of high quality Video Display Solutions, Sales, Repair and Servicing of Industrial Automation Products. • Corporate Office activities related to Industrial Automation Solutions, Building Automation Solutions, Datacenter Solutions, Telecom Energy Solutions, Renewable Energy Solutions and Display and Monitoring Solutions	• Manufacture, Supply, Repair, Installation and Servicing of high quality Telecom Power Solutions, Power solutions, Power Backup Solutions, Battery Chargers, and Uninterrupted power supplies. Also manufacturing and supply of wind power convertors and Electric Vehicle Chargers, Control Cubicles for Railway Rolling Stock. In-house calibration of measuring equipment

6.4 Organizational Boundaries

a) **Control:** Delta India Region has financial and operational control over the two organizations covered under the scope. Hence, the Operational Control approach for setting the organizational boundaries has been selected

Delta India Region has 100% financial and operational control over the two organizations (GGN & Rudrapur) covered under the scope. Hence, the Operational Control approach for setting the organizational boundaries has been selected.

6.5 Operational Boundaries

Delta Electronics India have selected to quantify, verify and report its Direct GHG emissions (Scope 1/ Category 1), Energy Indirect emissions (Scope 2 / Category 2) and part of Other Indirect Emissions (Scope 3 / Category 3,4,5,6) related to each of the two facilities mentioned above.

The term, “Scope” for the categorization of emission in Scope 1, 2 and 3 has not been specified in ISO 14064 -1:2018 specifications but in World Resource Institute (WRI-GHG protocol). However, these terms have been included in the report to provide clarity to intended users, wherever required. This is intended to improve the consistency and reliability of the report.
(**Please Ref Annexure 1 or 2)**

7.0 Reporting Boundary (Clause 5.2):

7.1 Establishing Reporting Boundary (Clause 5.2.1) :

Reporting boundary establishment includes identifying GHG emission and removals associated with the Delta India operations. The GHG emission and removals is categorized in to direct emissions, Indirect emissions (Energy).

Significance criteria of all the emissions will be as below: -

1. **Significant: - Any emission source lying in any category (1 to 6/Scope 1 to 3) which is having potential to produce more than or equal to 5% of tCO2e w.r.t. total tCO2e generation by the Organization**

Non - Significant: - Any emission source lying in any category (1 to 6/Scope 1 to 3) which is having potential to produce less than 5% of tCO2e w.r.t. total tCO2e generation by the Organization

Establishing the operational boundaries for Delta India GHG emissions emanate largely from fossil fuel consumption in the facility's diesel consumption in DG sets; refrigerant gas consumption in chillers and air conditioning units of company. Energy efficiency projects and plantation within the facility's organizational boundary may act as carbon sinks.

(Please refer Annexure 1, 2)

8.0 Quantification of GHG Emission and Removals.

8.1 GHG Sink

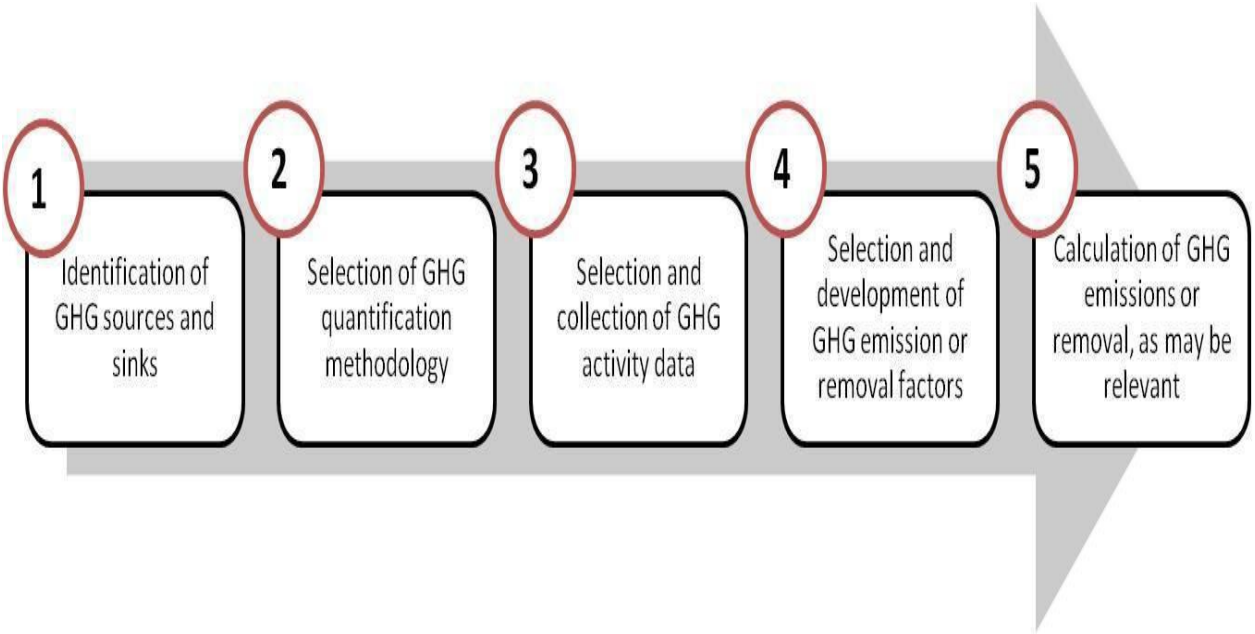
Delta Electronics India does not have any sink within its organizational boundaries.

8.2 GHG Emission due to Biomass Combustion

There was no biomass combustion occurring within Delta Gurugram and Rudrapur boundary.

8.3 GHG Emissions and Removals

Total GHG emissions and removals from two business sites of Delta Electronics India, Gurugram and Rudrapur were assessed through collection of data from designated responsible source and also site visit was conducted to understand the processes. The total GHG emissions from both the sites under direct, indirect and other indirect emissions were inventoried through following five step processes;

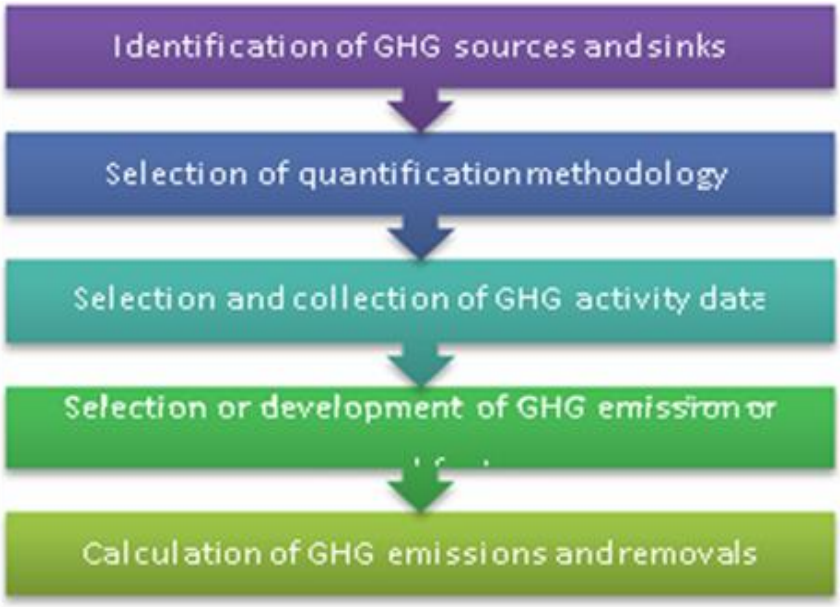


8.4 Identification of GHG emission source

Sources of data of GHG emissions

Sr. No.	Source of emissions	Source of data	Document/Records
1	DG Set operation – Fuel Consumption	Fuel Combustion	Log Book Records
2	Company owned vehicle	Fuel Combustion	Log Book Records
3	Purchase of Electricity – Emissions at the source of production	Electricity bills	Electricity Bills
4	Transportation of Raw material (Import) and products (Up-stream and downstream)	Logistic Data	SAP Records
5	Business travel (Air, Train, Taxi)	Administration	Vendor Invoices/SAP Records
6	Employee commuting	Administration	Vendor Invoices/SAP Records

8.5 Methodology



Calculation Method: -

Emission Factor (E.F) of an Emission Source x Activity Data

8.6 Selection and collection of GHG activity data

Following steps are followed during selection and collection of GHG activity data:

1) Based on the GHG sources and sinks as listed in GHG sources list, relevant GHG activity data are identified as required under the chosen GHG quantification methodology.
2) Current set of data collection procedures are followed to capture the GHG activity data.
3) GHG activity data are extracted from existing data collection system.
4) GHG activity data collection, storage and reporting procedures for un-captured GHG activity data are developed (wherever such data was not available) as per the selected quantification methodology.

8.7 Selection and collection of GHG emission data

Sr. No.	Source of emissions	Activity data	Source	Frequency of data collection
1	DG Set operation – Fuel Consumption	Fuel consumption	Meter readings/ Fuel log books	Continuous/daily basis
2	Company owned vehicle	Fuel consumption	Meter readings/ Fuel log books	Continuous/daily basis
3	Purchase of Electricity – Emissions at the source of production	Electricity consumption	Monthly bills from electricity supplier	Monthly
4	Transportation of Raw material (Import) and products (Up-stream and downstream) Vehicle	Distance travelled and total tons	Invoices from transporters	Monthly
5	Business travel	Air, Train, Road	TA bills /tour plan	Continuous/daily basis
6	Employee commuting - Vehicle	Travel distance and type of vehicle	Transporter invoices	Continuous/daily basis

8.8 Selection and development of GHG emission factors

As per the UNFCCC7, an emission factor is defined as the average emission rate of a given GHG for a given source, relative to units of activity. GHG emission factor is needed to calculate GHG emission from different sources and plays an important role in GHG inventory. ISO 14064-1-2018, Clause 6.3 defines greenhouse gas emission or removal factor as a relating activity data to GHG emissions or removals. Emission factors have been sourced from publicly available documents. The emission factor for purchased electricity (indirect energy use) has been sourced from Central Electricity authority of India whereas emission factors for stationary combustion sources have been sourced from 2006 IPCC Guidelines for National Greenhouse Gas Inventories and GHG protocol. Global Warming Potential values have been sourced from the IPCC Fifth and Sixth Assessment Report. This corresponds to use of Tier-02 approach for determination of GHG emissions.
Emission factor for GHG emissions from mobile sources (transportation of raw materials and product distribution) were sourced from India GHG program.

GHG Emission Report – 2022

Please refer Annexure 2 for complete details

Total Emissions			
S.No	Site	Total Emission tCO2e	Remarks
1	Gurugram	2396.86	
2	Rudrapur	2486.86	
Total		4,883.72	

Scope /Category	Parameters	Unit	Total Emission tCO2e	Total Emission (Gas Wise)			
				CO2	CH4	N2O	HFC
Scope 1 /Category 1	Diesel Consumption for Power Generation	KL TJ - tCO2e	**94.39**	**93.08**	**0.01**	**1.30**	**0.00**
Scope 1 /Category 1	Diesel Fuel Consumption for Company owned vehicles	KL TJ - tCO2e	**33.59**	**33.13**	**0.00**	**0.46**	**0.00**
Scope 1 /Category 1	R-407C	KG GWP	**35.48**	**0.00**	**0.00**	**0.00**	**35.48**
Scope 1 /Category 1	Fire Extinguisher CO2 Type	KG GWP	**0.03**	**0.03**	**0.00**	**0.00**	**0.00**
Scope 2 /Category 2	Electricity from grid	KWh tCO2-e	**1,856.54**				
Scope 3 /Category 3	By Sea (Import & Export) (Transportation of RM & FG)	 tCO2-e	**208.45**				
Scope 3 /Category 3	By Air (Import & Export) (Transportation of RM & FG)	 tCO2-e	**1,307.30**				
Scope 3 /Category 3	Domestic Inland Road (Transportation of FG)	 tCO2-e	**521.61**				
Scope 3 /Category 3	Air Travel (Business Travel)	Passenger Km tCO2-e	**716.46**				
Scope 3 /Category 3	Train Travel (Business Travel)	Passenger Km tCO2-e	**0.96**				
Scope 3 /Category 3	Car (Business Travel-Local)	KM tCO2-e	**30.77**				
Scope 3 /Category 3	Employee commuting-BUS	KM tCO2-e	**67.88**				
Scope 3 /Category 4	**Organizational Waste Related Emissions**	Kwh tCO2e	**10.24**				
Total tCO2e			**4883.72**				

8.9 GHG emission quantification

GHG accounting is done using guidelines mentioned in ISO 14064-1-2018 and the GHG protocol. As described in section 6.2.3, the GHG quantification is done by GHG activity data is multiplied by the relevant GHG emission/removal factors. The GHG calculations are made in an MS excel based spread sheet. The GHG emissions under direct 4GHG emissions, energy indirect GHG emissions and other indirect GHG emission categories are given below:

Direct GHG Emissions (Scope 1/ Category 1)
Direct GHG emission account for all fossil fuel combustion for its DG set operations, transports movement of company owned vehicles, refrigeration and air-conditioning equipment, chiller (at Gurugram), fire extinguishers and circuit breakers. All data for energy consumed by manufacturing processes is monitored and collated by Facilities team. Hence, all this data has been collated from Facilities team under Direct GHG Emissions (or Scope 1 emissions)

S. No	Site	Scope/Category	Total Emission tCO2e	Remarks
1	Gurugram	Scope 1 / Category 1	72.56	
2	Rudrapur	Scope 1 / Category 1	90.94	
Total			163.50	

All other sources identified under this category did not have any GHG emissions except use of Fire Extinguisher (CO2type), Refrigerant R-407C and R410

Energy indirect emissions (Scope 2) / Category 2: Indirect GHG emissions from imported energy
Energy indirect GHG emissions are associated with energy purchased by the organization/facility. The purchased energy could be electricity or steam or heat. The emission source could be outside of organizational boundary, but since the energy is used by facilities, the associated emissions are calculated and categorized as scope 2 emissions.

Purchase grid electricity which is supplied by national grid at both the sites and quantification is done through meters installed at site.

S. No	Site	Scope/Category	Total Emission tCO2e	Remarks
1	Gurugram	Scope 2 / Category 2	840.45	
2	Rudrapur	Scope 2 / Category 2	1,016.10	
Total			1,856.54	

Other indirect GHG emissions (Scope 3/ Category 3,4,5,6)

GHG Emission Report – 2022

Other Indirect emissions accounts for GHG emissions from various sources as categorized by GHG protocol & ISO 14064:1:2018 and presented in the table below:

Sr. No	Description	Scope/ Category	Gurugram (tCO2e)	Rudrapur (tCO2e)	Reasons for Exclusions
01	Purchased goods and services	Scope3/Category 4	Excluded	Excluded	As this data belongs to the Vendor, so not having proper backup data for this.
02	Up-stream transportation and distribution (Transportation of RM and Product by Sea, Air and Road)	Scope3/ Category 3	Included	Included	
03	Waste generated from operations	Scope3/ Category 4	Included	Included	
04	Business..travel (Air,Train,Taxi)	Scope3/ Category 3	Included	Included	Rudrapur : Usage of air and train travel controlled by corp. admin., so it has been included in Gurugram calculation
05	Employees commuting – (Employees travel from home to office and return in company hired bus)	Scope3/ Category 3	Excluded	Included	Gurugram : Not Applicable for Gurugram
06	Up-stream..leased assets	Scope3/Category3 or 4	Excluded	Excluded	Not Applicable Currently
07	Upstream transportation and distribution	Scope3/ Category 3	Included	Included	This data collected only for import RM currently because local upstream transportation data is not available to verify.
08	Processing of sold products	Scope3/ Category 5	Excluded	Excluded	As this data belongs to end users so data is not available to verify.
09	Use of sold products	Scope3/ Category 5	Excluded	Excluded	As this data belongs to end users so data is not available to verify.
10	End of life treatment of the sold products	Scope3/ Category 5	Excluded	Excluded	EOL Treatment is done based on sales agreement between Delta & Customers. And as per contract we have instructed customer to dispose as per Govt. regulations.
11	Downstream leased assets	Scope3/ Category 5	Excluded	Excluded	Currently Not applicable
12	Franchisee	Scope3/ Category 5	Excluded	Excluded	Currently Not applicable
13	Investments	Scope3/ Category 5	Excluded	Excluded	Currently Not applicable

Total Emission as per Scope 3 & Category 3, 4, 5 & 6 are show below.

S. No	Site	Scope/Category	Total Emission tCO2e	Remarks
1	Gurugram	Scope3/Category 3	1,481.86	
2		Scope3/Category 4	1.99	
5	Rudrapur	Scope3/Category 3	1,371.58	
6		Scope3/Category 4	8.25	
Total			2863.67	

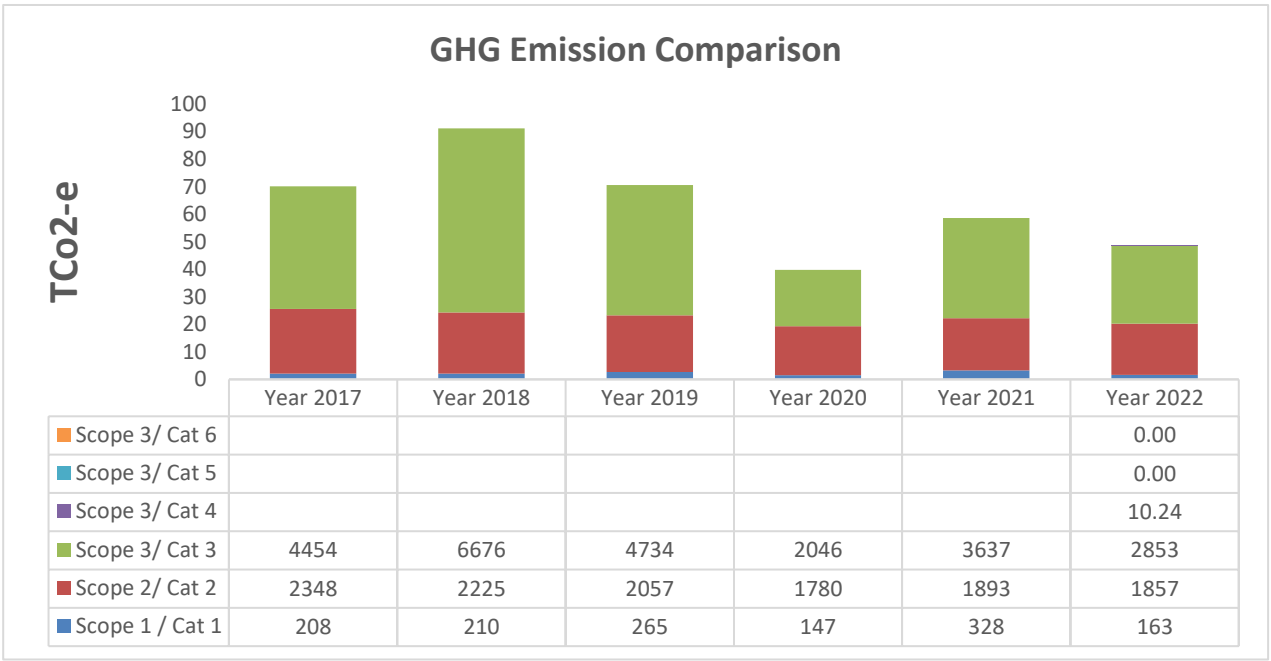
8.10 GHG Quantification Exclusions

There are certain exclusions in the GHG emission inventory report under scope 1/ Category 1 and three due non availability of verifiable data at sites and mentioned in the table under direct emissions (Scope 1/ Category 1) and Other indirect emissions (Scope 3/ Category 3,4,5,6)

8.11 Materiality

Materiality is defined as a concept that individual or the aggregation of errors, omissions and misrepresentations may affect the GHG assertion and could influence the intended user's decisions. The materiality threshold is set at 5%. Gurugram and Rudrapur shall ensure that any omission of data or GHG sources, any misrepresentations should not affect the GHG inventory by more than 5%.

8.12 Historical Base year and Base year GHG Emission comparison



	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022
Scope 3/ Cat 6						0.00
Scope 3/ Cat 5						0.00
Scope 3/ Cat 4						10.24
Scope 3/ Cat 3	4454	6676	4734	2046	3637	2853
Scope 2/ Cat 2	2348	2225	2057	1780	1893	1857
Scope 1 / Cat 1	208	210	265	147	328	163

8.13 Recalculate its Base Year

As per GHG Protocol explains in „A Corporate Accounting and Reporting Standard" that the 'Companies often undergo significant structural changes such as acquisitions, divestments, and mergers. These changes will alter a company's historical emission profile, making meaningful comparisons over time difficult. For consistent tracking of emissions over time, the base year emissions may need to be recalculated as companies undergo significant structural changes such as acquisitions, divestments, and mergers'.
The same detail is specified in the 6.4.2 Clause of ISO 14064:1:2018.

To ensure the representativeness of the base-year GHG inventory, the Delta has developed, documented and applied a base-year review and recalculation procedure to account for substantial cumulative changes in base-year emissions resulting from:

a) a structural change in reporting or organizational boundaries (i.e. merger, acquisition or divestiture), or
b) a change in calculation methodologies or emission factors, or
c) the discovery of an error or a number of cumulative errors that are collectively substantial.

The organization shall not recalculate its base-year GHG inventory to account for changes in facility production levels, including the closing or opening of facilities. The organization shall document base-year recalculations in subsequent GHG inventories.

Gurugram and Rudrapur is an organization engaged in Electronic business and with its vision to grow it may go under operational and structural changes. Hence, to ensure meaningful comparisons of GHG emissions over the time it is required that the Gurugram and Rudrapur shall make changes to the base year inventory according to the following changes.

-Structural/Operational business changes including acquisitions that result in a significant change to overall emissions
-Source ownership and control changes (changes in operational control over the GHG sources)
- Quantification methodology changes or data improvements that result in a 10 per-cent or greater change to overall emissions and
-If there is any identification of errors and gaps in the base year emissions that result in a 5 per-cent or greater change to overall. Please check Annex 1 for more details

8.14 Organizational Activities to reduce GHG emissions or increase GHG removals

GHG Reduction Initiatives: - Gurugram and Rudrapur efforts have been put to reduction of the GHG emissions through various projects, such as installation of Solar power for all irrigation activities which has saved energy consumption to some extent.

Total savings done through these projects in Calendar Year 2022 are as follows:

For Gurugram: - Produced 65037 Kwh & Saves 52.68 tCO2e
For Rudrapur: - Produced 4808 Kwh & Saves 3.89 tCO2e

Emission Factor used is 0.81 –Ref. Central Electricity Authority, V.18 April 2023

Annexure-03 (GHG Emission Reduction/Removal Initiatives By Delta)

S No	Intent of Initiative	Starting Year	Activity Description	Applicable Units/Site	Scope/Category	Expected Outcome	Unit of Outcome	Source of Data	Remarks
1	GHG Reduction	2008-RDP 2010-GGN	Generate the renewable energy by Solar Panels to compensate the Co2 emmision generated by purchased electricity	Gurugram and Rudrapur	Scope 2 Category 2	Approx 60K of renewable energy	Kwh	Meter Readings	based on Kwh, tCo2 will be calculated
2	GHG Reduction	May-23	Carpooling	Gurugram and Rudrapur	Scope 3 Category 3	Reduction of Diesel Consumption	Ltr	Invoices	based on Ltr, tCo2 will be calculated
4	GHG Reduction	2023	Installation of Smart Printers	Gurugram and Rudrapur	Scope 3 Category 4	Reduction in E-Waste	Kgs	Data from Service Provider of Refilling	based on Kgs, tCo2 will be calculated
5	GHG Removals	2023	Reducing Paper Consumption	Gurugram and Rudrapur	Scope 3 Category 4	Save Trees	Nos	Data Received From	Although the carbon absorption capacity can vary, it is generally considered that a tree can store about 167 kg of CO2 per year, or 1 ton of CO2 per year for 6 mature trees. This means that more than 67 trees would have to be planted a year to offset the CO2 emissions of a single Brit

9.0 Assessing and Reducing Uncertainty

The methodology presented here addresses the estimation of CO2, CH4, N2O, SF6, PFCs, NF3 and HFC's from GGN & Rudrapur Unit. Uncertainty is used to characterize the dispersion of values that could be reasonably attributed to a measured quantity (IPCC, 2006). The overall uncertainty associated with a GHG inventory is driven primarily by the uncertainty associated with the largest ("key") sources of emissions. Although very high levels of uncertainty may be associated with some sources, our overall impact on the uncertainty of entity-wide emissions, or that of a specific installation, may often be very small. In turn, the uncertainty associated with each individual source depends on the quality and availability of sufficient data to estimate emissions and/or on the ability to measure emissions and properly account for measurement variability.

For the present study, the most relevant data parameters used for the GHG estimation are based on measured values such as poser generation from DG set and purchased electricity from nation grid Hence, the uncertainty in the GHG emission calculation relates to uncertainty of the measurement of the parameters. Since in both cases the parameter value is also used for financial transactions between, Gurugram and Rudrapur and various other entities, the uncertainty of measurement of fossil fuel combustion and electricity purchased from grid are usually below 5% in all cases. When site-specific data are unavailable, good practice will usually be to develop emission estimates using emission factors drawn from references consistent with the IPCC Guidelines/ GHG protocol and national emission factors and the source category-specific good practice guidance. These factors will have been measured under particular circumstances that are judged to be typical. There will be uncertainties associated with the original measurements, as well as with the use of the factors in circumstances other than those associated with the original measurements. It is a key function of good practice guidance for each source category to guide the choice of emission factors to minimise this second source of uncertainty to the extent possible. The source category specific guidance also indicates, wherever possible, the uncertainty ranges likely to be associated with using these factors. Considering the above, the overall uncertainty in the GHG estimation of the present study is not likely to be more than ±5% and may hence be considered free from material misrepresentation.

Please refer Annexure 1 for Uncertainty Ranking

10.0 Document Retention and Record Keeping

Both sites, Gurugram and Rudrapur are certified to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 Management Systems. Hence, they use the same procedure for Document retention and record keeping Master list of records are maintained.

11.0 GHG Reporting

Introduction & Statement of Intent

1. Introduction:

This GHG Annual Report has been prepared and written in accordance with part 7.3.1 of ISO 14064-1:2018 standard and is designed to be used in the process of moving towards improved GHG Performance.

2. Statement of Intent:

This report is prepared with the intent of communicating the GHG emissions related to the organizational value additions to its stakeholders. While doing so the report also ensures the following:

- Communicating organizational GHG performance to Customers and Potential customers
- Communicating organizational resolve in GHG performance improvements to the

society.

3. Intended User:

The Intended users of this document are identified as given below:

- Existing and potential customers
- Regulators and governmental entities
- Society in general

4. Frequency of the Report and Period of Validity:

This report to be produced every year, covering a period of one year ending on 31st December.

5. Objective of the Initiative:

Delta India is one of the major manufacturers of Telecom Systems and UPS made to a variety of customer's specifications, mainly for the domestic and export market. Today, we have Global presence in Europe, Asia and Americas. The GHG report is a voluntary undertaking of the Delta India in line with overall organizational policy of promoting sustainable business practices and to be a "Green Company"

6. Declaration Statement by Delta India Electronics Pvt. Ltd.

Delta India Electronics Pvt. Ltd. collectively acting as "Reporting Organization" for the purpose of this report, do hereby declare that the Inventorization of GHG Emissions and reporting has been done as per ISO 14064-1: 2018 (Specification with Guidance at the Organization Level for Quantification and Reporting of Green House Gas Emissions and Removals).

Delta India commit that this report is intended to be verified by third party to "Reasonable level of assurance" and a "Statement of Assurance" from the same would be annexed to the report after the assessment.

Delta India started collating the data and reporting it in a structured form as per the specifications laid down in ISO 14064-1: 2018.

7. Policy on availability and methods of dissemination of the report

We will provide to all users. This report including the opinion statement issued by certification body. The data & report is being managed by Corporate Mgt of Delta and based on demand from any intended user, data is provided accordingly.

12.0 GHG Management and Monitoring Procedures

As per the ISO 14064 -1:2018 clause 9.2, The organization shall establish and maintain GHG information management procedures that - ensure conformance with the principles of this part of ISO 14064 -1:2018, ensure consistency with the intended use of the GHG inventory, provide routine and consistent checks to ensure accuracy and completeness of the GHG inventory, identify and address errors and emissions, and document and archive relevant GHG inventory records, including information management activities. During developing Gurugram and Rudrapur GHG inventory, A Core Team has been formed. Training on the ISO 14064 -1:2018 specification including introduction of climate change, impacts of GHG emission on environment, role of organization in GHG emission reduction has been conducted for the core team members at Gurugram where other locations participated through intranet video and where GHG activity data collection and archiving procedures have been discussed with core team.

13. Organization's role in verification activities

To provide the intended user the required assurance the GHG Report will be verified at two levels as given below:

S.N.	Type of Verification	Level of Assurance
1	Internal Verification	ReasonableAssurance
2	Third Party Verification	ReasonableAssurance

Internal Verification is being done by Trained Internal Auditors Verification data will be kept for reference purpose and report will be updated accordingly before the 3rd Party Assessment.

Statement of Verification Internal

- For 2022 Data, Internal Verification of the Baseline Report was carried out and it was concluded that the Baseline Report is materially correct and is a fair representation of GHG Data and Information.
- For 2022 Data, Internal Verification of this Annual Report was carried out and it was concluded that this Annual Report is materially correct and is a fair representation of GHG Data and Information.

The Internal Validation carried during month of Feb-Mar, 2022 of this GHG Report and supporting GHG Inventory Quality Management System has validated that the GHG Annual Report for the period Jan, 2022 to Dec, 2022 is prepared in accordance of ISO 14064-1-2018 International Standard.

GHG Emission Report – 2022

Annex-01 (Uncertainity & Significance Criteria)

Scope/ Category	Parameters	Unit	Significance Level (≥ 5% is Significant)	Uncertainity Remarks
SCOPE-1/Category 1	Diesel Consumption for Power Generation	KL		As inward & outward of Diesel Qty is verifiable with Invoice & Issue Log book having accurate value mentioned so this data is having low data uncertainty Ranking
		TJ - tCO2e		
	Diesel Fuel Consumption for Company owned vehicles	KL		
		TJ - tCO2e		
	R-22	KG		Refilling Invoice of refrigerants from vendor having accurate value mentioned so this data is having low data uncertainty Ranking
		GWP		
	R-410A	KG		
		GWP		
	R-134A	KG		
		GWP		
	R-407C	KG		
		GWP		
	SF 6	KG		
		GWP		
	Fire Extinguisher CO2 Type	KG		
		GWP		
	FM 200 (HFC227ea)	KG		
		GWP		
SCOPE-2/Category 2	Electricity from grid	KWh	"Significant	Electricity Bill having accurate value mentioned so this data is having low data uncertainty Ranking
		tCO2-e		
SCOPE-3/Category 3	(Transportation of RM & FG)		"Significant	As the distance has been calculated with the help of google Map, So there may be difference in distances measured. Due to this reason, this data is having uncertainty ranking on Maximum side (5%).
		tCO2-e		
	Business Trevel & Employee Commuting	Passenger Km	"Significant	As the distance has been calculated with the help of google Map, So there may be difference in distances measured. Due to this reason, this data is having uncertainty ranking on Maximum side (5%).
		tCO2-e		
SCOPE-3/Category 4	LPG Consumption for food preparation for Employees-Outsourced	Kgs	Not Calculated for 2022	There is challenge to calculate the actual consumption data hence uncertainty ranking on Maximum side (5%).
		tCO2-e		
SCOPE-3/Category 4	**Waste Disposition**	Kgs	"Significant	Data calculation done by actual weight data so it is having uncertainty ranking on Lower side
		tCO2-e		

If tCO2e in any Paramters equal or more than 5% then it will be considers as Significant

Annexure -2- (Emission Factor & Reference)

Parameters	Unit	Emission Factor/GWP	Reference	Links	Distance Calculator Links	
Diesel Consumption for Power Generation	KL TJ - tCO2e	**2.70**	UK Government GHG Conversion Factors for Company Reporting Year 2022	Click Here	-	
Diesel Consumption for Company owned vehicles	KL TJ - tCO2e	**2.70**	UK Government GHG Conversion Factors for Company Reporting Year 2022	Click Here	-	
R-22	KG GWP	**1760**	IPCC Fifth Assessment Report	Click Here	-	
R-410A	KG GWP	**2088**	EPA Climate Leadership- April 2023	Click Here	-	
R-134A	KG GWP	**1530**	IPCC Sixth Assessment Report	Click Here	-	
R-407C	KG GWP	**1774**	EPA Climate Leadership- April 2023	Click Here	-	
SF 6	KG GWP	**25200**	IPCC Sixth Assessment Report	Click Here	-	
Fire Extinguisher CO2 Type	KG GWP	**1**	IPCC Sixth Assessment Report			
FM 200 (HFC227ea)	KG GWP	**3600**	IPCC Sixth Assessment Report			
CH4	KG GWP	**27**	IPCC Sixth Assessment Report			
N2O	KG GWP	**273**	IPCC Sixth Assessment Report			
NF3	KG GWP	**17400**	IPCC Sixth Assessment Report			
Electricity from grid	KWh tCO2-e	**0.81**	Central Electricity Authority emission factor V-18, Issued on December 2022	Click Here	-	
By Sea (Import & Export) (Transportation of RM & FG)	 tCO2-e	**0.00578**	UK Government GHG Conversion Factors for Company Reporting Year 2022	Click Here	Till April 2022 From May 2023	Click Here Click Here-New
By Air (Import & Export) (Transportation of RM & FG)	 tCO2-e	**1.0189**	UK Government GHG Conversion Factors for Company Reporting Year 2022	Click Here	Till April 2022 From May 2023	Click Here Click Here-New
Domestic Inland Road (Transportation of FG)	 tCO2-e	**0.049**	India GHG program, Rev-01, issued on 2015 (India Specific)	Click Here	Till April 2022 From May 2023	Click Here Click Here-New
Air Travel	Passenger	**0.121**	India GHG program, Rev-01, issued on 2015 (India	Click	Till April 2022	Click Here

(Business Travel)	Km tCO2-e		Specific)	Here	 From May 2023	 Click Here-New
Train Travel (Business Travel)	Passenger Km tCO2-e	**0.00996**	India GHG program, Rev-01, issued on 2015 (Indian specific)	Click Here	Till April 2022 From May 2023	Click Here Click Here-New
Car (Business Travel-Local)	KM tCO2-e	**0.126**	India GHG program, Rev-01, issued on 2015(India Specific) considering <1400CC Diesel vehicle, Taxi having 1200CC range.	Click Here	-	
Employee commuting-BUS	KM tCO2-e	**0.015**	India GHG program, Rev-01, issued on 2015 (India Specific)	Click Here		
LPG Consumption for food preparation for Employees-Outsourced	Kgs tCO2-e	**2939.29**	UK Government GHG Conversion Factors for Company Reporting Year 2022	Click Here	-	
Wood	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Cartoons	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Plastic	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Polythene	Kgs TCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Foam	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Mix (Closed Loop Recy)	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Gardening Waste (Landfill) (May 2023 Onwards)	Kgs tCO2-e	**578.94**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Organic: food and drink waste (Local MC Handover)	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Metal (Closed Loop Recy)	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
E-Waste (Recycling)	Kgs tCO2-e	**21.28**	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Batteries Waste (Closed Loop)	Kgs tCO2-e	---	UK Government GHG Conversion Factors for Company Reporting Year 2022			
Solar Energy Generation	Kwh tCO2e	**0.81**	Central Electricity Authority emission factor V-18, Issued on December 2022	Click Here	-	

****

March 2023

CARBON FOOTPRINT OF COMPANY DELTA ELECTRONICS (SLOVAKIA), S. R. O.

THE INVENTORY OF GREENHOUSE GASES 2022 DATA

www.ci3.co.cz

CONTACTS AND INFORMATION ON PROCESSING

The report „Carbon footprint of company Delta Electronics (Slovakia), s. r. o. – Greenhouse gases inventory for 2022" was prepared by the company CI3 on the basis of input data provided by Delta Electronics (Slovakia), s. r. o.

CI3, s. r. o. is not responsible for the accuracy of the supplied input data.

Information about the processor – CI3, s. r. o.

CI3, s. r. o. is a sister company of the non - profit company CI2, o. p. s., which deals mainly with carbon footprint. In this area, it focuses on determining the company's carbon footprint (Company Carbon Footprint), determining the product's carbon footprint (Product Carbon Footprint), and verifying the carbon footprint according to technical standards STN EN ISO 14064 and the international standard GHG Protocol.

Contact details of the processor

Address

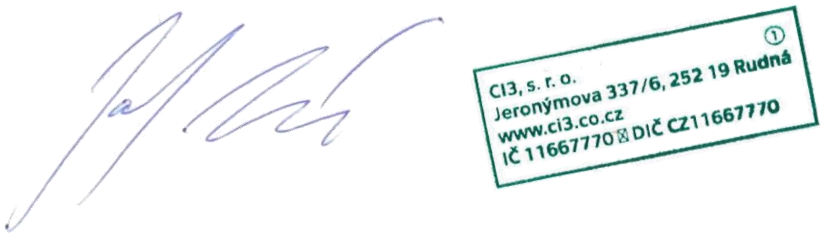
CI3, s. r. o.
Jeronýmova 337/6, 252 19 Rudná
Company ID: 11667770, Tax ID: CZ11667770
https://www.ci3.co.cz

Contact person

Mgr. Lubomír Bartoš, lubomir.bartos@ci3.co.cz, expert in carbon footprint processing
Mgr. Josef Novák, Ph.D., josef.novak@ci3.co.cz, company director

In Rudná, on March 7th, 2023

Sign and stamp



SUMMARY

The carbon footprint is a measure of the impact of human activity on the environment and especially on climate change. The carbon footprint is (similarly to the ecological footprint) an indirect indicator of the consumption of energy, products, and services. It measures the amount of greenhouse gases that correspond to a particular activity or product. In the case of a company, the carbon footprint determines the amount of greenhouse gases associated with its activities. Emissions for inventory are divided into six Categories:

- Direct emissions and sinks of greenhouse gases (Category 1)
- Indirect emissions from energy consumption (Category 2)
- Indirect emissions related to transport (Category 3)
- Indirect emissions related to the products and services used by the company (Category 4)
- Indirect emissions related to the use of the company's products (Category 5)
- Indirect emissions from other sources (Category 6)

The calculation of the company's carbon footprint was performed in accordance with the technical standard STN EN ISO 14064-1 and the international standard GHG Protocol. It is the most used calculation tool for the inventory of greenhouse gases of companies and organizations. It enables the company's management not only to measure emissions, but also to plan and manage their gradual reduction.

This report contains the results of the greenhouse gas inventory of Delta Electronics (Slovakia), s. r. o. (hereinafter also Delta Electronics, s. r. o.) for the year 2022. This is the seventh calculation of the company's carbon footprint. All emission sources from Categories 1 and 2 and selected items from Categories 3 and 4 were included in the calculation.

Table 1: Carbon footprint of Delta Electronics, s. r. o.

Category	Emissions 2022 [t CO_2e]	Share [%]
Category 1 (direct emissions and sinks of greenhouse gases)	463.90	2.29
Category 2 (indirect emissions from energy consumption) – market based	629.23	3.11
Category 3 (indirect emissions related to transport)	2,807.91	13.87
Category 4 (indirect emissions related to the products and services used by the company)	16,346.69	80.73
Category 5 (indirect emissions related to the use of the company's products)	–	–
Category 6 (indirect emissions from other sources)	–	–
Total	**20,247.73**	**100.00**

Greenhouse gas emissions in 2022 were dominated by the consumption of raw materials - especially aluminium (24.78%), iron (24.32%), printed circuits (19.20) and upstream transport (8.23%). The total carbon footprint of 20,247.73 t CO_2e per year increased by 111.47% compared to the base year 2016. The main reason is expanding the calculation, incorporation more items into it and clarification of emission factors. From the point of view of individual greenhouse gases, carbon dioxide (CO_2) emissions completely predominate. Emissions of methane (CH_4) and nitrous oxide (N_2O) and hydrofluorocarbons (HFC) are minor.

As for the future, we recommend developing GHG reduction policy that focuses on the most important emission sources that a company has under the direct control – electricity, natural gas, and fuels in company's vehicles. Consumption of electricity can be also further reduced. Category 3 and 4 emissions can be influenced by supplier choice and cost-effective measures in Delta Electronics, s. r. o.

1 COMPANY DESCRIPTION

1.1 Basic information and ownership structure

Delta Electronics (Slovakia), s. r. o. has been acting in Slovakia since 1994 when there was established Sales office in Bratislava and began production cooperation with local partner in Nova Dubnica. Our own production company was established in 2001 in Nova Dubnica. In recent past company has undergone several changes. One of the most important was incorporation into Delta Group and merger of two sister companies – production and sales office into one company.

Delta Group is the world's largest provider of switching power supplies and DC brushless fans, as well as a major source for power management solutions, components, visual displays, industrial automation, networking products, and renewable energy solutions. Delta Group has sales offices worldwide and manufacturing plants in Taiwan, China, Thailand, Mexico, India, and Europe. As a global leader in power electronics, Delta's mission is, "To provide innovative, clean and efficient energy solutions for a better tomorrow." Delta is committed to environmental protection and has implemented green, lead-free production and waste management programs for many years.

Production factory in Slovakia was opened on 4th of May 2007 in Dubnica nad Váhom. This decision was supported by promise of Delta to serve their European customers in the best way. New factory is equipped with modern technologies for production of complex product portfolio of power supplies, components of power systems (rectifiers, investors, and control units), solar inverters, as well as complete power systems. These products provide power supply for telecommunication, IT, industry automation and medical equipment.

Company's production concept is based on realization of reliable and innovative custom designed solutions according, customer needs. Modern facility in Dubnica nad Váhom operates as interoperation of quality equipment, structured processes and skilled and qualified employees and has ambition to become Central office of Delta in eastern Europe for production and service.

In 2022, Delta Electronics, s. r. o. employed **585 employees** (FTE) and its turnover was **145.50 mil. EUR**. Biggest customers include ABB, Siemens, Cisco, Ericsson, T-Mobile, IBM, Motorola, Slovak Telekom, and other important telecommunication companies. Main suppliers are Smart Trading TVD, Delta Electronics China and Alfacable.

1.1.1 Contact person

Monika Marečková
IMS Representative
Phone.: +421 424 661 276
Email: monika.mareckova@deltaww.com

1.2 Main activity and technology

The subject of activities and source of greenhouse gas emissions (carbon footprint) is manufacturing of above-mentioned products. The production is based on modern and efficient production lines.

1.3 Strategies and regulations in relation to the carbon footprint

There is no time bound GHG reduction target yet. It must be set and agreed at corporate level and implemented in all companies under Delta group.

2 GHG INVENTORY BOUNDARIES

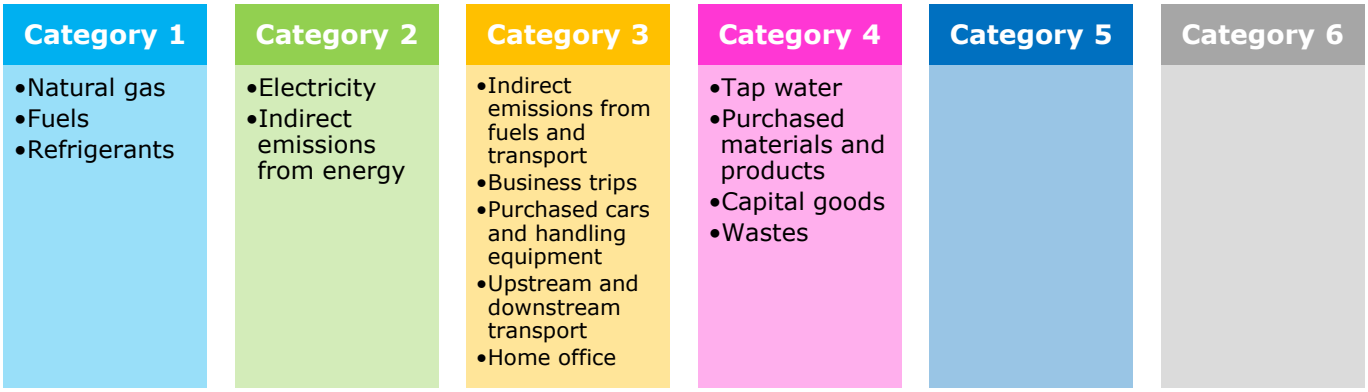
2.1 Organizational boundaries

The control approach was used to determine the organizational boundaries of the analysis. The operations owned and controlled by Delta Electronics, s. r. o., were included in the calculation of greenhouse gas emissions. All sources of direct emissions and selected sources of indirect emissions were included in the calculation. All facilities stated in Chapter 1.1 were included in the inventory.

2.2 Reporting boundaries

Figure 1 shows the composition of the carbon footprint of Delta Electronics, s. r. o. and the activities that contribute to greenhouse gas emissions. Emissions are divided into six Categories in accordance with the technical standard STN EN ISO 14064-1: 2019. For this GHG inventory, 2 categories were fully included: direct GHG emissions and removals (Category 1) and indirect GHG emissions from imported energy (Category 2). Indirect GHG emissions from transportation (Category 3) and indirect emissions related to the products and services used by the company (Category 4) were mostly included. Other categories of indirect emissions were not included.

Figure 1: Composition of the carbon footprint of Delta Electronics, s. r. o.



2.1 Greenhouse gases

Emissions of the following greenhouse gases **were included** in the inventory:

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)
- hydrofluorocarbons (HFC)

Emissions of the following greenhouse gases **were not included** (including justification):

- perfluorocarbons (PFC) – minimal amount
- sulphur hexafluoride (SF_6) – is not relevant to the technologies used
- nitrogen trifluoride (NF_3) – is not relevant to the technologies used

2.2 Year of calculation

This report on greenhouse gas emissions of Delta Electronics, s. r. o. was prepared for the calendar **year 2022**, i.e., from 1st January to 31st December. This is the seventh calculation of the carbon footprint since the base year.

3 INFORMATION ON EMISSIONS AND REMOVAL OF GREENHOUSE GASES

3.1 Methodology of Inventory

The calculation of greenhouse gas emissions was performed in accordance with the technical standard STN EN ISO 14064-1 and the international standard GHG Protocol (GHGP). If necessary, the input activity data was converted to the required unit and order. The calculation was performed separately for all produced emissions of individual relevant greenhouse gases (see Chapter 2.1). Subsequently, these emissions were converted according to their global warming potential (GWP) to so-called equivalent carbon dioxide (CO_2e) emissions. This parameter represents the resulting unit of the company's carbon footprint. The calculation is indicated in the following formulas:

$$AD_{ix} \times EF_{ix} = CF_{ix}$$

$$\sum_{x} (CF_{ix} \times GWP_x) = CF_i \; [CO_2e]$$

- AD_{ix} – activity data for the item *i* and greenhouse gas *x*
- EF_{ix} – emission factor for an item *i* and greenhouse gas *x*
- CF_{ix} – carbon footprint (greenhouse gas emissions) for the item *i* and greenhouse gas *x*
- GWP_x – contribution to climate change of greenhouse gas *x*
- CF_i – carbon footprint for the item *i* expressed in carbon dioxide equivalent (CO_2e)

Table 2: Global warming potential (GWP) for selected greenhouse gases

Greenhouse gas	GWP	Reference
CO_2 (carbon dioxide)	1	IPCC Sixth Assessment Report (AR6 – 100 years)
CH_4 (methane)	27.9	IPCC Sixth Assessment Report (AR6 – 100 years)
N_2O (nitrous oxide)	273	IPCC Sixth Assessment Report (AR6 – 100 years)
HFC (hydrofluorocarbons)	100 – 14,800	IPCC Sixth Assessment Report (AR6 – 100 years)
PFC (perfluorocarbons)	6,000 – 17,200	IPCC Sixth Assessment Report (AR6 – 100 years)
NF_3 (nitrogen trifluoride)	16,100	IPCC Sixth Assessment Report (AR6 – 100 years)
SF_6 (sulphur hexafluoride)	23,500	IPCC Sixth Assessment Report (AR6 – 100 years)

The sources of emission factors used are listed in Chapter 3.5. The calculation was performed in the MS Excel environment and verified in the internal calculation tool of the company CI3, s. r. o., which is used for the inventory of companies' greenhouse gases. This tool allows you to perform a standardized and fully comparable calculation in the coming years.

3.1.1 Changes in calculation methodology

None.

3.2 Direct greenhouse gas emissions and removals (Category 1)

The source of direct emissions was the **consumption of natural gas** in gas boilers for heating individual buildings of the Delta Electronics, s. r. o. company, which it owns. The total number was **2,006.24 MWh**.

Further, consumption of **diesel** was **18,664.40 l**, consumption of **gasoline** was **2,747.25 l**.

Table 3: Emissions in Category 1

Item	Consumption	Unit	Emissions [t CO_2e]
Natural gas	2,006.24	MWh	407.47
Diesel	18,664.40	l	50.01
Gasoline	2,747.25	l	6.42
Refrigerants - hydrofluorocarbons (HFC)	0.00	kg	0.00
Total			**463.90**

3.3 Indirect emissions

3.3.1 Indirect emissions from energy consumption (Category 2)

The main source of indirect emissions from the energy consumed is the **electricity** consumed by Delta Electronics, s. r. o. in Dubnica nad Váhom. It is used to ensure operation and production. The total electricity consumption (net) from the supplier Slovenské elektrárne - energetické služby, s. r. o. in 2022 was **4,124.85 MWh**. It was requested to provide specific emission factor of their electricity and provided value of **81.9 t CO_2e/GWh** for 2022.

From 2016, in terms of the method used to determine the carbon footprint of the institution / company (GHG Protocol), it is recommended to use the so-called double reporting of electricity consumption. The first method, called the **location-based** method, means using the national or local energy mix of electricity generation and its corresponding emission factor to convert electricity consumption to the corresponding greenhouse gas emissions. The second method, called the **market-based** method, is based on a company's contracts with an electricity supplier. If this supplier can prove the origin of the electricity sold, i.e., the emissions of the sources from which the electricity supplied by him is produced, it is possible to use the emission factor of these sources. The origin of this electricity must be documented by so-called "contractual instruments that meet minimum quality criteria". In Europe, the only way to prove the origin of electricity is the "Guarantee of Origin" mechanism. If electricity whose origin is not proven by guarantees of origin is used, "market-based emissions" are calculated on the basis of greenhouse gas emissions related to the **residual mix**.

Table 4: Total energy consumption for Categories 1 and 2

Type of energy/fuel	Consumption from renewable sources [MWh]	Consumption from non-renewable sources [MWh]	Total consumption [MWh]
Electricity Dubnica	76.10	4,124.85	4,200.95
Electricity Bratislava	0.00	6.16	6.16
Natural gas	0.00	2,006.24	2,006.24
Diesel	0.00	182.54	182.54
Gasoline	0.00	23.63	23.63
Total	**76.10**	**6,343.42**	**6,419.52**

Table 4 shows the total energy consumption of Delta Electronics, s. r. o. in 2022. It includes the consumption of natural gas, electricity, and fuels. Total energy consumption is one of the indicators reported in the CDP reporting (Carbon Disclosure Project).

Indirect emissions from electricity and natural gas, including losses from their production and distribution, were also included in Category 2 according to the methodology of the international standard GHG Protocol.

Table 5: Emissions in Category 2

Item	Consumption	Unit	Emissions [t CO_2e]
Electricity Dubnica (market-based)[1)]	4,124.85	MWh	337.82
Electricity Dubnica (location-based)[1)]	*4,124.85*	*MWh*	*619.39*
Electricity Bratislava (residual mix)[1)]	6.16	MWh	1.14
Electricity Bratislava (location-based)[1)]	*6.16*	*MWh*	*0.92*
Electricity (WTT and losses)	4,131.01	MWh	210.23
Electricity PV (losses)	76.10	MWh	3.12
Natural gas (WTT and losses)	2,006.24	MWh	76.92
Total			**629.23**

[1)] Emissions from electricity based on the market-based method in Dubnica nad Váhom were included in the calculation of the carbon footprint. The residual mix method was used for Bratislava.

3.3.2 Indirect emissions related to transport (Category 3)

Category 3 includes **business trips** (by air), **upstream** and **downstream transport** made in 2022. The calculation also includes **indirect emissions from fuels** by type of transport for business trips, upstream and downstream transport. Category 3 **also includes purchased cars handling equipment**, **home office work** and **accommodation during a business trips**.

Table 6: Emissions in Category 3

Item	Consumption	Unit	Emissions [t CO_2e]
Diesel – WTT	18,664.40	l	11.88
Gasoline - WTT	2,747.25	l	1.82
Business trips by air - long distance flights	373,977.91	pkm	38.19
Business trips by air – long distance flights - WTT	373,977.91	pkm	7.91
Business trips by air – to 3,700 km	124,781.77	pkm	10.13
Business trips by air – to 3,700 km - WTT	124,781.77	pkm	2.10
Upstream transport – air – long distance flights	2,657,591.22	tkm	1,431.98
Upstream transport – air – long distance flights - WTT	2,657,591.22	tkm	296.51
Upstream transport – air – to 3,700 km	28,146.04	tkm	34.27
Upstream transport – air – to 3,700 km - WTT	28,146.04	tkm	7.10
Upstream transport – road	861,344.80	tkm	91.47
Upstream transport – road - WTT	861,344.80	tkm	22.39
Upstream transport – shipping	6,783,874.12	tkm	109.55
Upstream transport – shipping - WTT	6,783,874.12	tkm	24.59
Downstream transport – air – long distance flights	45,156.56	tkm	24.33
Downstream transport – air – long distance flights - WTT	45,156.56	tkm	5.04
Downstream transport – air – to 3,700 km	17,500.51	tkm	21.33
Downstream transport – air – to 3,700 km - WTT	17,500.51	tkm	4.41
Downstream transport – road	4,589,744.41	tkm	487.39
Downstream transport – road - WTT	4,589,744.41	tkm	119.29
Downstream transport – shipping	1,051,633.85	tkm	16.98
Downstream transport – shipping - WTT	1,051,633.85	tkm	3.81
Electrical forklifts	1	piece	20.60
Home office	6,800	day	1.71
Home office – WTT	6,800	day	0.58
Accommodation during a business trip – Belgium	1	night	0.01
Accommodation during a business trip – Czech Republic	21	night	0.76
Accommodation during a business trip – Croatia	6	night	0.09
Accommodation during a business trip – Finland	2	night	0.01
Accommodation during a business trip – France	6	night	0.04
Accommodation during a business trip – Germany	86	night	1.14
Accommodation during a business trip – Ghana	5	night	0.22
Accommodation during a business trip – Great Britain	5	night	0.05
Accommodation during a business trip – Hungary	40	night	0.76

Accommodation during a business trip – Kenya	5	night	0.22
Accommodation during a business trip – Lebanon	5	night	0.34
Accommodation during a business trip – Netherlands	96	night	1.42
Accommodation during a business trip – Norway	2	night	0.01
Accommodation during a business trip – Poland	16	night	0.53
Accommodation during a business trip – Saudi Arabia	5	night	0.53
Accommodation during a business trip - Slovakia	78	night	1.49
Accommodation during a business trip - Slovenia	9	night	0.13
Accommodation during a business trip - Switzerland	1	night	0.01
Accommodation during a business trip - Taiwan	28	night	2.16
Accommodation during a business trip - Thailand	61	night	2.65
Total			**2,807.91**

3.3.3 Indirect emissions related to the products and services used by the company (Category 4)

Category 4 includes **tap water**, **purchased materials and products**, **capital goods** and solid and liquid **wastes**.

Table 7: Emissions in Category 4

Item	Consumption	Unit	Emissions [t CO_2e]
Aluminium	595.60	t	5,017.10
Copper	316.30	t	598.63
Steel	2.16	t	3.20
Iron	2,578.00	t	4,923.98
Tin	6.02	t	103.24
Paper/cardboard	162.48	t	133.43
Case, insulator, socket	17.23	t	33.57
Organic solvents	4.60	t	4.37
Filling materials - PE form, EPE, Polyform	33.91	t	66.07
Wood	168.27	t	31.53
Printed circuits	53.12	t	3,888.38
Electrical components	265.00	t	861.25
Batteries	19.20	t	324,48
Tap water	4,521.00	m^3	1.50
Wastewater	4,521.00	m^3	2.97
Solid waste	519.28	t	166.79
Hazardous waste	33.97	t	0.72
Capital goods	844,608.42	EUR	185.47
Total			**16,346.69**

3.3.4 Indirect emissions related to the use of the company's products (Category 5)

Emission sources in Category 5 were not included due to the boundary of the analysis (see Chapter 2)

3.3.5 Indirect emissions from other sources (Category 6

Emission sources in Category 6 were not included due to the boundary of the analysis (see Chapter 2).

3.4 Inclusion of biogenic emissions and CO_2 removal

Currently not relevant for the calculation.

3.5 Emission factors, their sources and validity

Emission factors were taken or calculated from the following documents and sources – Slovak National Inventory Reports NIR, Czech National Inventory Reports – NIR, SPP – distribúcia, a. s., Slovenské elektrárne - energetické služby, s. r. o., UK Government GHG Conversion Factors for Company Reporting, Association of Issuing Bodies, Ecoinvent, Low Carbon Vehicle Partnership and Intergovernmental Panel on Climate Change - IPCC. In the event, that a specific emission factor was not available, it was estimated based on the experience of CI3 employees.

The uncertainty of emission factors in Categories 1 and 2 ranges from 1.0 to 4.5%. For items in Categories 3 and 4, it can reach up to 50% due to the merging of different items into one group.

4 EVALUATIONS OF EMISSIONS AND REMOVAL OF GREENHOUSE GASES

4.1 Base year

The base year for determining the greenhouse gases emissions of Delta Electronics, s. r. o. is **2016**.

4.1.1 Recalculation and changes of the base year

No recalculation was performed in the monitored period.

4.2 Other significant changes in emissions and recalculation outside the base year

Is not relevant.

4.3 Comparison and development of greenhouse gases emissions

4.3.1 Result of the greenhouse gases inventory for 2022

Table 8: Carbon footprint of Delta Electronics, s. r. o.

Category	Emissions [t CO_2e]
Category 1 (direct emissions and sinks of greenhouse gases)	463.90
Category 2 (indirect emissions from energy consumption) – market-based	629.23
Category 3 (indirect emissions related to transport)	2,807.91
Category 4 (indirect emissions related to the products and services used by the company)	16,346.69
Category 5 (indirect emissions related to the use of the company's products)	–
Category 6 (indirect emissions from other sources)	–
Total	**20,247.73**

Figure 2: Carbon footprint of Delta Electronics, s. r. o.

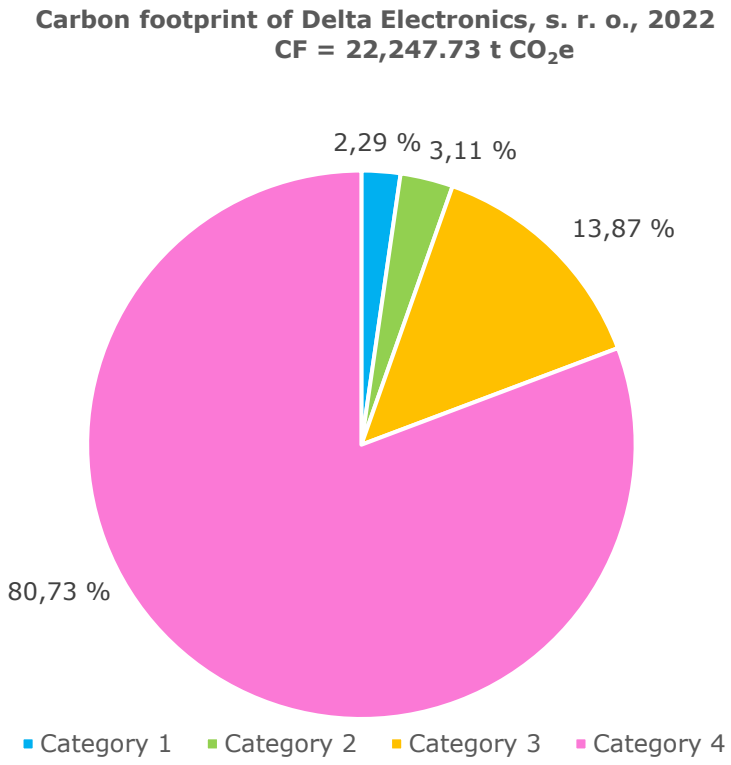


Table 9: Greenhouse gas emissions of Delta Electronics, s. r. o.

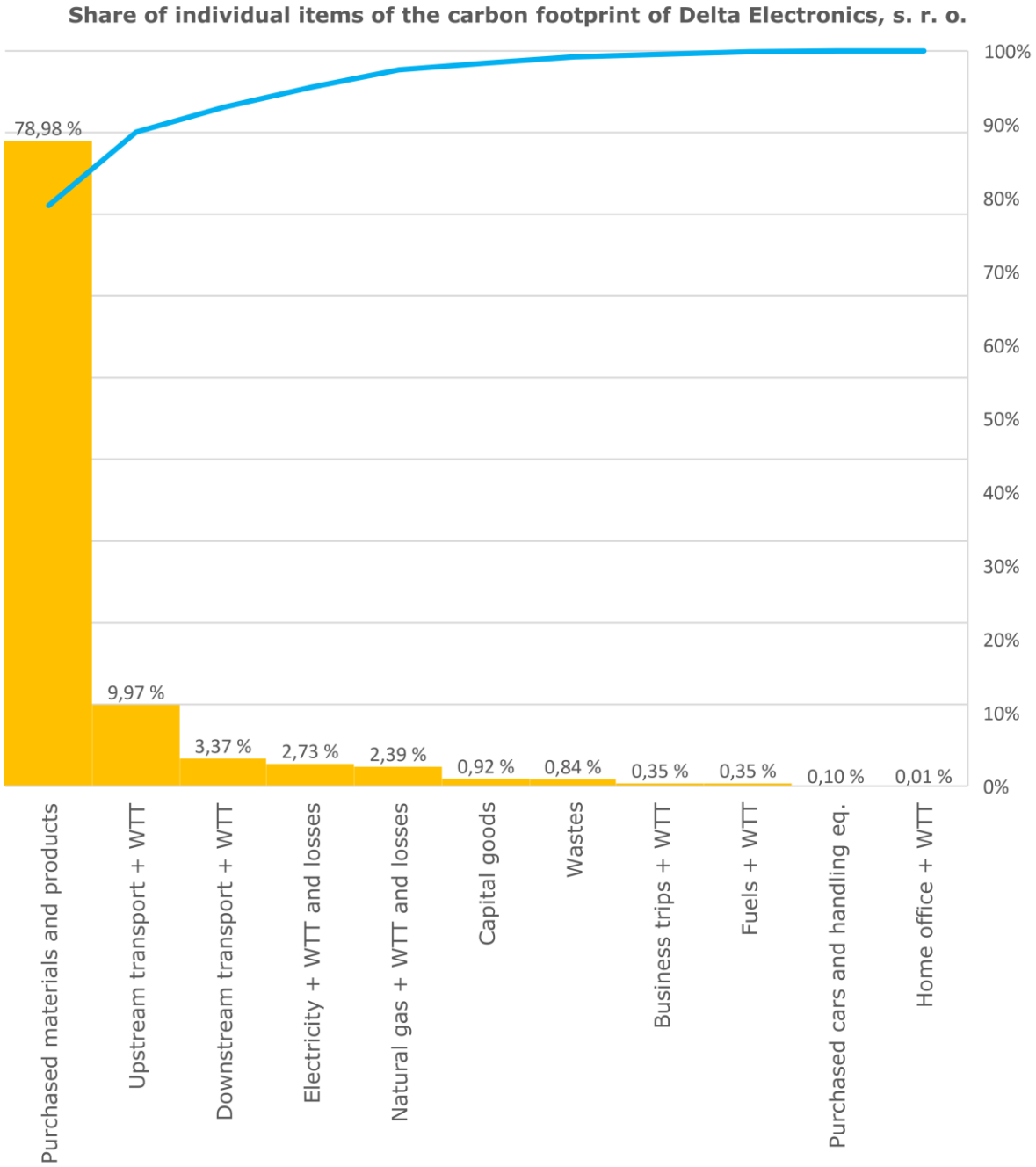
Greenhouse gas	Emissions [t]	Emissions [t CO_2e]
CO_2 (carbon dioxide)	20,123.77	20,123.77
CH_4 (methane)	3.24	96.59
N_2O (nitrous oxide)	0.10	27.37
HFC (hydrofluorocarbons)	0.00	0.00
Total CO_2e (equivalent CO_2)		**20,247.73**

In table 10 and the following graph show the items sorted according to their effect on the total carbon footprint of Delta Electronics, s. r. o. For greater clarity, the individual items from Chapters 3.2 and 3.3 were grouped into larger logical units. Potential indirect emissions from fuels and energy, including losses from their production and distribution, were added to the relevant items across the Categories. Their separate values are given in chapters 3.2 and 3.3.

Table 10: Share of individual items of the carbon footprint of Delta Electronics, s. r. o.

Item	Emissions [t CO_2e]	Share [%]
Purchased materials and products	15,990.74	78.98
Upstream transport + WTT	2,017.85	9.97
Downstream transport + WTT	682.56	3.37
Electricity + WTT and losses	552.31	2.73
Natural gas + WTT and losses	484.40	2.39
Capital goods	185.47	0.92
Wastes	170.48	0.84
Business trips + WTT	70.90	0.35
Fuels + WTT	70.13	0.35
Purchased cars and handling eq.	20.60	0.10
Home office + WTT	2.29	0.01
Total	**20,247.73**	**100,00**

Figure 3: Share of individual items of the carbon footprint of Delta Electronics, s. r. o.



4.3.2 Development of greenhouse gases emissions

Table 11: Comparison of the carbon footprint of Delta Electronics, s. r. o. between 2016 and 2022 in Scopes

Scope	Emissions 2016 [t CO_2e]	Emissions 2022 [t CO_2e]	2022 vs. 2016
Scope 1	509.87	463.90	-9.02%
Scope 2	636.61	338.96	-46.76%
Scope 3	8,428.14	19,444.87	+130.71
	9,574.62	**20,247.73**	**+111.47%**

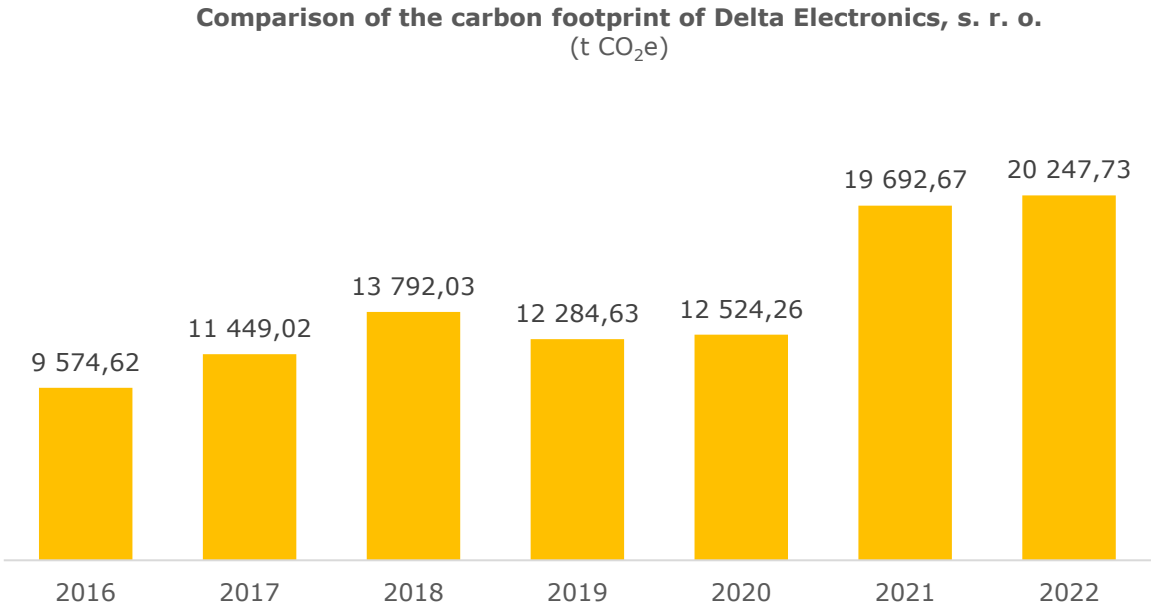
Table 12: Development of the carbon footprint of Delta Electronics, s. r. o. in the period from 2016 to 2022

Category	Scope	Emissions 2016 [t CO_2e]	Emissions 2017 [t CO_2e]	Emissions 2018 [t CO_2e]
Category 1	Scope 1	509.87	504.88	474.24
Category 2	Scope 2	636.61	678.71	539.64
Category 3	Scope 3	8,428.14	10,265.44	12,778.14
Category 4				
Category 5				
Category 6				
Total		**9,574.62**	**11,449.02**	**13,792.03**

Category	Scope	Emissions 2019 [t CO_2e]	Emissions 2020 [t CO_2e]	Emissions 2021 [t CO_2e]
Category 1	Scope 1	498.61	448.56	510.55
Category 2	Scope 2	418.27	601.01	535.91
Category 3	Scope 3	11,367.76	948.59	3,819.05
Category 4			10,526.10	14,827.17
Category 5			–	–
Category 6			–	–
Total		**12,284.63**	**12,524.26**	**19,692.67**

Category	Scope	Emissions 2022 [t CO_2e]
Category 1	Scope 1	463.90
Category 2	Scope 2	629.23
Category 3	Scope 3	2,807.91
Category 4		16,346.69
Category 5		–
Category 6		–
Total		**20,247.73**

Figure 4: Comparison of the carbon footprint of Delta Electronics, s. r. o.



4.4 Intensity of greenhouse gases emissions

Table 13: Internal ratio indicators of the carbon footprint of Delta Electronics, s. r. o. and their comparison between 2016 and 2022

Indicator	2016	2022	2022 vs. 2016
Total CF per employee (FTE) [t CO_2e/FTE]	16.65	34.61	+107.86%
S1+S2 / K1+K2 per employee (FTE) [t CO_2e/FTE]	1.99	2.35	+17.84%
Total CF per revenue [t CO_2e/ths. euro]	0.139	0.139	+0.14%
S1+S2 / K1+K2 per revenue [t CO_2e/ths. euro]	0.017	0.008	-54.85%

4.5 Recommendations and further steps

Recommendations in terms of quality and complexity of carbon footprint calculation
See relevant documents:

- GHG Politika
- GHG Ciele
- GHG Ciele monitorovanie
- OS 39 Riadenie GHG

For future GHG inventories, we again recommend automating the collection of background data more. These are mainly business trips, upstream and downstream transport.

For 3-5 of the most important items in terms of indirect footprint (the main raw materials purchased), the company should request from its suppliers an Environmental Product Declaration (EPD) or other document on emission factors. If they do not get it, then it must be given as a proposal for improvement by next year.

We recommend identifying the persons responsible for data collection and their accuracy.

For Category 3, we also recommend:

- Extend the calculation with ways to work.

For Category 5, we also recommend:

- Extend the calculation with investments.

Recommendations in terms of reducing the carbon footprint
Recommendations for Category 1:

- Implement energy saving measures to reduce natural gas and fuels consumption.

Recommendations for Category 2:

- Continue to prefer low-emission electricity, or switch to a supplier who offers emission-free electricity (so-called "green electricity").

Recommendations for Category 3:

- Prefer public transport or online meetings for business and work trips.

Recommendations in terms of carbon footprint management and emission reduction
In accordance with the requirements of the GHG Protocol, we recommend developing a policy or plan to reduce the company's greenhouse gas emissions. It is based on inventories for the period 2016 to 2022 and sets out specific measures, responsible persons, and implementation dates. The plan should include a target value for reducing the carbon footprint by a certain year and should be adopted by the company's management.

The plan should include individual measures to reduce the carbon footprint, quantifying their financial intensity, time horizon and impact on the overall carbon footprint.

Another option for reducing the carbon footprint is to offset part of the emissions (e.g., business trips) through an offset program.

5 FINANCIAL AND CONTRACTUAL INSTRUMENTS

Is not relevant.

6 ATTACHMENTS

6.1 List of abbreviations used

CDP	Carbon Disclosure Project
STN	Slovak technical standard
FTE	Full Time Equivalent
GHG	Greenhouse gas
GHGP	Greenhouse Gas Protocol
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
ISO	International Organization for Standardization
NIR	National Inventory Report
PFC	Perfluorocarbons
CF	Carbon footprint
WTT	Well-to-Tank

6.2 WE MONITORE / WE REDUCE CO_2

The program WE MONITORE / WE REDUCE CO_2 is a **voluntary instrument for environmental protection**, based on the objectives of international and national agreements in the field of climate protection. The aim of the program is to motivate and support companies to **reduce the amount of greenhouse gases**, present the results of the program and mediate the implementation of public benefit offset projects. This is the only program of its kind in the Czech Republic.

The program is sponsored by the Ministry of the Environment and the Ministry of Industry and Trade of the Czech Republic. The guarantor and administrator of the program is the non-profit organization CI2, o. p. s.

The voluntary **program WE MONITORE / WE REDUCE CO_2 enables entities to monitor and reduce greenhouse gas emissions**. After fulfilling the basic conditions defined in the Program Rules, the participating entity will receive a certificate and will be awarded the mark of the appropriate level of involvement for a period of one year.