



Mover of UN
Sustainable
Development Goals

Report

Greenhouse Gas (GHG) Inventory for Elna PCB (M) Sdn Bhd

June 2024
Report No.: PJ-24-032



Document Details

Document Type	Report
Document Title	Greenhouse Gas (GHG) Inventory for Elna PCB (M) Sdn Bhd
Project No.	PJ-24-032
Date	3 rd May 2024
Client	Elna PCB (M) Sdn Bhd


Document History

			EeHSSE Approval to Issue		
Revision	Author	Reviewer	Name	Date	Comments
00	DLJJ	LLB	DN	30 th May 2024	Issued for review
01	DLJJ	LLB	DN	4 th June 2024	Issued for approval
02	DLJJ	LLB	DN	10 th June 2024	Issued as final

Signatures



Daryl Lee Jia Jun, PhD
ESG Consultant



Lee Lian Beng
Project Lead | Partner

EeHSSE Associates Sdn Bhd
5-6-1, Block B, Jalan 1/125E
Megan Salak Park, Taman Desa Petaling
57100 Kuala Lumpur
Malaysia
www.eehsse.com

EXECUTIVE SUMMARY

EeHSSE Associates Sdn Bhd (EeHSSE, formerly known as *EeHSSE Academy Sdn Bhd*) was engaged by Elna PCB (M) Sdn Bhd (Elna PCB) to provide consultancy services on developing a baseline greenhouse gas (GHG) emission inventory for its operations.

Boundary and Limitations

The GHG boundary was established by reviewing Elna PCB's organizational boundaries and operational controls.

GHG Emission

This report shows Elna PCB's GHG emissions for its base year, i.e. financial year (FY) 2023, with reporting period of 1st January 2023 to 31st December 2023. The GHG emission is segmented into separate totals for Scope 1 and 2, and Scope 3.

The total GHG emission was calculated based on sources that fall under Scope 1 (direct emissions from owned vehicles, fuel consumption in boiler, fugitive losses from refrigerant and fire suppression agent, and emissions from sewage treatment plant), Scope 2 (purchased electricity), and Scope 3 emissions, which included the selected categories of (Category 1 – Purchase Good and Service), (Category 6 – Business Travel (land and air transport) and Category 7 – Employee Commute. A separate line item is presented for direct CO₂ emission from biogenic sources.

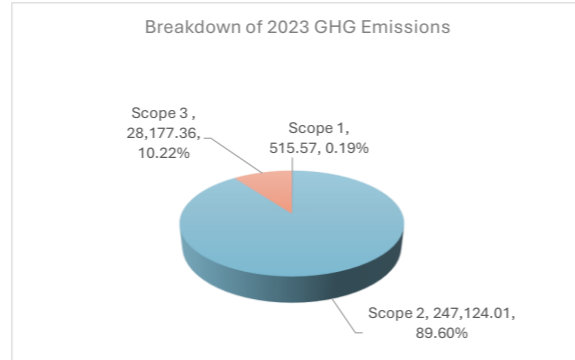
The total GHG emissions for Scope 1 and 2 amounted to **247,639.58 tons of carbon dioxide (CO₂) equivalent**. When Scope 3 is included, it is totaled **275,816.94 to tons of CO₂ equivalent** as shown in table below.

Scope	Emission (ton-CO ₂ e)	Percentage of Total Scope 1 & 2 Emissions(%)
Scope 1 – Direct Emission	515.57	2.09
Scope 2 – Indirect Emissions	247,124.01	99.79
Scope 3 – Other Indirect Emissions (selected categories)		
• Purchase good and service	27,864.13	
• Business Travel	7.66	
• Employee Commute	305.57	
Other Direct GHG data (not included in Scope 1)		
• Direct biogenic CO ₂ emissions	0.31	
Total Scope 1 and 2	247,639.58	
Total Scope 3	28,177.36	
Grand Total	275,816.94	

Corporate Greenhouse Gas (GHG) Inventory 2023

Elna PCB - GHG Inventory
FY 2023

	ton-CO2e
Scope 1	515.57
Scope 2	247,124.01
Scope 3	28,177.36
Total	275,816.94
Scope 1 Biogenic	0.31



Scope and Emission Sources	Emission Factor	Emission Factor Unit	Unit	Base Year - FY 2023					
				Qty in Unit	Emission (tCO2e)	Percentage of Total			
Scope 1 (PCB + EMS)					515.57	0.19%	0.21%		
Stationary Combustions									
Gas Fuel (LPG)	0.00293936	tCO2e/kg	kg	5,600.00	16.46	0.01%	0.01%		
Gas Fuel (Natural Gas)	0.05311480	tCO2e/mmBTU	mmBTU	8,845.77	469.84	0.17%	0.19%		
Liquid Fuel, Stationary (Diesel)	0.00251206	tCO2e/litres	litres	107.00	0.27	0.00%	0.00%		
Mobile Combustions									
Mobile Combustion - Company Car									
Mileage based									
		CH ₄ (g/mile)	N ₂ O (g/mile)						
Passenger Car, Petrol, 2019	3.59E-07	0.0051	0.0015	tCO2e/km	km	12,867.00	0.0046	0.00%	0.00%
Passenger Car, Petrol, 2012	9.68E-07	0.0071	0.0046	tCO2e/km	km	22,100.00	0.0214	0.00%	0.00%
Passenger Car, Petrol, 2009	9.68E-07	0.0071	0.0046	tCO2e/km	km	18,770.00	0.0182	0.00%	0.00%
Passenger Car, Petrol, 2008	1.03E-06	0.0072	0.0049	tCO2e/km	km	23,098.00	0.0237	0.00%	0.00%
Passenger Car, Petrol, 2006	1.52E-06	0.0076	0.0075	tCO2e/km	km	15,717.00	0.0238	0.00%	0.00%
Van, Diesel, 2013	8.00E-07	0.0095	0.0035	tCO2e/km	km	36,000.00	0.0288	0.00%	0.00%
Fuel based (Petrol)	0.00231968	tCO2e/litres	litres	9,072.00	21.0442	0.01%	0.01%		
Fuel based (Diesel)	0.00269749	tCO2e/litres	litres	1,430.00	3.8574	0.00%	0.00%		
Fugitive Emissions									
Refrigerant Leakages									
R-22	1,760	GWP	kg	2.00	3.5200	0.00%	0.00%		
R-32	675	GWP	kg	0.00	0.0000	0.00%	0.00%		
R-410a	2,088	GWP	kg	0.00	0.0000	0.00%	0.00%		
R-410b	2,229	GWP	kg	0.00	0.0000	0.00%	0.00%		
R-134a	1,430	GWP	kg	0.00	0.0000	0.00%	0.00%		
Fire Suppressant Leakages									
CO ₂	1	GWP	kg	405.00	0.4050	0.00%	0.00%		
Sewage Treatment Plant (CH ₄ Emissions)	Per calculation in spreadsheet				0.0565	0.00%	0.00%		
Scope 2 (PCB + EMS)					247,124.01	89.60%	99.79%		
Purchased Electricity	0.000758	tCO2e/kWh	kWh	326,021,116.60	247,124.01	89.60%			
Scope 3					28,177.36	10.22%	11.38%		
Business Travel									
Air Travel (short haul)	0.00013070	tCO2e/km	passenger-mile (km)	8,800.00	1.15	0.00%			
Air Travel (medium haul - excl foreign work)	0.00008140	tCO2e/km	passenger-mile (km)	25,828.00	2.10	0.00%			
Air Travel (medium haul - Foreign Worker)	0.00008140	tCO2e/km	passenger-mile (km)	51,694.50	4.21	0.00%			
Land Travel (e-hailing)	0.00019705	tCO2e/km	vehicle-mile (km)	1,030.00	0.20	0.00%			
Employee Commute									
Passenger Car	0.00019705	tCO2e/km	vehicle-mile (km)	924,056.50	182.09	0.07%			
Motorcycle	0.00011652	tCO2e/km	vehicle-mile (km)	773,041.50	90.08	0.03%			
Bus	0.00003468	tCO2e/km	passenger-mile (km)	963,166.00	33.40	0.01%			
Major Tier Supplier									
Nanya	0.00102200	tCO2/USD	USD	22,667,134.34	23,165.81	8.40%			
KB	0.00031600	tCO2/USD	USD	1,492,205.81	471.54	0.17%			
Duponts	0.00047200	tCO2/USD	USD	2,725,349.92	1,286.37	0.47%			
Taiyo Ink	0.00047200	tCO2/USD	USD	3,031,927.63	1,431.07	0.52%			
Eternal Technology Corp	0.00047200	tCO2/USD	USD	3,197,765.67	1,509.35	0.55%			

Scope 1 & 2 =	247,639.58	tCO2e
Grand Total =	275,816.94	tCO2e

Emission factor and Resources
UK Government GHG Conversion Factors for Company Reporting (2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) UK Government GHG Conversion Factors for Company Reporting (2023)
US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) - classified under light duty truck US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023)
US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023)
US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) Greenhouse Gas Emissions Estimation Methodologies for Biogenic Emissions from Selected Source Categories: Solid Waste Disposal Wastewater Treatment Ethanol Fermentation; Intergovernmental Panel of Climate Change (IPCC) 2019
Grid Emission Factor (GEF) 2021 in Malaysia published by MGTC
US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023)
US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023) US EPA Emission Factors for Greenhouse Gas Inventories (dated Sept 2023)