United Shield International Ltd

Carbon Footprint Report and Action Plan

Version 2

8th August 2024

DOCUMENT DETAILS	
Company	United Shield International Limited
Title	Carbon Footprint Report and Action Plan
For Period	1st Jan 2023 to 31st Dec 2023
Consultants	Carbon Lens
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Version	Version 2
Dated	8th August 2024

Carbon Lens

Carbon Lens services are designed to help customers gain a competitive advantage through understanding their carbon footprint and planning emissions reduction.

United Shield

United Shield International is one of the leading manufacturers in the world of personal ballistic and fragmentation protection and equipment, with design and manufacturing operations in Andover, Hampshire, in the United Kingdom.

1. Contents

2. Executive Summary

To achieve Net Zero, United Shield needs to remove carbon from its operations and wider business activities consistently each year until they reach a net-zero position by 2040. This target is set using the Science-Based Targets Initiative (SBTi) guidance.

3. Introduction

Carbon Lens has reviewed the following data sets submitted by United Shield Including.

1. Energy used at facilities and offices at the following locations in Andover, UK.
    a. Glenmore industrial park.
    b. Southway industrial park.
2. Water
3. Staff commuting.
4. Business Travel.
5. Upstream and downstream transport
6. Waste data.
7. Significant purchases.

The data was used to calculate the carbon footprint of United Shield.

4. Calculations

The carbon emissions for each category of consumption were calculated using the methodology defined in the Greenhouse Gas Protocol and the Carbon Conversion Factors published annually by DEFRA on behalf of the UK Government.

Emissions consist of several atmospheric greenhouse gases which include Carbon Dioxide (CO_2), Sulphur Hexafluoride (SF_6), Methane (CH_4), Nitrous Oxide (N_2O), Ozone O_3, Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs). For simplicity of comparison, the global warming potential of all these gases is combined into Carbon Dioxide Equivalent (CO_2e). All carbon emissions in this report are in CO_2e units.

The carbon footprint for United Shield was calculated to be,

Total Footprint: - 3,724 Tonnes CO_2e

To enable a clear understanding of the carbon footprint that United Shield has control over, versus the element where the company has influence, but not control, the carbon reduction plan has also been categorised into Scope 1, Scope 2, and Scope 3 elements.

Data Quality and Exclusions

Aspect	Calculation Factors	Comment	Data Quality
Mains Gas	*GHG Protocol Factors*	*Estimated meter readings*	*Fair*
Electricity	*GHG Protocol Factors*	*Estimated meter readings*	*Fair*
Fuel Oil	*GHG Protocol Factors*	*Estimated from Purchase Data*	*Fair*
Business Travel	*GHG Protocol Factors*	*From data provided*	*Good*
Upstream Transport	*GHG Protocol Factors*	*From data provided*	*Good*
Downstream Transport	*GHG Protocol Factors*	*From data provided*	*Good*
Waste	*GHG Protocol Factors*	*From data provided*	*Good*
Water & Sewerage	*GHG Protocol Factors*	*Estimated meter readings*	*Fair*
Staff Commuting	*GHG Protocol Factors*	*From data provided*	*Good*
Rental & Lease Costs	*ONS Carbon Intensity by Industry*	*From data provided*	*Fair*
Purchases	*ONS Carbon Intensity by Industry*	*From data provided*	*Fair*

Table 4.1 Data Quality

5. Carbon Footprint

5.1 Total Footprint

Aspect	Tonnes CO_2e				
	Total	Scope 1	Scope 2	Scope 3	%
Mains Gas	263.45	225.10		38.35	7.1%
Electricity	86.35		70.34	16.02	2.3%
Fuel Oil	6.17	5.02		1.15	0.2%
Business Travel	48.00			48.00	1.3%
Upstream Transport	250.95			250.95	6.7%
Downstream Transport	510.45			510.45	13.7%
Staff Commuting	65.19			65.19	1.8%
Waste	26.85			26.85	0.7%
Water & Sewerage	1.03			1.03	0.0%
Rental & Lease Costs	3.01			3.01	0.1%
Purchases	2,462.15			2,462.15	66.1%
Total	3,723.60	230.12	70.34	3,423.14	100%

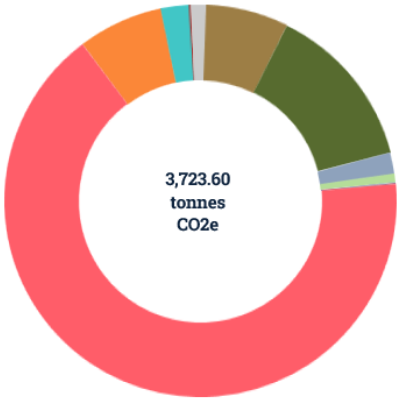


Figure 5.1: United Shield's Total Carbon Footprint

Commentary

Purchases are the highest source of emissions followed by transport and gas.

- Carbon reductions initiatives should include.
- Use of Submetering to better measure energy use.
- Voltage optimisation for better energy management.
- Investigation of potential Solar panel installation.
- Review of upstream and downstream transport.
  eg. cooperation with transport providers on use of Sustainable of Aviation Fuel (SAF)"
- Investigation of induction heating to lower gas use.
- Reduction of air travel wherever possible.
- Staff training.

5.2 Business Travel Emissions

Mode of Travel	Tonnes CO_2e				
	Total	Scope 1	Scope 2	Scope 3	%
Vehicles	0.00	0.00		0.00	0.0%
Bus	0.00			0.00	0.0%
Taxi (regular)	0.00			0.00	0.0%
Train	0.00			0.00	0.0%
Light Rail & Tram	0.00			0.00	0.0%
Underground	0.00			0.00	0.0%
Air - Domestic (within nation)	0.74			0.74	1.5%
Air - Short-haul (under 2,000 Km)	4.34			4.34	9.1%
Air - Long haul (over 2,000 Km)	42.92			42.92	89.4%
Total	48.00	0.00	0.00	48.00	100.0%

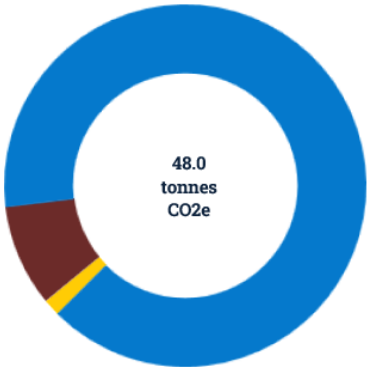


Figure 5.2: United Shield Carbon Footprint Emissions from Business Travel

Commentary

This chart shows a breakdown of business travel.

The GHG conversion factor used was kg CO_2e per km travelled plus the "Well to Tank" factor for each type of travel.

Well-to-tank (WTT) conversion factors for transport relate to the upstream Scope 3 emissions associated with extraction, refining and transportation of the raw fuels before they are used to power the transport mode. These are included in accordance with GHG protocol principles.

5.3 Emissions from Purchased Goods and Services

Aspect	tCO_2e	Scope 3	%
Goods & Materials	2,369.21	2,369.21	96.2%
Sub Contract Services	45.22	45.22	1.8%
Equipment	25.54	25.54	1.0%
Clothing	7.84	7.84	0.3%
Professional Services	4.87	4.87	0.2%
Maintenance	3.72	3.72	0.2%
Financial Services	2.74	2.74	0.1%
Printing & Media	1.42	1.42	0.1%
Storage	0.81	0.81	0.0%
Telecoms	0.08	0.08	0.0%
Testing	0.02	0.02	0.0%
Catering	0.01	0.01	0.0%
Memberships & Subscriptions	0.01	0.01	0.0%
Maintenance	2,462.03	2,462.03	100%

Table 5.3: United Shield's Carbon Footprint Emissions from Purchases

Aspect	tCO_2e	Scope 3	%
Barrday Inc	792.00	792.00	32.2%
Point Blank Enterprises	287.40	287.40	11.7%
NP Aerospace Ltd	99.26	99.26	4.0%
VGTec Limited	88.14	88.14	3.6%
Arville Textiles Limited	81.00	81.00	3.3%
Veplas Velenjska Plastika	75.86	75.86	3.1%
Avient Protective Materials BV (DSM	65.00	65.00	2.6%
Cora Textiles Srl	56.94	56.94	2.3%
Micam Ltd	56.90	56.90	2.3%
Ritefast Engineering Ltd	38.87	38.87	1.6%
Permali Gloucester Limited	37.00	37.00	1.5%
AMF Engineering Ltd	34.28	34.28	1.4%
Capatex Ltd	30.77	30.77	1.2%
Pro-Systems SpA	29.49	29.49	1.2%
Kopak Rubber & Plastics Ltd	26.43	26.43	1.1%
Dalong Group Limited	25.85	25.85	1.0%
Fabtech Engineering Ltd	24.40	24.40	1.0%
United Shield International LLC	22.94	22.94	0.9%
Others	488.35	488.35	19.8%
Total	2,462.03	1,703.65	65%

Table 5.4: United Shield's Carbon Footprint Emissions from Top 20 Suppliers

Commentary

This chart breaks down the total emissions from purchases made by United Shield for the period.

The supply chain data used were based on the amount spent in the period with each supplier provided by United Shield and use of supplied weights where provided. The emissions were calculated using generic sector-specific carbon intensity (CO_2e/£) figures provided by the UK Office for National Statistics.

Increased granularity will be achieved by carrying out a survey of suppliers to establish their carbon footprint and influence the reduction of emissions within the supply chain and by collaborating closely with the highest emitting suppliers.

5.4 Emissions from Transport

Transport Mode of Transport	Tonnes CO_2e			
	Total	Up Stream	Down Stream	%
Road	6.04	0.51	5.53	1%
Sea Transport	12.12	12.02	0.10	2%
Air	743.24	238.41	504.83	98%
Total	761.40	250.95	510.45	100.0%

Figure 5.5: Carbon Footprint CO2e Emissions from Transport.

Commentary

Air transport is responsible for emissions in this category.

- Reduction initiatives can include.
- Reviewing whether the percentage of sea freight can be increased.
- Working with freight companies to cooperate on use of Sustainable Aviation Fuel (SAF)

6. United Shield Carbon Reduction Target

SBTi Targets	TCO_2e	% Base	Reduction	% Reduction
Base Year	3,724	100%	0	0%
1 Year	3,611	97%	112	3%
5 Years	2,818	76%	906	24%
2030	2,230	**40%**	1,493	40%
Ten Years	1,756	47%	1,968	53%
2040	887	**24%**	2,836	76%
2045	524	14%	3,200	86%
2050	382	**10%**	3,342	90%

Table 6.1: United Shield's Carbon Reduction Targets: 2023 to 2050

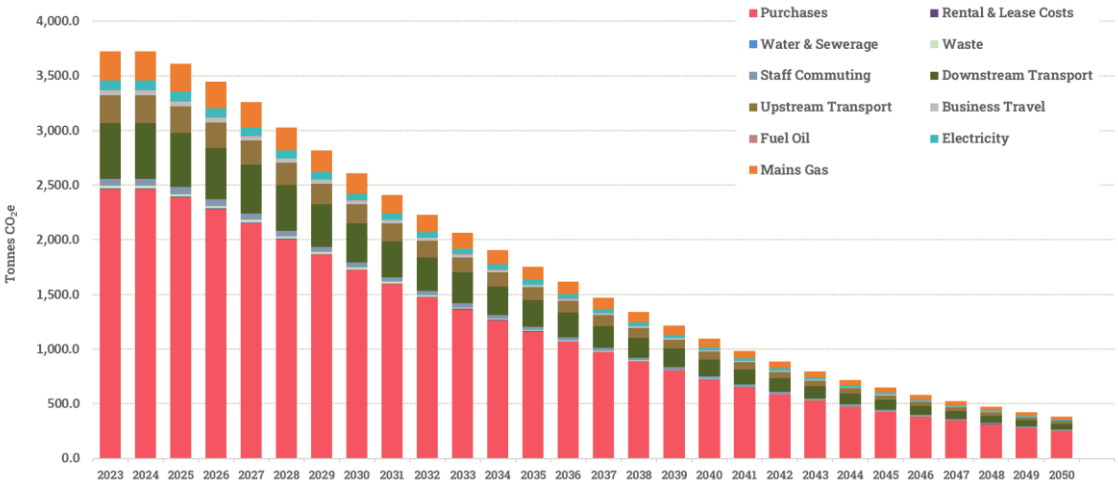


Figure 6.2: United Shield's carbon reduction plan summary: 2023 to 2050.

7. United Shield Carbon Action Plan

United Shield International Ltd is committed to achieving Net Zero by 2050 and plans to carry out the following initiatives towards achieving that aim.

7.1 Carbon footprint and EMS ongoing management

Aspect	Observations / Actions
Carbon footprint and EMS	**1.1** Implement environmental policy and action plan.
	1.2 Appoint green champions/ ambassadors.
	1.3 Carry out CO_2-related Toolbox talks for all staff and contractors.
	1.4 Develop a structured training and CO_2 awareness plan for staff.
	1.5 Cooperate with contractors and suppliers.

7.2 Energy

	Observations / Actions
Energy Reduction	**2.1** Use Submetering to better measure energy use.
	2.2 Voltage optimisation for better energy management
	2.3 Regularly check and record accurate energy consumption data.
	2.4 Review energy consumption and embodied CO_2 as a criterion for future equipment purchases.
	2.5 Monitor energy use when facilities and offices are not in use
	2.6 Ensure computers, copiers and display screens are set to optimum efficiency
	2.7 Fit LED Lighting.
	2.8 Investigation of induction heating to lower gas use.
Building Facilities	**2.9** Conduct an energy audit for the building infrastructure.
	2.10 Update the asset register to include all energy-consuming equipment.
	2.11 Review the EPC reports in conjunction with the carbon footprint. (see the link in Appendix A)
	2.12 Consider actions highlighted in the published EPC report.
Renewable Energy	**2.13** Achieve 80% renewable energy use by 2025.
	2.14 Achieve 100% renewable energy use by 2035.
	2.15 Investigate the installation of onsite renewable energy sources such as photovoltaic cells, batteries or heat pumps.

7.3 Facilities and Office

Aspect	Observations / Actions
Office Equipment	**3.3** Ensure computers, copiers and display screens are set to optimum efficiency. Review the energy consumption of the servers
	3.4 Review the office and other equipment energy consumption.
	3.5 Review printing volumes, printing inks and other office consumables.
	3.6 Consider recycling and re-use options for office equipment when it is disposed of.
	3.7 Conduct a survey of staff working from home in order to establish more accurate data. Advise staff on energy-saving opportunities.
	3.8 Consider IT lifecycle for future projects, can equipment be repaired and re-used?
Facilities and Office Waste	**3.9** Conduct a waste audit in order to establish the volumes, types and final destination of waste generated. Contact the waste contractors, in many cases, they will be able to supply a full breakdown of the waste removed and their recycling rates.
	3.10 Review the food consumed and the food waste in the canteen. Consider lower-carbon food options.
Facilities and Office IT	**3.11** Review the volume of Emails and cloud working versus video chats.
	3.12 Review IT systems and complete a carbon intensity audit.
	3.13 Generic count on e-mails, review the requirement for a large number of e-mails.
	3.14 Review the IT asset list and plan to purchase low-energy alternatives in the future.

7.4 Procurement

Aspect	Observations / Actions
Procurement	**4.1** Collaborate with the top 20 suppliers to significantly reduce total emissions.
	4.2 Ensure new contracts require suppliers to state their carbon footprint and have an action plan.
	4.3 Complete a supplier survey.
	4.4 Support supply chain to help them manage footprint.
	4.5 Develop a consistent approach to data gathering throughout the supply chain.
	4.6 Continually review packaging options

7.5 Transport

Aspect	Observations / Actions
Upstream & Downstream Transport	**5.1** Review of upstream and downstream transport.
	5.2 Consider increased use of sea transport vs air
	5.3 Liaise with suppliers to review more sustainable upstream transport
	5.4 Cooperate with transport providers on use of Sustainable of Aviation Fuel (SAF)

7.6 Travel & Homeworking

Aspect	Observations / Actions
Business Travel	**6.1** Reduce Air Travel.
	6.2 If flying is necessary, fly economy.
	6.3 Reduce unnecessary travel.
	6.4 Encourage the use of train travel if possible.
	6.5 Carry out an employee survey.
Homeworking	**6.6** Engage with staff to reduce home emissions.
	6.7 Carry out an employee survey.
	6.8 Invest in more energy-efficient technology for WFH.
	6.9 Set green procurement requirements for all new laptops, monitors printers and other technology
	6.10 Provide energy efficiency training & or personal carbon footprint analysis and advice.
	6.11 Encourage move to LEDs,
	6.12 Encourage switching to renewable energy tariffs for home energy.
	6.13 Incentivise move to more energy-efficient heating and cooling systems.

APPENDIX A - Documents and References Used in Calculation.

The calculations were carried out using mathematical models and the methodology defined in the Greenhouse Gas Protocol in particular.

GHG Corporate Accounting and Reporting Standard and Scope 2 Guidance

GHG Scope 2 Guidance

GHG Technical Guidance for Calculating Scope 3 Emissions

The Carbon Conversion Factors published annually by DEFRA on behalf of the UK government.

https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023

https://www.ons.gov.uk/economy/environmentalaccounts/datasets/ukenvironmentalaccountsatmospheremissionsgreenhousegasemissionsbyeconomicsectorandgasunitedkingdom

The Greenhouse Gas Protocol has been developed between The World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

Greenhouse Gas Protocol | (ghgprotocol.org)

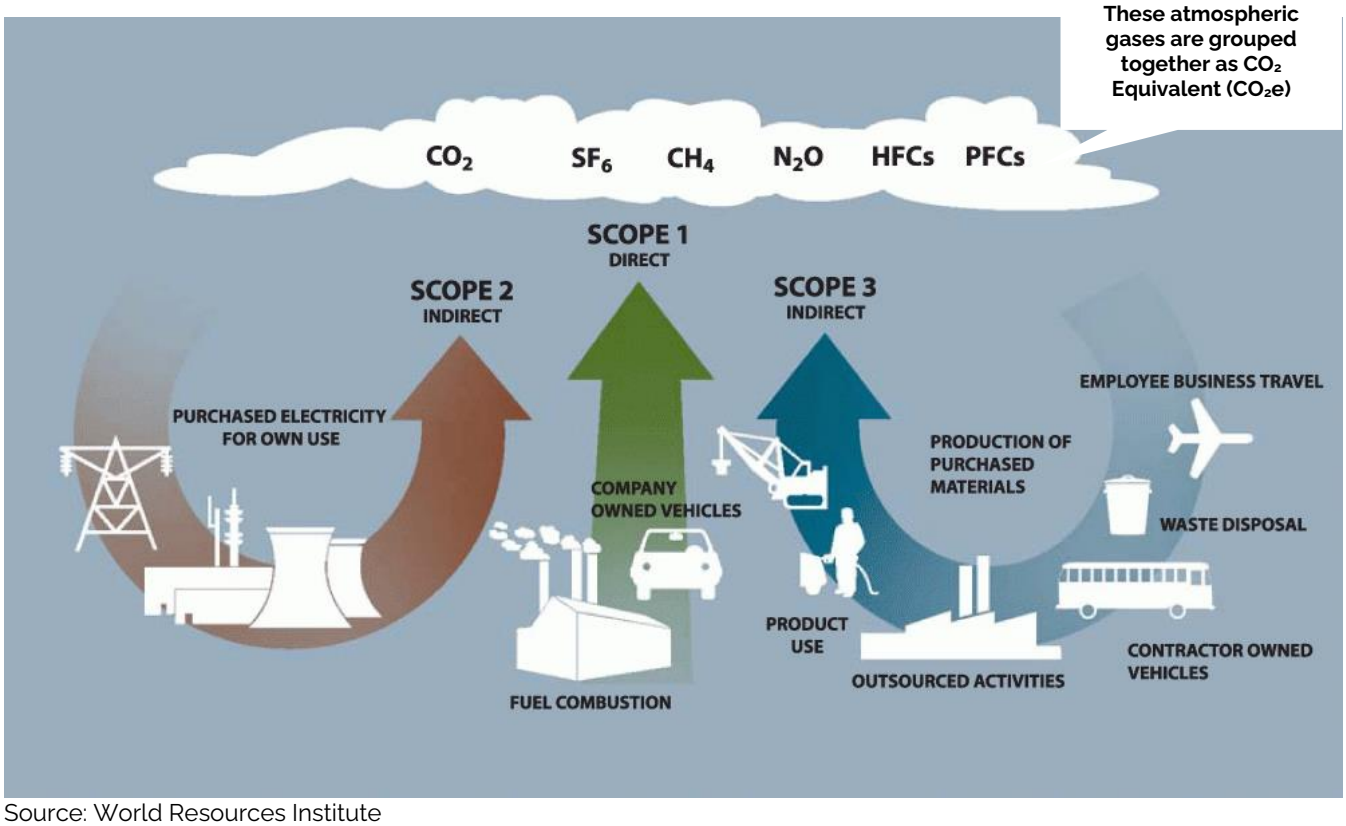
The calculations were performed using Carbon Lens's specialist emission calculation tool (DataCollator) aligned with the above protocols.

Science-Based Targets Initiative

Ambitious corporate climate action - Science-Based Targets

APPENDIX B – Emissions Scopes Explained.

Emission scopes are defined by the internationally accepted Greenhouse Gas Protocol. The protocol has been developed in many years' cooperation with The World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). They are based on an assessment of which emissions from operations that can be directly controlled and those which can merely be influenced.



Source: World Resources Institute

SCOPE 1	SCOPE 2	SCOPE 3
Company Facilities Company Vehicles Fugitive Emissions	Purchased Electricity Steam Heating Cooling	Purchased Goods & Services Business Travel Capital Goods Employee Commuting Waste Use of Sold Products Transport & Distribution Leased Assets Water

APPENDIX C - Glossary.

Term	Description
Absolute Reduction	The actual reduction in emissions
Base Year	A historical datum (e.g., year) against which a company's emissions are tracked over time.
Base Year Emissions	GHG emissions in the base year.
Baseline	A hypothetical scenario for what GHG emissions would have been in the absence of a GHG project or reduction activity.
Business Travel	Transportation of employees for business-related activities.
Capital Goods	Final goods that have an extended life and are used by the company to manufacture a product, provide a service, or sell, store, and deliver merchandise. In financial accounting, Examples of capital goods include equipment, machinery, buildings, facilities, and vehicles.
Carbon Footprint	The total greenhouse gas (GHG) emissions caused by an individual, event, organization, service, place, or product, expressed as carbon dioxide equivalent (CO2e).
Carbon Intensity	A measure of carbon emission against a variable of business operations such as turnover, output or staff.
Carbon Neutral	A measure of the carbon emissions that are emitted over the full life cycle of a product or service and usually expressed as grams of CO2-e.
Circular Economy	A circular economy tries to break that cycle of make-use-dispose with adaptive reuse
CO_2e CO_2 Equivalent	The universal unit of measurement to indicate the global warming potential (GWP) of each greenhouse gas, expressed in terms of the GWP of one unit of CO_2.
Direct Emissions	Emissions from sources that are owned or controlled by the reporting company.
Downstream Emissions	Indirect GHG emissions from sold goods and services.
Embodied Carbon	The emissions that result from the entire project
Emission Factor	A factor that converts activity data into GHG emissions data (e.g., kg CO2e emitted per litre of fuel consumed, kg CO2e emitted per Kilometer travelled, etc.).
Employee Commuting	Transportation of employees between their homes and their worksites.
Environmental Product Declaration (EPD)	A document that quantifiably demonstrates the environmental impacts of a product.
Equity Share Approach	A consolidation approach whereby a company accounts for GHG emissions from operations according to its share of equity in the operation.

Term	Description
Extrapolated Data	Data from a similar process or activity that is used as a stand-in for the given process or activity and has been customized to be more representative of the given process or activity.
Global Warming Potential	A factor describing the radiative forcing impact (degree of harm to the atmosphere) of (GWP) one unit of a given GHG relative to one unit of CO2
Greenhouse Gas	Gasses contributing to global warming. Seven gases, Carbon Dioxide (CO2); Methane (CH4); Nitrous Oxide (N2O); Hydrofluorocarbons (HFCs); Perfluorocarbons (PFCs); Sulphur Hexafluoride (SF6), and Nitrogen Trifluoride (NF3).
Greenhouse Gas Inventory	A quantified list of an organization's GHG emissions and sources.
Greenwashing	PR tactic used to make a company or product appear environmentally friendly, without meaningfully reducing its environmental impact.
Indirect Emissions	Emissions that are a consequence of the activities of the reporting company but occur at sources owned or controlled by another company.
Indirect GHG Emissions	Emissions that are a consequence of the operations of the reporting company, but occur at sources owned or controlled by another company. This includes Scope 2 and Scope 3.
Life Cycle Assessment (LCA)	Total emissions from the inputs and outputs throughout a product's life cycle. From the moment it was created to the moment it has decayed.
Location-Based Method	A method to quantify Scope 2 GHG emissions based on average energy generation emission factors for defined locations.
Market-Based	A method to quantify Scope 2 GHG emissions based on GHG emissions emitted by the generators from which the reporter contractually purchases electricity.
Net Zero	A state in which the greenhouse gases going into the atmosphere are balanced by removal from the atmosphere.
Offsetting	The action or process of compensating for carbon dioxide emissions arising from industrial or other human activity, by participating in schemes designed to make equivalent reductions of carbon dioxide in the atmosphere.
Proxy Data	Data from a similar process or activity that is used as a stand-in for the given process or activity without being customized to be more representative of the given process or activity.
Reporting Year	The year for which emissions are reported.
Scope 1 Emissions	Emissions from operations that are owned or controlled by the reporting company.

Term	Description
Scope 2 Emissions	Indirect emissions from the generation of purchased or acquired electricity,
Scope 3 Emissions	All indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.
Secondary Data	Data that is not from specific activities within a company's value chain.
Supply Chain	A network of organizations (e.g., manufacturers, wholesalers, distributors, and retailers) involved in the production, delivery, and sale of a product to the consumer.
Upstream Emissions	Indirect GHG emissions from purchased or acquired goods and services.
Value Chain	all of the upstream and downstream activities associated with the operations of the reporting company, including the use of sold products by consumers and the end-of-life treatment of sold products after consumer use.
Value Chain Emissions	Emissions from the upstream and downstream activities associated with the operations of the reporting company.
Waste	An output of a process that has no market value.