



Greenhouse Gas Emissions Inventory for Eqonic Group Limited 2024-2025

Prepared in accordance with GHG Protocol

Reporting Period : 01/02/2024 to 31/01/2025
Prepared by : Eqonic Sustainability Ltd
Date : December 2025

1. Introduction

Eqonic Group is a British battery technology innovator. It delivers advanced battery energy storage systems and renewable energy generation solutions. The firm collaborates with leading UK Universities to develop their next generation batteries which are free from lithium, cobalt and rare earth metals. Eqonic also supplies lithium iron phosphate based battery energy storage systems, inverters and solar panels. The batteries and inverters are manufactured for Eqonic by established manufacturers under the Eqonic brand. The solar panels are sourced from leading Tier 1 solar panel manufacturers.

The Group has an office in South Midlands and a serviced office in London. One of Eqonic's employees works from home. Eqonic Group has three main divisions:

1. Eqonic Innovations which develops new battery technologies from the ground up without the need for lithium, cobalt, sodium or rare earth metals.
2. Eqonic Products and Services which supplies a wide range of lithium iron phosphate (LFP) technology-based battery energy storage systems for the residential, commercial and industrial built environment sectors. Eqonic also engages in projects to provide batteries for other uses such as UGVs (unmanned ground vehicles), EVs and portable power solutions.
3. Eqonic+ which arranges the financing of our batteries via selected banks and other financial institutions.

This Greenhouse Gas emissions report reflects Eqonic Group's commitment to transparency, carbon accountability and continuous progress towards Net Zero.

2. Methodology and Definitions

2.1. Methodology

This is Eqonic's first GHG emissions report. It covers scope 1, 2 and 3 emissions. It is prepared in alignment with the GHG Protocol.

The reporting period covered by this inventory is 01/02/2024 to 31/01/2025. This year has been chosen as Eqonic has a good amount of emissions data for this year.

Regarding organisational boundaries, this report has taken Operational Control as its consolidated approach. This means the firm accounts for 100% of the GHG emissions over which it has operational control. It does not account for GHG emissions from operations in which it owns an interest but does not have operational control. It includes Eqonic's South Midlands based leased office, as Eqonic has the authority to introduce and implement operating policies there, and electricity in the office is sub-metered. However, this report doesn't include the labs it rents at a

university, which it uses for battery testing and R&D projects sometimes. This report also doesn't include emissions from the serviced office in London, which is used by Eqonic occasionally or from a warehouse that the company uses to store stock occasionally, as Eqonic doesn't control the energy or policies for these buildings.

This report includes emissions for all seven types of greenhouse gases, namely carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆), and nitrogen trifluoride (NF₃). These emissions have been converted to their CO₂ equivalent using the Intergovernmental Panel on Climate Change (IPCC) 2021 Global Warming Potential (GWP).

This report predominantly uses the 2024 UK Government Greenhouse Gas (GHG) emissions factors published by the Department for Energy Security and Net Zero (DESNZ) to calculate emissions.

To calculate lifecycle emissions of the solar panels, batteries and inverters supplied by Eqonic the report takes its emissions factors from these academic studies:

- 1) "CO₂ Emissions of silicon photovoltaic modules- Impact of module design and production location" Fraunhofer Institute of Solar Energy Systems ISE, Germany, September 2022
- 2) Peiseler, L, Schenker, V et al, "Carbon footprint distributions of lithium-ion batteries and their materials", from Nature Communications, November 2024
- 3) Dodd, N and Espinosa, N, "Preparatory study for solar photovoltaic modules, inverters and systems" 2018

Scope 2 emissions are reported using both the location-based and market-based methods in line with the GHG Protocol Scope 2 Guidance. Our headline Scope 2 emissions are presented on a market-based basis, reflecting our procurement of renewable electricity. Location-based emissions are disclosed to support transparency and comparability.

A third party verification has not been sought for this report so far. A 5% significance threshold for recalculation has been set for this report.

The report includes the following Scope 3 categories: 2, 3, 5, 6 and 7. Categories 8-14 either did not apply or weren't material. Scope 1 data was not available. Eqonic doesn't have enough accurate waste data to calculate category 4.

2.2. Definitions

GHG: Greenhouse Gases

GWP: Global Warming Potential

REGO certificates: Renewable Energy Guarantees of Origin. These certificates prove that electricity has been generated from renewable sources such as wind, solar or hydropower. Each certificate represents one megawatt- hour (MWh) of renewable energy produced.

Scope 1 emissions: Direct GHG emissions that occur from sources that are owned or controlled by the reporting company. For example, emissions from stationary combustion in owned or controlled boilers, or mobile combustion from company cars, process emissions from physical or chemical processing or fugitive emissions from equipment leaks or air conditioning or refrigeration equipment.

Scope 2 emissions: Indirect emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company.

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. For example the production of purchased products, transportation of purchased products, or use of sold products

WTT: Well-to-tank. This refers to the upstream emissions from extracting/producing/refining and transporting a fuel or energy carrier before it's burned/used.

The graphic below explains how GHG Protocol defines the different emissions scopes.

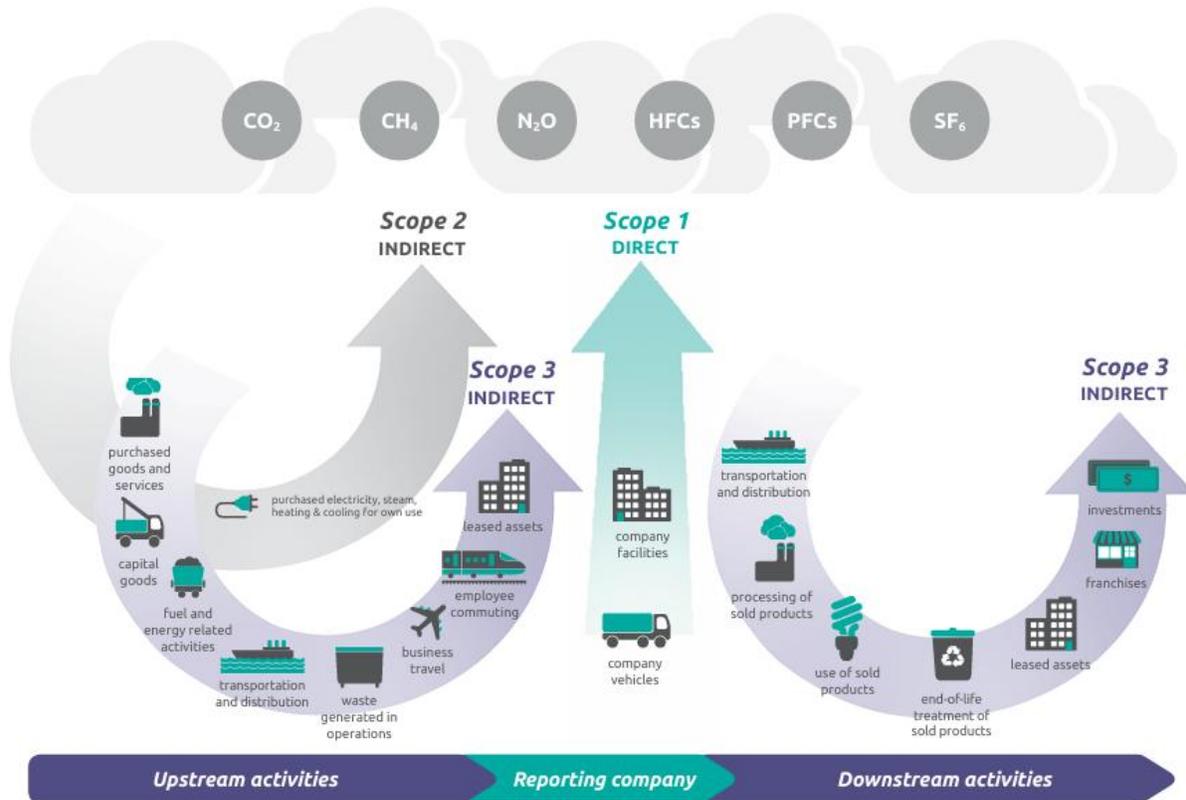


Figure 1 GHG Protocol Emission Scopes

3. Additional Information

Eqonic's office in South Midlands is powered by electricity only and uses Crown Gas & Power's Standard Electricity product. This was powered entirely by wind energy. Their renewable electricity supply is backed by REGO (Renewable Energy Guarantees of Origin) certificates, ensuring it is genuinely zero-carbon at the point of use. The Eqonic office is heated by electric wall mounted panel heaters.

Air-Conditioning units at the Eqonic office are supplied by two Windex chillers, which provide chilled water to the building's air conditioning units.

Eqonic shares its office complex in the South Midlands with several other companies, therefore to calculate aircon emissions from the shared chiller unit we have divided the size of the Eqonic office- 44.5 sq. metres by the total area measurement for the whole building which is 3,539.03 sq. metres.

The Eqonic office building holds a B rated EPC.

Glass, plastic, cardboard and food from our office is all recycled. Non-recyclable residues are sent to a waste to energy plant.

Recently LED lights have been added throughout our office complex and the wall mounted electric panel heaters have been replaced. Washrooms and shower facilities have been refurbished which has more than halved water consumption. Onsite EV charging has been installed.

4. Carbon Footprint Report

GHG emissions table for period 1st February 2024 to 31st January 2025

Table 1: Base Year Emissions 1-3 by scope.

Emission Source	Unit	Total	kg CO ₂ e	tCO ₂ e	Notes
Scope 1					
Stationary combustion: Emissions from combustion in stationary sources (e.g. oil or gas from boilers, furnaces, and turbines)	kg	0	0	0	Eqonic's office runs entirely on electricity and has no gas or oil supply
Mobile combustion: Emissions from combustion of fuels in transportation	kg	0	0	0	Eqonic has no company cars
Process emissions: Emissions from physical or chemical processing	kg	0	0	0	Until March 2025 Eqonic paid a University to do the testing of their batteries, Eqonic doesn't have operational control over the University labs
Fugitive emissions: (e.g., equipment leaks; emissions from the use of refrigeration and air conditioning equipment; and methane leakages from gas transport)	kg	1.91	3,104	3.10	These emissions relate to Eqonic's two shared Windex Chillers
Total Scope 1 Emissions		1.91	3,104	3.10	

Emission Source	Unit	Total	kg CO2e	tCO2e	Notes
Scope 2					
Location-based electricity	kWh	4,084	846	0.85	
Market-based electricity (reflecting emissions from electricity that the company has purposefully chosen via bundled or unbundled certificates (renewable tariffs, REGO-backed supply))		0	-	0	100% of Eqonic's electricity emissions are matched with valid REGOs
Total Scope 2 Emissions			-	-	

Emission Source	Unit	Total	kg CO2e	tCO2e	Notes
Scope 3					
Category 1-Purchased Goods and Services					Not available
Total Category 1			0	0	
Category 2-Capital Goods					
Batteries	Battery Total (kWh)	389	24,125	24.13	
Solar Panels	PV System Size (kWp)	136	109,933	109.93	
Inverters	PV System Size (kg)	763	6,600	6.60	
Total Category 2			140,659	140.66	
Category 3-Fuel- and Energy-Related Activities					
Emission Factor Transmission and Distribution losses	kWh	4,084	75	0.07	
WTT Business Travel- Diesel Car	Km	805	33	0.03	
WTT Business Travel - Hybrid Car	Km	9,656	250	0.25	

WTT Business Travel - Petrol Car	Km	7,725	354	0.35	
WTT Business Travel - National Rail	Km	7,478	67	0.07	
WTT Employee Commuting- Car diesel	Km	18,926	785	0.79	
WTT Employee Commuting- Car hybrid	Km	9,463	245	0.24	
WTT Employee Commuting- Car petrol	Km	3,944	181	0.18	
WTT Employee Commuting- bus	Km	11,086	356	0.36	
WTT Employee Commuting- taxi	Km	2,366	122	0.12	
Total Category 3			2,469	2.47	
Category 4-Upstream Transportation and Distribution					
Transport by sea from China to the United Kingdom	Km	17,889	285	0.29	
Transport by sea from the Netherlands to the United Kingdom	Km	243	26	0.03	
Total Category 4			312	0.31	
Category 5-Waste Generated in Operations					Our shared office building doesn't keep this information
Total Category 5			0	0	
Category 6-Business Travel					
Business Travel- Car diesel	Km	805	167	0.17	
Business Travel- Car hybrid	Km	9,656	830	0.83	
Business Travel- Car petrol	Km	7,725	1,348	1.35	
Business Travel- Train	Km	7,478	265	0.27	
Hotels	Nights	3	31	0.03	
Total Category 6			2,642	2.64	
Category 7-Employee Commuting					

Employee Commuting- Car diesel	Km	18,926	3,923	3.92	
Employee Commuting- Car hybrid	Km	9,463	1,465	1.47	
Employee Commuting- Car petrol	Km	1,578	280	0.28	
Employee Commuting- bus	Km	13,452	1,459	1.46	
Employee Commuting- taxi	Km	2,366	492	0.49	
Employee Working from Home	Hours	1,920	641	0.64	
Total Category 7			8,260	8.26	
Category 8-Upstream Leased Assets				N/A	
Category 9-Downstream Transportation and Distribution				N/A	
Category 10-Processing of Sold Products				N/A	
Category 11-Use of Sold Products				N/A	
Category 12-End-of-Life Treatment of Sold Products				N/A	Our first projects were finished in 2020, we don't have products at the end of their life yet.
Category 13-Downstream Leased Assets		N/A		N/A	
Category 14-Franchises		N/A		N/A	
Category 15-Investments		N/A		N/A	
Total Scope 3 Emissions				154.34	

Emission Source	Unit	Total	kg CO2e	tCO2e	Notes
Total Scopes 1, 2 and 3			158,291	158.29	
Total tCO2e per Employee			26,382	26.38	

A note on electricity calculation methodology: a location-based method reflects the average emissions intensity of grids on which energy consumption occurs, using mostly grid-average emission factor data. A market-based method, on the other hand, reflects emissions from the electricity that companies have purposefully chosen. The GHG Protocol requires both methods to be included in emissions reporting.

5. Results and Analysis

Table 2: Summary of Emissions by Scope

Total Emissions	Total Emissions/ Tonnes	Percentage
Scope 1- Direct GHG emissions that occur from sources that are owned or controlled by the reporting company	3.10	2
Scope 2- Indirect emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company	0	-
Scope 3- All indirect emissions (not included in scope 2) that occur in the value chain of the reporting company	154.34	98

Table 3: Summary of Scope 3 Emissions

Total Emissions	Total Emissions/ Tonnes	Percentage
Scope 3- Category 2-Capital Goods	140.66	91
Scope 3- Category 3- Fuel- and Energy-Related Activities	2.47	2
Scope 3- Category 4- Upstream Transportation and Distribution	0.31	0
Scope 3- Category 6- Business Travel	2.64	2
Scope 3- Category 7- Employee Commuting	8.26	5
Total	154.34	

Figure 2: Total Emissions by Scopes t/CO₂e

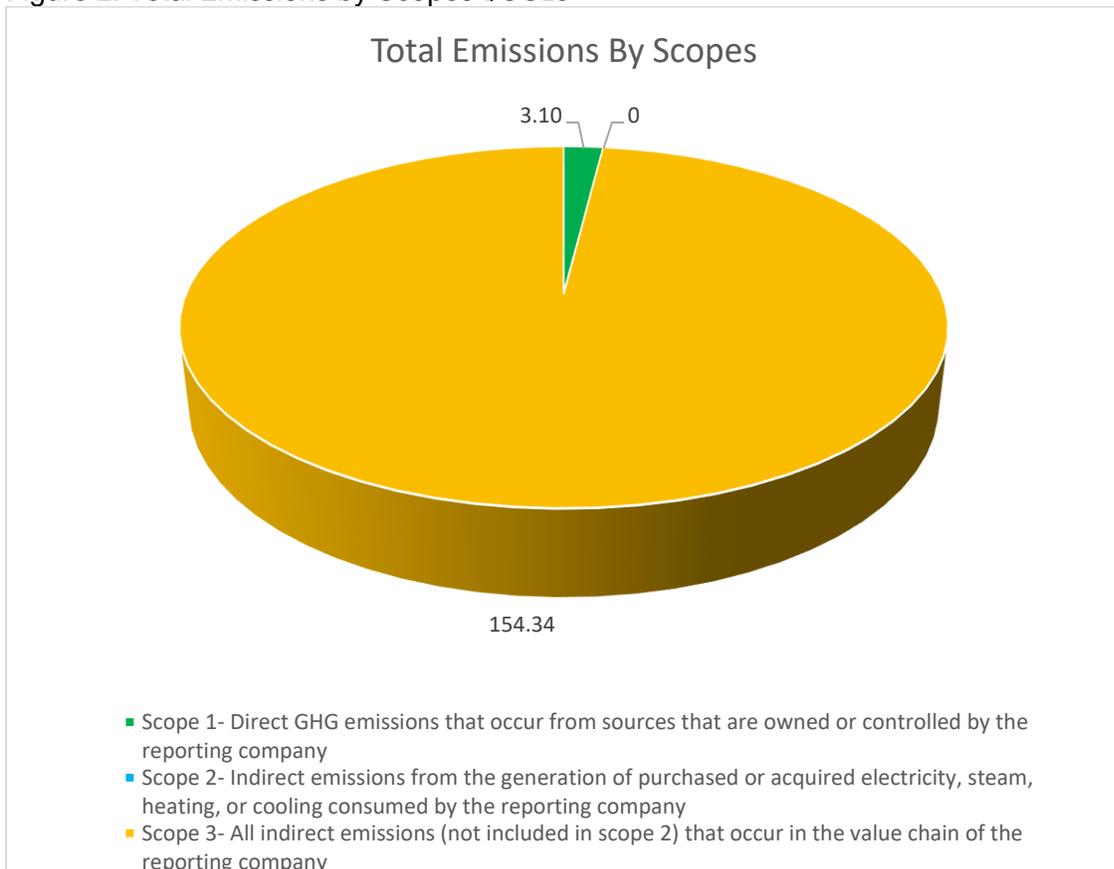
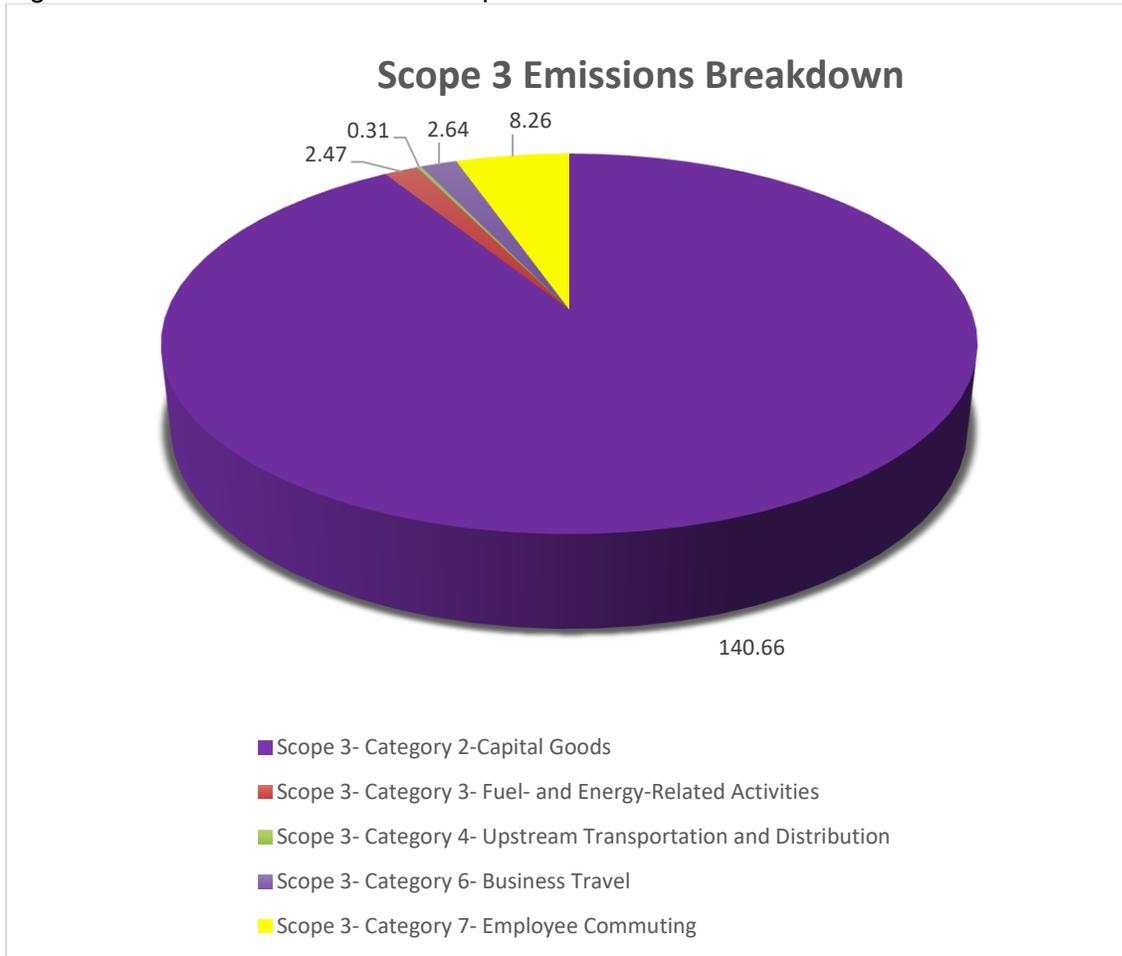


Figure 3- Emissions Breakdown- Scope 3 t/CO2e



Conclusion

As shown in Table 2 above, 98% of Eqonic Group’s emissions relate to its Scope 3 value chain emissions. Of its scope 3 emissions, its solar panels, batteries and inverters, which are categorised under Capital Goods, make up 91% of its scope 3 emissions.

The Chinese-branded solar panels purchased by Eqonic account for approximately 78% of its Scope 3 emissions from capital goods, a significant portion for a British battery technology company. Solar panels made in China typically have much higher embodied emissions compared to their European counterparts, largely due to the coal-intensive electricity used during

production. In Christian Reichel's, "CO₂ Emissions of silicon photovoltaic modules- Impact of module design and production location" paper he suggest that solar panels produced in the EU or Germany cause 41% and 28% respectively less CO₂ emissions than those produced in China (480 and 510 kg versus 810 kg CO₂-eq/kWp) ². Eqonic could consider sourcing more solar panels from European manufacturers. However, this strategy would need to be weighed against cost pressures, as Chinese-made panels are typically much cheaper than those produced in Europe.

Employee commuting made up around 5% of Eqonic's scope 3 emissions, 47% of these emissions related to one diesel car, these emissions could be reduced significantly by switching to an electric or hybrid vehicle.

It is interesting to note that the emissions from one employee working from home for the year from heating and office equipment were double the emissions compared to an employee who drove a petrol car to the office a few miles every working day, based on the UK Government Greenhouse Gas emissions factors.

References

1. UK Government Greenhouse Gas (GHG) emissions factors published by the Department for Energy Security and Net Zero (DESNZ). [Greenhouse gas reporting: conversion factors 2024 - GOV.UK](#) for most emission factors.
2. Reichel, C, Muller, A et al, “CO₂ Emissions of silicon photovoltaic modules- Impact of module design and production location” Fraunhofer Institute of Solar Energy Systems ISE, I, September 2022 [Reichel_5DV234 \(1\).pdf](#), to calculate lifecycle emissions from our solar panels
3. Peiseler, L, Schenker, V et al, “Carbon footprint distributions of lithium-ion batteries and their materials”, from Nature Communications, November 2024 [Carbon footprint distributions of lithium-ion batteries and their materials | Nature Communications](#) to calculate emissions for our batteries
4. Dodd, N and Espinosa, N, “Preparatory study for solar photovoltaic modules, inverters and systems” Joint Research Centre (JRC), the European Commission’s science and knowledge service, 2018 https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/contentype/product_group_documents/1581689975/DraftReport_Task5.pdf To calculate emissions from our inverters.