8th April 2025

Corporate Carbon Footprint 2024

Energy Changes

Table of Contents

1. Executive Summary

Energy Changes aims to understand its impact and contribution to climate change by measuring its Carbon Footprint for the year 2024.

This report presents the results of the greenhouse gas (GHG) emissions inventory for the year 2024, covering the relevant scopes. The objective is to identify the main GHG emitting activities and based on the results, provide recommendations for emission reduction strategies.

The information used in this report covers the period from January 1, 2024, to December 31, 2024.

1.1. Methodology

The methodological guidelines used for calculating the Corporate Carbon Footprint were developed primarily based on the GHG Protocol Standard and the GHG Protocol Scope 3 Standard.

For the purpose of the GHG emissions inventory, the organizational boundaries of Energy Changes include its main office located in Vienna, Austria.

1.2. Results

The total GHG emissions generated by Energy Changes' activities during 2024 were:

43 tonnes of CO_2e

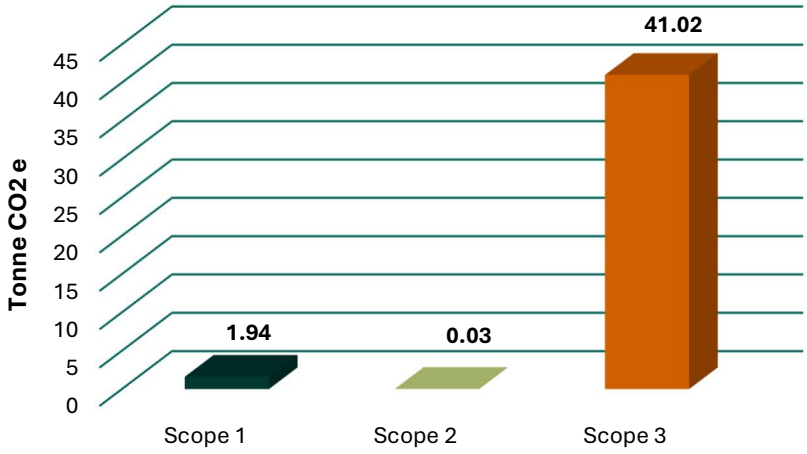

***Figure 1**:* Energy Changes 2024 GHG Emissions by Scope

Where:

- **Scope 1**: Direct GHG emissions and removals, representing 4.52% of total emissions (1.94 tCO_2e).
- **Scope 2**: Indirect GHG emissions from purchased electricity (market-based), accounting for 0.08% (0.03 tCO_2e).
- **Scope 3**: Other indirect GHG emissions, representing the majority with 95.40% (41.02 tCO_2e).

Figure 2 highlights the two main sources of GHG emissions, which together account for over 93% of the total:

- **Primary source**: Business travel primarily due to air travel, contributing 82% (35.10 tCO_2e) of total emissions.
- **Second source**: Fuel- and energy-related activities mainly due to air travel fuel production, contributing 11% (4.61 tCO_2e) of the total.

	
82%	11%
Business travel	Fuel-and energy-related activities

***Figure 2**:* Main Sources of GHG Emissions

2. General Description of the Organization's Inventory

2.1. General Description of the Company

Energy Changes Projektentwicklung GmbH, or Energy Changes, is a climate and sustainability advisory and project development firm based in Vienna, Austria. Since 2006, the company has been focused on identifying, designing, and developing projects that reduce or avoid greenhouse gas emissions while delivering positive sustainable development benefits to local communities.

The company operates a single main office, located in the 1st district of Vienna, which houses a team of 8 permanent employees.

2.2. Selection of Base Year

The base year represents a specific point in time used for comparing GHG emissions across a time series.

Energy Changes began measuring its Corporate Carbon Footprint in 2023. However, due to methodological and calculation changes, it is recommended to update the base year to 2024.

2.3. GHG Included

Three greenhouse gases were identified as contributors to Energy Changes' Carbon Footprint:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)

3. System Boundaries

3.1. Organizational Boundaries

The organizational boundaries for Energy Changes' GHG emissions inventory include its main office located in Vienna's First District, Austria.

The consolidation method applied is the **operational control approach**, meaning that 100% of the emissions associated with the headquarters are included in this inventory, as this facility is fully operated and managed by Energy Changes.

3.2. Operational Boundaries

Energy Changes is accounting for its GHG emissions across Scope 1 (direct), Scope 2 (indirect from energy), and the entirety of Scope 3 (other indirect). The following classification reflects the relevant operational activities included in the calculation:

- Scope 1: Direct emission from office facilities (heating) and purchased fuel for vehicles.[1]
- Scope 2: Indirect emissions from purchased electricity for office facilities.
- Scope 3: Other indirect emissions from:
  - Category 1: Purchased goods and services
  - Category 2: Capital goods
  - Category 3: Fuel- and energy-related activities
  - Category 4: Upstream transportation and distribution
  - Category 5: Waste generated in operations
  - Category 6: Business travel
  - Category 7: Employee commuting

4. Quantified GHG Emissions and removals Inventory

4.1. Calculation Principles

In alignment with the GHG Protocol Standard and the GHG Protocol Scope 3 Standard, this report has been developed in accordance with the following principles, ensuring that the GHG information presented is true, fair, and reliable:

Relevance: All GHG emission sources necessary to meet the needs of the intended users have been identified, quantified, and reported.

Completeness: The inventory includes all relevant direct emissions (Scope 1) as well as indirect emissions (Scopes 2 and 3).

Consistency: To ensure that the inventory results are comparable over time, with each other and with the base year, the report clearly documents the inventory scope, calculation methodologies, exclusions, limitations, and any other factors relevant to the time series.

Transparency: The information presented is clear, neutral, and easy to understand. It is based on robust documentation and auditable data, with sources, references, and methodologies fully disclosed.

Accuracy: The calculations are performed with sufficient precision to support informed decision-making with a reasonable level of confidence. Additionally, the report includes an uncertainty assessment.

4.2. Calculation Methodology

The Carbon Footprint has been developed in accordance with the guidelines set by the GHG Protocol Standard and the GHG Protocol Scope 3 Standard.

GHG emissions were calculated by multiplying the activity data that quantifies each emission source (see **Table 1**) by the corresponding emission factor (see **Table 2**).

[1] Cooling equipment were identified but excluded from the calculation, as there were no refills in 2024.

The individual emissions of each GHG from the sources in Scope 1 and Scope 2 were then multiplied by the Global Warming Potential (GWP) of each gas (see **Table 3**) in the subsequent step to convert them into CO_2 equivalents (CO_2e).

4.2.1. Activity Data

Table 1 presents the activity data used in the calculation of Energy Changes' inventory. The company itself provided the data required to quantify each activity contributing to emission sources, including direct data for Scope 1, Scope 2, and Scope 3 emissions.

Scope	Emission source	Activity data	Unit	Additional information	Data source
1	Fuel consumption in owned or controlled vehicles	Fuel consumption	Liters	Fuel type	Provided by Energy Changes
	Fuel consumption in owned or controlled stationary equipment	Fuel consumption	Kilowatt-hours (kWh)	Fuel type	Provided by Energy Changes
2	Purchased electricity	Quantity of kilowatt-hours consumed	Kilowatt-hours (kWh)	Electricity source	Provided by Energy Changes
3	Purchased goods and services	Quantity of materials consumed	Kilograms (Kg)	Material type	Provided by Energy Changes
	Capital goods	Quantity of purchased goods	Pieces (P)	Type of purchased good	Provided by Energy Changes
	Fuel- and energy-related activities	Fuel consumption	Litters; Kilowatt-hours (kWh); kilometre (Km); Passenger kilometre (pkm)	Fuel type	Provided by Energy Changes
	Upstream transportation and distribution	Transportation of good and materials from the production site to the point of use	Kilograms (Kg)	Type of vehicle, transport distance, load weight	Provided by Energy Changes
	Waste generated in operations	Quantity of waste generated	Kilograms (Kg)	Type of waste	Provided by Energy Changes
	Business travel	Land, air transportation, and overnight stays for	kilometre (Km); Passenger. kilometre (pkm); days	Transportation type, Hotel country and ranking;	Provided by Energy Changes

Scope	Emission source	Activity data	Unit	Additional information	Data source
		work purposes.			
	Employee commuting	Daily commute of employees from home to work and vice versa. Home office time.	kilometre (Km); Passenger. kilometre (pkm); Home office hours	Transportation type	Provided by Energy Changes

***Table 1**:* Description of activity data used, along with their units and sources.

4.2.2. Emission Factors

Emission factors are numerical values that link activity levels with the amount of a specific chemical compound emitted by a source. The emission factors used in this calculation are shown in **Table 2**.

Scope	Emission Source	Description	Value	Unit	Source
1	Fuel consumption in owned or controlled vehicles	Diesel[2]	2.4716	kg CO2/L	Umweltbundesamt[3]
		Diesel[2]	1.85E-05	kg CH4/L	
		Diesel[2]	1.11E-04	kg N2O/L	
		Biodiesel[4]	0.1458	kg CO2/L	
		Biodiesel[4]	2.29E-06	kg CH4/L	
		Biodiesel[4]	8.57E-06	kg N2O/L	
	Fuel consumption in owned or controlled stationary equipment	CNG	0.1951	kg CO2/kWh	Umweltbundesamt[3]; IPCC 2006[5]
		CNG	1.76E-05	kg CH4/kWh	
		CNG	3.52E-07	kg N2O/kWh	
2	Purchased electricity	Electric power generation, accounting for transmission and distribution losses	0.1646	t CO2e/MWh	Umweltbundesamt[3]
			5.20E-05	t CH4/MWh	
			3.00E-06	t N2O/MWh	
3	Purchased goods and services	Copy Paper	1044.318	kgCO2e/tonnes	DEFRA 2024[6]
		High quality paper	1339.318	kgCO2e/tonnes	
	Capital goods	Laptop	172	kgCO2e/item	Ecoinvent 3.8, SimaPro 9.4.0.1
		Cell phone	37.7	kgCO2e/item	
	Fuel- and energy-related activities	WTT (Well-to-Tank) CNG	0.049	kgCO2e/kWh	DEFRA 2024[6]
		WTT Diesel	0.074	kgCO2e/kWh	
		WWT electricity Austria	0.042	kgCO2e/kWh	
		WTT Air travel economy	0.017	kgCO2e/p.km	

[2] 94.3% of diesel considered
[3] https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0948.pdf
[4] 6.6% of biodiesel considered
[5] IPCC 2006. Vol 2 -Stationary Combustion
[6] https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024

		WTT Air travel premium	0.026	kgCO2e/p.km	
		WTT EC - Car (diesel)	0.041	kgCO2e/km	
		WWT EC- tram	0.007	kgCO2e/p.km	
		WWT EC - Metro	0.007	kgCO2e/p.km	
		WWT EC - Bus	0.026	kgCO2e/p.km	
		WWT EC - Train	0.009	kgCO2e/p.km	
		WTT EC - Car (diesel)	0.074	kgCO2e/kWh	
	Upstream transportation and distribution	Van transport	0.612 0.000 0.004	kg CO2/ t.km kg CH4/ t.km kg N2O/ t.km	
	Waste generated in operations	Plastic and glass- landfilled	8.884	kgCO2e/tonnes	DEFRA 2024[6]
		Waste recycled	6.411	kgCO2e/tonnes	
		Paper- landfilled	1164.390	kgCO2e/tonnes	
		General waste- landfilled	497.044	kgCO2e/tonnes	
	Business travel	Air- Economy	0.134 0.000 0.001	kg CO2/ p.km kg CH4/ p.km kg N2O/ p.km	DEFRA 2024[6]
		Air- Premium economy	0.214 0.000 0.001	kg CO2/ p.km kg CH4/ p.km kg N2O/ p.km	
		Hotel stay- Germany	13.200	kgCO2e/per night	
		Hotel stay- Italy	14.300	kgCO2e/per night	
		Hotel stay- Switzerland	6.600	kgCO2e/per night	
		Hotel stay- Thailand	43.400	kgCO2e/per night	
		Hotel stay- Turkey	32.100	kgCO2e/per night	
		Hotel stay- US	16.100	kgCO2e/per night	
		Hotel stay- Azerbaijan	45.000	kgCO2e/per night	
		Hotel stay- Tunisia	34.900	kgCO2e/per night	
		Hotel stay- Serbia	41.200	kgCO2e/per night	
		Hotel stay- Uzbekistan	46.200	kgCO2e/per night	
		Hotel stay- Romania	16.800	kgCO2e/per night	
	Employee commuting	Home office	0.031	kgCO2e/working hour	DEFRA 2024[6]
		Employee commuting - Car (diesel)	0.168 4.64E-06 1.67E-03	kg CO2/ pkm kg CH4/ pkm kg N2O/ pkm	
		Employee commuting - tram	0.028 1.20E-04 1.60E-04	kg CO2/ pkm kg CH4/ pkm kg N2O/ pkm	
		Employee commuting - Metro	0.028 1.10E-04 1.60E-04	kg CO2/ pkm kg CH4/ pkm kg N2O/ pkm	
		Employee commuting - Bus	0.108 1.00E-05 7.30E-04	kg CO2/ pkm kg CH4/ pkm kg N2O/ pkm	
		Employee commuting - Train	0.035 8.00E-05 2.80E-04	kg CO2/ pkm kg CH4/ pkm kg N2O/ pkm	

***Table 2**:* Description of emission factors used

4.2.3. GWP Values

To convert direct GHG emissions to CO_2e, the Global Warming Potentials (GWPs) from the IPCC AR6 were used for a 100-year time horizon, as shown in **Table 3**.

GHG	Global Warming Potential (100 years)
CO2	1
CH4 - fossil	29.8
CH4 - biogenic	27
N2O	273

***Table 3**:* Global warming potentials used

4.2.4. Exclusions

Refrigerant leaks from Scope 1 were excluded, as no refills occurred in 2024. Aside from this, all relevant emission sources from Scope 1, Scope 2, and Scope 3 were included.

4.2.5. Limitations

The following limitations were identified:

- For emissions associated with employee commuting, 47 weeks of work were considered.
- The quantities of waste generated by type are estimates, based on 2 kg of plastic per week, 5 kg of paper per week, 10 kg of general waste per week, and 2 kg of glass per week. A total of 52 weeks was considered, with 2% of the waste sent to a landfill, while the rest is incinerated or recycled[7].
- Purchased goods and services values were assumed to be the same as in 2023.
- For employee commuting and business travel, diesel cars were considered.
- For the upstream transportation and distribution emission source, a Van travel distance of 10 km (from the point of purchase to the office) is considered for purchased goods and capital goods.

4.2.6. Uncertainty

In accordance with the principle of accuracy in the estimation of GHG emissions reported in this report, a qualitative uncertainty assessment was conducted.

The following table presents the specification of activity levels, along with the qualitative assessment of uncertainty.

[7]https://www.eea.europa.eu/publications/many-eu-member-states/austria

Scope	Emission source	Activity level	Uncertainty
1	Fuel consumption in owned or controlled vehicles	Primary data	Reasonable
	Fuel consumption in owned or controlled stationary equipment	Primary data	Reasonable
2	Purchased electricity	Primary data	Reasonable
3	Purchased goods and services	Secondary data	Limited
	Capital goods	Primary data	Reasonable
	Fuel- and energy-related activities	Primary data	Reasonable
	Upstream transportation and distribution	Secondary data	Limited
	Waste generated in operations	Secondary data	Limited
	Business travel	Primary data	Reasonable
	Employee commuting	Primary data	Reasonable

***Table 4**:* Description of Data Quality

5. GHG Inventory Results

The Carbon Footprint has been calculated based on the information requested and provided for each GHG emission source, applying the relevant emission factors. The GHG emissions generated by Energy Changes' activities in 2024 were:

43 tonnes of CO_2e

Table 5 presents the GHG emissions by scope and source type, along with the percentage contribution of each source to the total Carbon Footprint. This breakdown reveals that air travel accounted for 71% of total emissions, followed by hotel stays at 11% and upstream emissions from fuel production for air travel at 9%.

Source of GHG emissions	TOTAL	Carbon Dioxide (CO_2)	Metane (CH_4)	Nitrous Oxide(N_2O)	Contribution (%)
	(tonnes CO2e/year)				
Total Corporate Carbon Footprint- Enegy Changes (market based)	43				
Scope 1- Direct GHG emissions	**1.9434**				
Fuel consumption in owned or controlled vehicles					
Fossil emissions	0.6345	0.6267	0.0001	0.0077	1.48%
Biogenic emissions	0.0006		0.0000	0.0006	0.00%
Fuel consumption in owned or controlled stationary equipment					
Fossil emissions	1.3083	1.3042	0.0035	0.0006	3.04%
Scope 2 - Indirect electricity GHG emissions (Location based)	**0.5738**				
Purchased electricity- location based	0.5738	0.5657	0.0053	0.0028	
Scope 2 - Indirect electricity GHG emissions (Market based)	**0.0344**				
Purchased electricity- market based	0.0344	0.0344			0.08%
Scope 3 - Other indirect GHG emissions	**41.0157**				
Category 1: Purchased goods and services	0.0559	0.0559			0.13%
Category 2: Capital goods	0.2097	0.2097			0.49%
Category 3: Fuel- and energy-related activities					
Scope 1 Upstream fuel	0.5115	0.5115			1.19%
Upstream electricity	0.1443	0.1443			0.34%
Upstream air travel	3.7295	3.7295			8.67%
Upstream commute	0.2273	0.2273			0.53%
Category 4: Upstream transportation and distribution	0.0003	0.0003	0.0000	0.0000	0.00%
Category 5: Waste generated in operations	0.0175	0.0175			0.04%
Category 6: Business travel					
Air travel	30.3231	30.1708	0.0020	0.1504	70.53%
Land travel	0.0389	0.0386	0.0000	0.0004	0.09%
Overnight stays	4.7420	4.7420			11.03%
Category 7: Employee commuting					
Office commute- Tram	0.1223	0.1211	0.0005	0.0007	0.28%
Office commute- Train	0.2667	0.2640	0.0006	0.0021	0.62%
Office commute- Car	0.2395	0.2371	0.0000	0.0024	0.56%
Office commute- Metro	0.1699	0.1682	0.0007	0.0010	0.40%
Office commute- Bus	0.1020	0.1013	0.0000	0.0007	0.24%
Home office	0.1153	0.1153			0.27%
Informative emissions					
Direct biogenic CO_2 emissions from biodiesel	0.0370				

***Table 5**:* Energy Changes Greenhouse Gas Inventory, 2024

Figure 3 illustrates the contribution of each identified emission source to Energy Changes' Corporate Carbon Footprint.

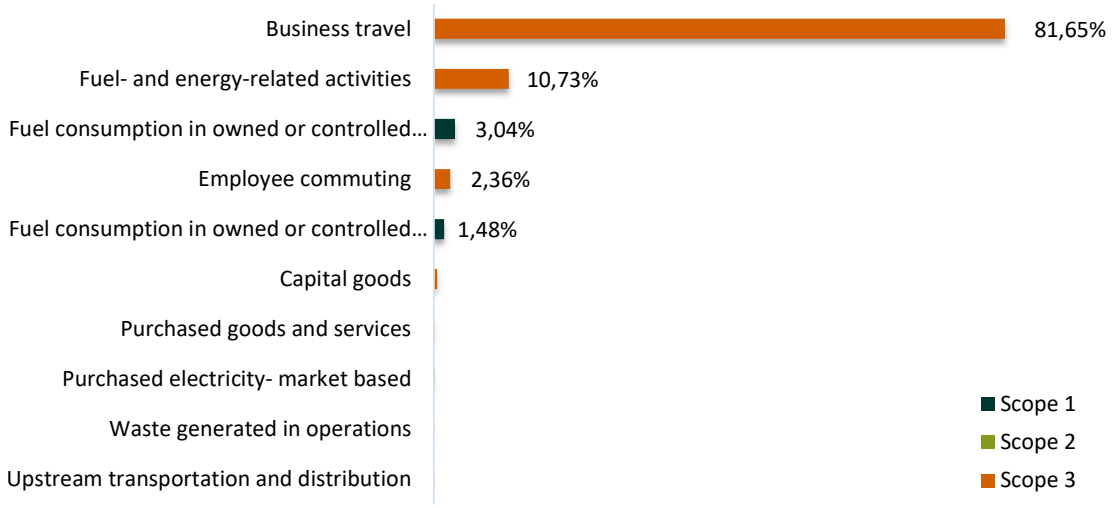

***Figure 3**: Share by emission source type, Energy Changes 2024*

In terms of contribution to total GHG emissions in 2024:

Scope 1 accounted for **4.52%**, **Scope 2** for **0.08%**, and **Scope 3** for **95.40%** of the total Carbon Footprint assessment.

Scope 1:

Within Scope 1 emissions, 67% resulted from the combustion of CNG in heaters, while the remaining 33% came from diesel combustion in vehicles.

Scope 2 and 3:

For Scope 2 and Scope 3, which include indirect emissions, 86% of the total came from business travel. Of this, 71% was attributed to air travel, followed by hotel overnight stays, which contributed 12% to total indirect emissions.

Summary of findings:

Overall, as seen in **Figure 3**, the business travel category is the main driver of emissions (with air travel being the largest contributor) accounting for 82% of total emissions. This is followed by fuel- and energy-related activities, primarily from the upstream production of aviation fuel, which contributes up to 11% to overall emissions.

6. General Recommendations

Based on Energy Changes' 2024 Corporate Carbon Footprint results, the following initiatives and actions are recommended to reduce emissions and improve overall environmental performance:

Scope 1:

- Optimize the use of heating, especially during office hours, and assess whether retrofitting through thermal renovation is a viable option for the building.
- Reduce fuel consumption for vehicles and opt for more sustainable transportation alternatives, such as public transport.

Scope 2:

- Analyse energy-efficient measures, such as replacing office lighting with LED bulbs.

Scope 3:

- For business travel, encourage employees to travel only when absolutely necessary. When travel is required, prioritize ground transportation, such as train travel. If air travel is unavoidable, opt for economy class over premium economy or business class. Additionally, prefer direct flights to those with multiple layovers.

7. Addressing our footprint

At Energy Changes, we identify, design, implement, register, and manage carbon projects which generate high integrity verified units which represent emissions avoidance or removals around the world. After implementing measures to reduce corporate emissions, we encourage all corporates to purchase and retire credits for their remaining emissions through high-integrity, credible carbon projects with verified positive climate impacts.

A buffer of 10% is applied to our overall carbon footprint to ensure that any uncertainties in the underlying data used to calculate our carbon footprint is taken into account. The total amount of credits retired includes our 10% buffer.

Total Scope 1-3 tCO2e	**43.57**
+ Buffer (10%)	**4.36**
Total retired amount tCO2e	**47.93**

Table 6: Total emissions including 10% Buffer

List of figures

List of tables