Carbon Accounting Report 2024

SpareBank 1 Sogn og Fjordane

This report provides an overview of the organisation's greenhouse gas (GHG) emissions, which is an integrated part of the organisation's climate strategy. GHG emission accounting is a fundamental tool in identifying tangible measures to reduce GHG emissions. The annual GHG emission accounting report enables the organisation to benchmark performance indicators and evaluate progress over time.

This report comprises the head office in Førde as well as the sales offices.

The input data is based on consumption data from internal and external sources, which are converted into tonnes CO2-equivalents (tCO2e). The GHG emissions analysis is based on the international standard, A Corporate Accounting and Reporting Standard, developed by the Greenhouse Gas Protocol Initiative (GHG Protocol). The GHG Protocol is the most widely used and recognized international standard for measuring greenhouse gas emissions and is the basis for the ISO standard 14064-I

Reporting Year Energy and GHG Emissions

Emission source	Description	Consumption	Unit	Energy (MWh)	Emissions tCO_2e	% share
Transportation total				**23.3**	**5.6**	**-**
Diesel (NO)		1,261.0	liters	12.4	2.8	-
Petrol		1,187.0	liters	11.0	2.8	-
Scope 1 total				**23.3**	**5.6**	**-**
Electricity total				**830.6**	**22.4**	**-**
Electricity Nordic mix		830,553.0	kWh	830.6	22.4	-
District heating location total				**315.3**	**0.6**	**-**
District heating NO/Bergen		285,883.0	kWh	285.9	0.4	-
District cooling NO/Bergen		29,400.0	kWh	29.4	0.2	-
District heating general total				**13.8**	**0.1**	**-**
Electric heat/cooling pump Nordic (output)		13,772.0	kWh	13.8	0.1	-
Scope 2 total				**1,159.6**	**23.2**	**-**
Purchased goods and services total				**-**	**21.8**	**-**
Debit card	plastic	5,401.0	Qty	-	0.2	-
Debit card, bioplastic		39,275.0	Qty	-	1.6	-
Office supplies incl paper		420,736.0	NOK	-	20.0	-
Capital goods total				**-**	**277.0**	**0.1 %**
Signs	Bank signs	1,097,794.0	NOK	-	28.5	-
Printed circuit and electronic assembly	installation of bank signs	112,061.0	NOK	-	1.2	-
Software		6,176,056.0	NOK	-	51.3	-
Office furniture	Pods	1,970,097.0	NOK	-	49.1	-
Office furniture	Office chairs	280,576.0	NOK	-	7.0	-
Office furniture	Staff cabinet	830,421.0	NOK	-	20.7	-
Office chair (A1-3)	Office chairs	80.0	Qty	-	10.1	-
Monitor 49''		147.0	Qty	-	102.3	0.1 %
Headphones, Jabra Evolve2 75 (A1-3)	Headset	9.0	Qty	-	0.1	-
Audio and video equipment	Conference equipment	286,449.0	NOK	-	2.4	-
Printer, laser, color	Printer	8.0	Qty	-	0.5	-
Laptop, HP 14 (A1-3)	Computer	25.0	Qty	-	3.9	-
Fuel-and-energy-related activities total				**-**	**6.0**	**-**
Diesel (WTT)	Diesel	1,261.0	liters	-	0.8	-
Petrol (WTT)	Gasoline	1,187.0	liters	-	0.7	-
Electricity Norway (upstream)		699,426.0	kWh	-	4.5	-
Upstream transportation and distribution total				**-**	**18.7**	**-**
Postal service	Postage	2,423,495.0	NOK	-	18.7	-
Waste total				**-**	**0.1**	**-**
Mixed waste, recycled		4,250.0	kg	-	-	-
Paper waste, recycled	Paper pulp	13,255.0	kg	-	0.1	-
Paper waste, recycled	Paper, cardboard, carton	945.0	kg	-	-	-
Plastic waste, recycled		95.0	kg	-	-	-
EE waste, recycled		620.0	kg	-	-	-

Business travel total				-	**47.2**	-
Air travel, domestic		37,727.0	$kgCO_2e$	-	37.7	-
Air travel, continental	Nordics and Europe	2,530.0	$kgCO_2e$	-	2.5	-
Mileage all. car (NO)	Fossil cars	26,114.0	km	-	1.7	-
Mileage all. el car Nordic	Electric cars	162,765.0	km	-	0.8	-
Hotel nights, Nordic		587.0	nights	-	4.4	-
Employee commuting total				-	**168.7**	**0.1 %**
Electric car Nordic		963,980.0	km	-	4.9	-
Car, diesel (avg.)		749,265.0	km	-	127.2	0.1 %
Car, Plug-in Hybrid Electric Vehicle (PHEV)		174,348.0	km	-	18.9	-
Bus (NO)		285,526.0	pkm	-	17.1	-
Ferry, foot passengers		22,833.0	pkm	-	0.4	-
Train (NO)	Train/ Tram commuting	11,826.0	pkm	-	0.1	-
End-of-life treatment of sold products total				-	**0.5**	-
EoL: Plastic waste, incinerated	Debit card (plastic)	27.0	kg	-	0.1	-
EoL: Plastic waste, incinerated	Debit card (bioplastic)	196.4	kg	-	0.5	-
Investments total				-	**262,274.0**	**99.8 %**
Carbon dioxide (CO2)	Property (private market)	4,100.0	tonne	-	4,100.0	1.6%
Carbon dioxide (CO2)	Property development	1,946.0	tonne	-	1,946.0	0.7 %
Carbon dioxide (CO2)	Property (business market)	2,217.0	tonne	-	2,217.0	0.8 %
Carbon dioxide (CO2)	Agriculture	95,192.0	tonne	-	95,192.0	36.2 %
Carbon dioxide (CO2)	Fishing/fishing industry	78,988.0	tonne	-	78,988.0	30.1 %
Carbon dioxide (CO2)	Aquaculture	36,568.0	tonne	-	36,568.0	13.9 %
Carbon dioxide (CO2)	Industry and mining	15,755.0	tonne	-	15,755.0	6.0 %
Carbon dioxide (CO2)	Energy	6,851.0	tonne	-	6,851.0	2.6 %
Carbon dioxide (CO2)	Building and construction	2,400.0	tonne	-	2,400.0	0.9 %
Carbon dioxide (CO2)	Retail trade	2,367.0	tonne	-	2,367.0	0.9 %
Carbon dioxide (CO2)	Transport	12,737.0	tonne	-	12,737.0	4.8 %
Carbon dioxide (CO2)	Hotels and toursim	808.0	tonne	-	808.0	0.3 %
Carbon dioxide (CO2)	Services, Car, Culture, Entertainment and Leisure Activities, Other	2,345.0	tonne	-	2,345.0	0.9 %
Scope 3 total				-	**262,813.9**	**100.0 %**
Total*				**1,182.9**	**262,842.7**	**100.0 %**
KJ*				**4,258,603,980.0**		
***The total numbers for MWh and KJ include only Scope 1 + Scope 2**						

Reporting Year Market-Based GHG Emissions

Category	Unit	2024
Electricity Total (Scope 2) with Market-based calculations	tCO_2e	-
Scope 2 Total with Market-based electricity calculations	tCO_2e	0.7
Scope 1+2+3 Total with Market-based electricity calculations	tCO_2e	262,820.2

In 2024, SpareBank 1 Sogn og Fjordane had total greenhouse gas emissions of 262 842.7 tons of CO2 equivalents (tCO2e). This is a reduction of 9 633.1 tCO2e, corresponding to 3.5% compared to 2023.

Greenhouse gas emissions in 2024 had the following distribution:
Scope 1: 5.6 tCO2e (0.002%)
Scope 2: 23.2 tCO2e (0.009%)
Scope 3: 262 813.9 tCO2e (99.99%)

The reduction in total emissions is primarily due to a reduction in category 15 investments in Scope 3. In Scope 1 and 2, a decrease in emissions has been recorded, corresponding to 6.7 tCO2e (Scope 1) and 18.9 tCO2e (Scope 2). The decrease in emissions from Scope 1 and 2 mainly comes from a lower consumption of fuel reported in Scope 1, as well as lower consumption of electricity reported in Scope 2.

Scope 1
Mobile combustion: Actual consumption of fossil fuel in the company's vehicles (owned, leased, rented). Total fuel consumption in 2024 was 1 261 liters of diesel. This amounts to a total of 5.6 tCO2e and corresponds to a decrease of 54.5% compared to 2023 with 12.3 tCO2e. The significant decrease is due to the replacement of the bank`s own fleet.

Scope 2

This significant decrease in consumption of electricity and heat pump/cooling is due to the beginning of a renovation and remodeling work at the headquarter in Førde since the summer 2024, where this location has not been used for the last 6-7 months of 2024. The employees are expected to move back to the office in 2025 once the renovation is completed.

Electricity: Measured consumption of electricity in owned or rented premises/buildings for all departments. The table on page 2 shows greenhouse gas emissions from electricity calculated with the location-based emission factor Nordic mix. Emissions from electricity consumption have decreased by 45.6 % compared to 2023, going from 41.2 to 22.4 tCO2e. This corresponds to a decrease of 641.7 MWh. Electricity with a market-based factor is presented in the table on page 4 of this report. The practice of presenting emissions from electricity consumption with two different emission factors is further explained under Scope 2 in Methodology and sources on page 12. SpareBank 1 Sogn og Fjordane purchased guarantees of origin for its electricity consumption of 830.6 MWh in 2024. Therefore, the emissions related to electricity consumption with a market-based factor will be 0.

District heating and cooling: Use of district heating and cooling in owned/leased buildings. The consumption of district heating and cool increased by 39.1 MWh from 2023 to 2024, which corresponds to an increase of 0.3 tCO2e.

Heat pump: Use of a heat pump in owned/rented buildings. Total greenhouse gas emissions from the use of heat pumps ended up at 0.1 tCO2e, which corresponds to a decrease of 43.4 MWh from 2023 to 2024.

Scope 3

Purchased goods and services: SpareBank 1 Sogn og Fjordane has reported emissions for its 44 676 issued bank cards in 2023. There is an augmentation of 4 246 in the number of cards issued compared to 2023. Bank cards are an essential part of a bank's business and are replaced every 3-4 years for all customers.

The emissions linked to the bank cards produced an emission of 1.8 tCO2e, which amounts to an augmentation of 0.2 tCO2e compared to the previous year. In 2024, the bank used a larger proportion of bioplastics in its production of bank cards. Of the 44 676 cards issued in total, 39 275 cards were registered with a larger proportion of bioplastic. This category has a decrease of 16.2%, which is due to a reduction in the emission factor for office supplies between 2023 and 2024.

Capital goods: A total of 277.0 tCO2e emissions was reported for purchased capital goods in 2024. This represents a decrease of 41.5 % compared to 2023. This reduction is mainly due to the lower cost of the purchased goods.

Fuel-and-energy-related activities: A total of 6.0 tCO2e emissions has been recorded for fuel-and-energy related activities in 2024 despite a decrease of emission related to transportation owned by SpareBank 1 Sogn og Fjordane (see Scope 1). The main reason is due to the reporting of electricity upstream emissions which were not reported in previous years.

Upstream transportation and distribution: This category relates to the transportation expenses of the bank cards produced. A total of 18.7 tCO2e emissions was recorded in 2024, representing a decrease of 63.6%compared to 2023. The value of the emission factor for postal services was modified between 2023 and 2024, which could explain this reduction.

Waste: Reported waste in kg divided into different waste fractions, as well as treatment method (recycled, energy recovered, landfill). Waste accounted for emissions of less than 0.1 tCO2e in 2024, representing a significant decrease of 5.9 tCO2e or 98.3% compared to 2023. The decrease is mainly due to the headquarters, where waste emissions are reported, having been out of use for the last 6-7 months of 2024 due to renovations. SpareBank 1 Sogn Fjordane can expect the emissions related to waste to increase again when the employees move back to the headquarters once renovations are completed in 2025.

Business travel: A total of 47.2 tCO2e emissions were recorded for business travels in 2024, representing an increase of 73.5% compared to 2023, when emissions were 27.2 tCO2e. The increase is mainly due to the rise of domestic flights in 2024. This large increase in business travel, including domestic flights and hotel stays, is linked to SpareBank 1`s conversion. In 2024, the bank transitioned from Sparebanken Sogn og Fjordane to SpareBank 1 Sogn og Fjordane, leading to an increased need for employees to travel across the country to connect with colleagues in the SpareBank 1 Alliance. Kilometer allowances were given for 26 114 km with fossil cars, and 162 675 km with electric cars. In total, this resulted in emissions of 2.5 tCO2e in 2024, compared to 2.7 tCO2e in 2023. The bank's employees spent a total of 587 hotel nights in Norway in 2024, an increase of 291 nights compared to 2023, corresponding to a 98.3% rise. Emissions associated with hotel stays accounted for 4.4 tCO2e in 2024, representing an increase of 2.2 tCO2e compared to 2023.

Employee commuting: Employee commuting refers to emissions associated with employees' travel between their homes and the headquarters in Førde. A total emission of 168.7 tCO2e was recorded in 2024. Data from the 2024 commuting survey was used for both 2023 and 2024. The difference in emissions between 2023 and 2024 is caused by changes associated with some of the emission factors used in this category.

Use of sold products: Emissions associated with the collection, transport, and treatment of bank cards issued in 2024 at the end of their lifespan. There was a change in the type of emission factor between 2023 and 2024 to a more appropriate one, which explains the 68.8% reduction in emissions.

Investments: The bank has included emissions for its lending portfolio in 2024. This represents a significant footprint and contributes to a substantial increase in emissions. A total of 262 274 tCO2e has been recorded for investments, accounting for 99.98% of SpareBank 1 Sogn og Fjordane's total greenhouse gas emissions. A decrease in emissions of 9 390 tCO2e between 2023 and 2024 was observed. The changes from 2022 to 2023 are due to new methods for calculating financed emissions. There are also new methods for categorizing the lending portfolio. Emissions have been recorded for the following industries in 2024: agriculture, real estate development, fisheries/fish industry, aquaculture, industry and mining, energy, construction, retail trade, transport, hotels and tourism, culture, entertainment, and leisure activities. The industries with the largest share of emissions are agriculture (36.2%) and fisheries/fish industry (30.1%).

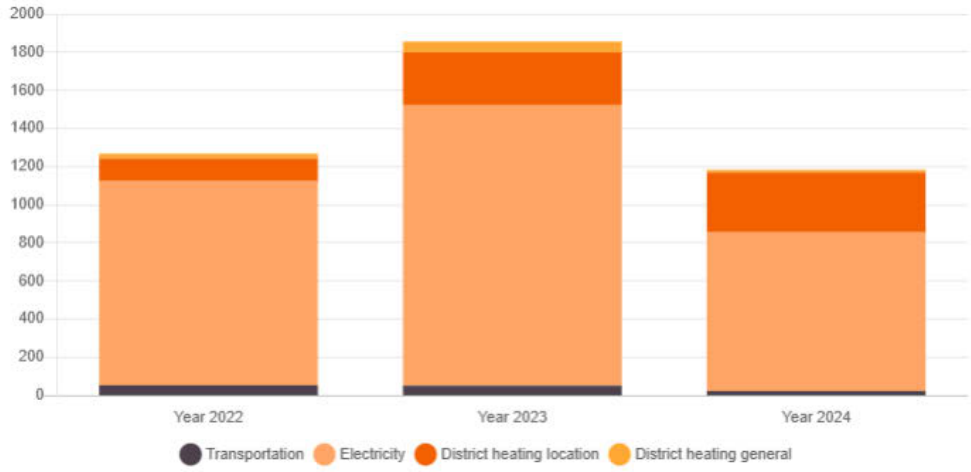
Annual GHG Emissions

Category	Description	2022	2023	2024	% change from previous year
Transportation total		**11.4**	**12.3**	**5.6**	**-54.5 %**
Diesel (NO)		7.4	8.0	2.8	-65.0 %
Petrol		4.0	4.3	2.8	-34.9 %
Scope 1 total		**11.4**	**12.3**	**5.6**	**-54.5 %**
Electricity location-based total		**27.8**	**41.2**	**22.4**	**-45.6 %**
Electricity Nordic mix		27.8	41.2	22.4	-45.6 %
District heating location total		**0.2**	**0.3**	**0.6**	**100.0 %**
District heating NO/Bergen		0.2	0.3	0.4	33.3 %
District cooling NO/Bergen		-	-	0.2	100.0 %
District heating general total		**0.2**	**0.5**	**0.1**	**-80.0 %**
Electric heat/cooling pump Nordic (output)		0.2	0.5	0.1	-80.0 %
Scope 2 total		**28.2**	**42.1**	**23.2**	**-44.9 %**
Purchased goods and services total		**2.0**	**26.0**	**21.8**	**-16.2 %**
Debit card		1.7	0.5	0.2	-60.0 %
Debit card, bioplastic		0.3	1.1	1.6	45.5 %
Office supplies incl paper		-	24.4	20.0	-18.0 %
Capital goods total		**-**	**473.3**	**277.0**	**-41.5 %**
Signs	Bank signs	-	-	28.5	100.0 %
Printed circuit and electronic assembly	Installation of bank signs	-	-	1.2	100.0 %
Software		-	-	51.3	100.0 %
Software	Software, total access	-	51.9	-	-100.0 %
Ventilation equipment		-	51.0	-	-100.0 %
Office furniture	Pods	-	-	49.1	100.0 %
Office furniture	Office chairs	-	-	7.0	100.0 %
Office furniture	Staff cabinet	-	-	20.7	100.0 %
Office furniture	Office and cabin furniture	-	24.1	-	-100.0 %
Other electrical equipment	Alarm bank cabin	-	2.6	-	-100.0 %
Office chair (A1-3)	Office chairs	-	-	10.1	100.0 %
Office chair (A1-3)	Office chairs jan., may., okt.,	-	7.5	-	-100.0 %
Building, repair and maintenance	Sandane renovation	-	109.9	-	-100.0 %
Building, repair and maintenance	Renovation Bergen + kitchen change Sandane	-	20.0	-	-100.0 %
Monitor 49''		-	-	102.3	100.0 %
Monitor 49''		-	132.2	-	-100.0 %
Headphones, Jabra Evolve2 75 (A1-3)	Headset	-	-	0.1	100.0 %
Headphones, Jabra Evolve2 75 (A1-3)		-	0.7	-	-100.0 %
Audio and video equipment	Conference equipment	-	1.5	2.4	60.0 %
Car compact (electric)	New el car	-	14.4	-	-100.0 %
Printer, laser, color	Printer	-	-	0.5	100.0 %
Laptop, HP 14 (A1-3)	Computer	-	-	3.9	100.0 %
Laptop, HP 14 (A1-3)	Computer, HP	-	54.0	-	-100.0 %
Apple MacBook Pro 16"	Computer, Apple	-	0.6	-	-100.0 %
Monitor 34''	PC-screen, 43"	-	0.5	-	-100.0 %
Wireless telecommunications	Network boxes	-	2.2	-	-100.0 %

Fuel-and-energy-related activities total		**-**	**3.3**	**6.0**	**81.8 %**
Diesel (WTT)		-	2.2	0.8	-63.6 %
Petrol (WTT)	Gasoline	-	1.1	0.7	-36.4 %
Electricity Norway (upstream)		-	-	4.5	100.0 %
Upstream transportation and distribution total		**-**	**51.4**	**18.7**	**-63.6 %**
Postal service	Postage	-	-	18.7	100.0 %
Postal service	Postage	-	51.4	-	-100.0 %
Waste total		**4.7**	**6.0**	**0.1**	**-98.3 %**
Paper waste, recycled		0.1	-	-	-
Paper waste, recycled	Paper pulp	-	-	0.1	100.0 %
Paper waste, recycled	Paper, cardboard, carton	-	-	-	-
Paper waste, recycled	Secure shredding	-	0.3	-	-100.0 %
Mixed waste, recycled		-	-	-	-
Plastic waste, recycled		-	-	-	-
Plastic waste, recycled		-	-	-	-
EE waste, recycled		-	-	-	-
EE waste, recycled		-	-	-	-
Residual waste, incinerated		4.4	-	-	-
Residual waste, incinerated		-	5.5	-	-100.0 %
Cardboard waste, recycled	Cardboard press	-	0.1	-	-100.0 %
Metal waste, recycled		0.1	-	-	-
Metal waste, recycled		-	-	-	-
Business travel total		**29.8**	**27.2**	**47.2**	**73.5 %**
Air travel, domestic		15.4	-	-	-
Air travel, domestic		-	19.7	37.7	91.4 %
Air travel, continental		0.8	-	-	-
Air travel, continental	Flights abroad	-	2.7	-	-100.0 %
Air travel, continental	Nordics and Europe	-	-	2.5	100.0 %
Mileage all. car (NO)		12.4	-	-	-
Mileage all. car (NO)	Fossil cars	-	1.8	-	-100.0 %
Mileage all. car (NO)		-	-	1.7	100.0 %
Mileage all. el car Nordic		-	-	-	-
Mileage all. el car Nordic	Electric cars	-	0.9	-	-100.0 %
Mileage all. el car Nordic		-	-	0.8	100.0 %
Hotel nights, Nordic	Norway	1.2	-	-	-
Hotel nights, Nordic		-	2.2	-	-100.0 %
Hotel nights, Nordic		-	-	4.4	100.0 %
Employee commuting total		**-**	**168.5**	**168.7**	**0.1 %**
Electric car Nordic		-	-	4.9	100.0 %
Electric car Nordic		-	5.1	-	-100.0 %
Car, diesel (avg.)	Fossil cars	-	-	127.2	100.0 %
Car, diesel (avg.)		-	127.2	-	-100.0 %
Car, Plug-in Hybrid Electric Vehicle (PHEV)		-	-	18.9	100.0 %
Car, Plug-in Hybrid Electric Vehicle (PHEV)		-	16.3	-	-100.0 %
Bus (NO)		-	-	17.1	100.0 %
Bus (NO)		-	19.4	-	-100.0 %
Ferry, foot passengers		-	-	0.4	100.0 %
Ferry, foot passengers		-	0.4	-	-100.0 %
Train (NO)	Train/ Tram commuting	-	-	0.1	100.0 %

Train (NO)		-	0.1	-	-100.0 %
End-of-life treatment of sold products total		**-**	**1.6**	**0.5**	**-68.8 %**
Debit card	Plastic	-	0.5	-	-100.0 %
Debit card, bioplastic		-	1.1	-	-100.0 %
EoL: Plastic waste, incinerated	Debit card (plastic)	-	-	0.1	100.0 %
EoL: Plastic waste, incinerated	Debit card (bioplastic)	-	-	0.5	100.0 %
Investments total		**325,140.0**	**271,664.0**	**162,003.0**	**-40.4 %**
Carbon dioxide (CO2)	Agriculture	126,940.0	68,548.0	95,192.0	38.9 %
Carbon dioxide (CO2)	Residential property	-	4,920.0	-	-100.0 %
Carbon dioxide (CO2)	Commercial property	-	6,736.0	-	-100.0 %
Carbon dioxide (CO2)	Property (private market)	-	-	4,100.0	100.0 %
Carbon dioxide (CO2)	Property development	-	-	1,946.0	100.0 %
Carbon dioxide (CO2)	Fishing and aquaculture	29,500.0	-	-	-
Carbon dioxide (CO2)	Fishing/fishing industry	-	39,198.0	78,988.0	101.5 %
Carbon dioxide (CO2)	Property (business market)	-	-	2,217.0	100.0 %
Carbon dioxide (CO2)	Industry and mining and extraction	100,320.0	-	-	-
Carbon dioxide (CO2)	Aquaculture	-	17,983.0	36,568.0	103.3 %
Carbon dioxide (CO2)	Electricity, gas, steam, and hot water supply	29,730.0	-	-	-
Carbon dioxide (CO2)	Industry and mining	-	35,794.0	15,755.0	-56.0 %
Carbon dioxide (CO2)	Building and construction business	12,460.0	-	-	-
Carbon dioxide (CO2)	Energy	-	18,525.0	6,851.0	-63.0 %
Carbon dioxide (CO2)	Sale and operation of real estate	480.0	-	-	-
Carbon dioxide (CO2)	Building and construction	-	18,002.0	2,400.0	-86.7 %
Carbon dioxide (CO2)	Other transport and storage, pipe transport	11,860.0	-	-	-
Carbon dioxide (CO2)	Retail trade	9,190.0	17,191.0	2,367.0	-86.2 %
Carbon dioxide (CO2)	Transport	-	30,834.0	12,737.0	-58.7 %
Carbon dioxide (CO2)	Service sectors	590.0	-	-	-
Carbon dioxide (CO2)	Hotels and tourism	-	3,662.0	808.0	-77.9 %
Carbon dioxide (CO2)	Accommodation and catering business	3,780.0	-	-	-
Carbon dioxide (CO2)	Services, Car, Culture, Entertainment and Leisure Activities, Other	-	10,271.0	-	-100.0 %
Carbon dioxide (CO2)	Other	290.0	-	-	-
Carbon dioxide (CO2)	Services, Car, Culture, Entertainment and Leisure Activities, Other	-	-	2,345.0	100.0 %
Scope 3 total		**325,176.6**	**272,421.4**	**262,813.9**	**-3.5 %**
Total		**325,216.1**	**272,475.8**	**262,842.7**	**-3.5 %**
Percentage change			**-16.2 %**	**-3.5 %**	

Annual energy consumption (MWh) Scope 1 & 2



Annual Market-Based GHG Emissions

Category	Unit	2022	2023	2024
Electricity Total (Scope 2) with Market-based calculations	tCO_2e	-	6.2	-
Scope 2 Total with Market-based electricity calculations	tCO_2e	0.3	7.1	0.7
Scope 1+2+3 Total with Market-based electricity calculations	tCO_2e	325,188.3	272,440.8	262,820.2
Percentage change			**-16.2 %**	**-3.5 %**

Annual Key Energy and Climate Performance Indicators

Name	Unit	2022	2023	2024	% change from previous year
Scope 1 + 2 emissions (tCO2e)		39.6	54.3	28.8	-47.1 %
Total emissions (s1+s2+s3) (tCO2e)		325,216.1	272,475.8	262,842.7	-3.5 %
Total energy scope 1 +2 (MWh)		1,268.2	1,856.8	1,182.9	-36.3 %

Methodology and sources

The Greenhouse Gas Protocol Initiative (GHG protocol) is developed by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). This analysis is according to A Corporate Accounting and Reporting Standard Revised edition, currently one of four GHG Protocol accounting standards explaining how to calculate and report GHG emissions. The reporting considers the following greenhouse gases, all converted into CO2 equivalents: CO2, CH4 (methane), N2O (laughing gas), SF6, HFCs and PFCs.

This analysis is based on the operational control aspect that defines what should be included in the carbon inventory, as well as in the different scopes. When using the control approach to consolidate GHG emissions, companies shall choose between either the operational control or financial control criteria. Under the control approach, a company accounts for the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control.

The carbon inventory is divided into three main scopes of direct and indirect emissions.

Scope 1Mandatory reporting includes all direct emission sources where the organisation has operational control. This includes all use of fossil fuels for stationary combustion or transportation, in owned, leased or rented assets. It also includes any process emissions, from e.g. chemical processes, industrial gases, direct methane emissions etc.

Scope 2 Mandatory reporting includes indirect emissions related to purchased energy; electricity or heating/cooling where the organisation has operational control. The electricity emissions factors used in CEMAsys is based on national gross electricity production mixes on a 3 years rolling average (IEA Stat). The Nordic electricity mix covers the weighted production in Sweden, Norway, Finland and Denmark, which reflects the common Nord Pool market area. Emission factors per fuel type are based on assumption in the IEA methodological framework. Factors for district heating/cooling are either based on actual (local) production mixes, or average IEA stat.

In January 2015, the GHG Protocol published new guidelines for calculating emissions from electricity consumption.

Primarily two methods are used to "allocate" the GHG emissions created by electricity generation to the end consumers of a given grid. These are the *location-based* and the *market-based* method. The location-based method reflects the average emissions intensity of grids on which energy consumption occurs, while the market-based method reflects emissions from electricity that companies have purposefully chosen (or their lack of choice).

Businesses who report on their GHG emissions will now have to disclose both location-based emissions from the production of electricity and the marked-based emissions related to the potential purchase of Guaranties of Origin (GoO).

The purpose of this amendment in the reporting method is on one hand to show the impact of energy efficiency and saving measures, and on the other hand to display how the acquisition of GoOs affect the GHG-emissions. Using both methods in the emission reporting highlights the effect of all measures regarding electricity consumption.

The location-based method: The location-based method is based on statistical emissions information and electricity output aggregated and averaged within a defined geographic boundary and during a defined time period. Within this boundary, the different energy producers utilize a mix of energy resources, where the use of fossil fuels (coal, oil and gas) result in direct GHG-emissions. These emissions are reflected in the location-based emission factor.

The market-based method: The choice of emission factor using this method is determined by whether the business acquires GoOs or not. When selling GoOs, the supplier certify that the electricity is produced by only renewable sources, which has an emission factor of 0 grams of CO2e per kWh. However, for electricity without the guarantee of origin, the emission factor is based on the remaining electricity production after all GoOs for renewable energy are sold. This is called a *residual mix,* which is normally substantially higher than the location-based factor. As an example, the market-based Norwegian residual mix factor is approximately 7 times higher than the location-based Nordic mix factor. The reason for this high factor is due to Norway's large export of GoOs to foreign consumers. In a market perspective, this implies that Norwegian hydropower is largely substituted with an electricity mix including fossil fuels.

Scope 3 Voluntary reporting of indirect emissions from purchased products or services in the value chain. The scope 3 emissions are a result of the company's different activities, which are not controlled by the company, i.e. they're indirect. Examples are business travel, goods transportation, waste handling, consumption of products etc. In general, the GHG report should include information that users, both internal and external to the company need for their decision making. An important aspect of relevance is the selection of an appropriate inventory boundary that reflects the substance and economic reality of the company's business relationships.

References:

DEFRA (2013). Environmental reporting guidelines: Including mandatory greenhouse gas emissions reporting
guidance. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206392/pb13944-env-reporting-guidance.pdf

DEFRA (2017). 2017 guidelines to DEFRA/DECC's GHG conversion factor for company reporting. Produced by AEA for the Department of Energy and Climate Change (DECC) and the Department for Environment, Food, and Rural Affairs (DEFRA).

IEA (2017). CO2 emission from fuel combustion, International Energy Agency (IEA), Paris.

IEA (2017). Electricity information, International Energy Agency (IEA), Paris.

IMO (2014). Reduction of GHG emissions from ships - Third IMO GHG Study 2014 (Final report). International Maritime Organisation, http://www.iadc.org/wp-content/uploads/2014/02/MEPC-67-6-INF3-2014-Final-Report-complete.pdf

IPCC (2014). IPCC fifth assessment report: Climate change 2013 (AR5 updated version November 2014). http://www.ipcc.ch/report/ar5/

RE-DISS (2017). Reliable disclosure systems for Europe – Phase 2: European residual mixes.

WBCSD/WRI (2004). The greenhouse gas protocol. A corporate accounting and reporting standard (revised edition). World Business Council on Sustainable Development (WBCSD), Geneva, Switzerland /World Resource Institute (WRI), Washington DC, USA, 116 pp.

WBCSD/WRI (2011). Corporate value chain (Scope 3) accounting and reporting standard: Supplement to the GHG Protocol corporate accounting and reporting standard. World Business Council on Sustainable Development (WBCSD), Geneva, Switzerland /World Resource Institute (WRI), Washington DC, USA, 149 pp.

WBCSD/WRI (2015). GHG protocol Scope 2 guidance: An amendment to the GHG protocol corportate standard. World Business Council on Sustainable Development (WBCSD), Geneva, Switzerland /World Resource Institute (WRI), Washington DC, USA, 117 pp.

This list of references may not be complete. Depending on the use of the CEMAsys emission factors database, there are a number of different local and national sources. If necessary, please contact CEMAsys Help Desk for further details.