

Energi & klimaregnskap 2023

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 emissions accounting is a fundamental tool in identifying tangible measures to reduce GHG emissions. The annual GHG emissions accounting report enables the organisation to benchmark performance indicators and evaluate progress over time.

Consolidation approach used for the GHG emissions accounting:

This report comprises the following organisational units:

This report excludes the following organisational units:

Please add a short explanation of why the organisational units are excluded.

Is there any timeline for including omitted sites/locations in the future?

Please explain.

The input is based on consumption data from internal and external sources, which has then been converted into tonnes CO₂-equivalents (tCO₂e) using generic and/or specific emission factors. The GHG emissions accounting 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 recognised international standard for measuring greenhouse gas emissions on a company level, and is the basis for the ISO standard 14064-I.

Reporting Year Energy and GHG Emissions

Utslippskilde	Forklaring	Forbruk	Enhet	Energi (MWh)	Utslipp tCO ₂ e	Utslippsandel
Transport total				34.1	7.9	2.3 %
Diesel (NO)		3,480.8	liters	34.1	7.9	2.3 %
Scope 1 total				34.1	7.9	2.3 %
Elektrisitet total				2,585.6	16.0	4.7 %
Elektrisitet Norge	strøm	2,585,577.4	kWh	2,585.6	16.0	4.7 %
Electricity general total				87.1	-	-
Elektrisitet Sol	solceller	87,079.0	kWh	87.1	-	-
Fjernvarmestet total				927.4	19.1	5.6 %
Fjernvarme Trondheim	fjernvarme	927,390.0	kWh	927.4	19.1	5.6 %
Scope 2 total				3,600.0	35.1	10.3 %
Avfall total				-	37.5	11.0 %
Glass, window	1331 - vindusglass	160.0	kg	-	0.2	0.1 %
Restavfall, forbrenning	9913 - utsortert brennbart avfall	2,030.0	kg	-	1.1	0.3 %
Restavfall, forbrenning	9913 - Utsortert brennbart avfall	13,530.0	kg	-	7.5	2.2 %
Restavfall, forbrenning	9912 - Blandet næringsavfall.	22,600.0	kg	-	12.5	3.6 %
Pappavfall til resirkulering	1221 - brunt papir og bølgepapp	1,830.0	kg	-	-	-
Pappavfall til resirkulering	1221 - Brunt papir og bølgepapp	50,697.0	kg	-	1.1	0.3 %
Plastavfall til resirkulering	1711 - Klar plastfolie LDPE	16,650.0	kg	-	0.4	0.1 %
Plastavfall til resirkulering	1799 - Blandet plast	250.0	kg	-	-	-
Restavfall til forbrenning	9912 - blandet næringsavfall	10,590.0	kg	-	0.2	0.1 %
Papiravfall til resirkulering	1299 - Blandet papir, papp og kartong	1,420.0	kg	-	-	-
Papiravfall til resirkulering	1299 - Blandet papir, papp og kartong.	1,380.0	kg	-	-	-
Papiravfall til resirkulering	1251 - sikkerhetsmakulering - papir	75.0	kg	-	-	-
Papiravfall til resirkulering	1251 - kontorpapir	840.0	kg	-	-	-
Elektronisk avfall til resirkulering	1599 - Blandet EE-avfall	2,470.0	kg	-	0.1	-
Elektronisk avfall til resirkulering	1599 - Blandet EE-avfall.	1,220.0	kg	-	-	-
Treavfall til resirkulering	1149 - Blandet trevirke	27,480.0	kg	-	0.6	0.2 %
Treavfall til resirkulering	1142 - Overflatebehandlet trevirke	17,420.0	kg	-	0.4	0.1 %
Metalavfall til resirkulering	1452 - Blandede metaller	2,780.0	kg	-	0.1	-
Metalavfall til resirkulering	1452 - Blandede metaller.	180.0	kg	-	-	-
Organisk avfall, behandlet	1128 - fett fra fettutskiller	2,000.0	kg	-	-	-
Organisk avfall, behandlet	1128 - Fett fra fettutskiller	2,500.0	kg	-	0.1	-
Farlig avfall til resirkulering	7086 - Lysstoffrør og sparepærer.	75.0	kg	-	-	-
Farlig avfall til resirkulering	7134 - Surt organisk avfall, småkolli	18.0	kg	-	-	-
Farlig avfall til resirkulering	7051 - Maling, lim, lakk, småkolli	149.0	kg	-	-	-
Farlig avfall til resirkulering	7122 - Sterkt reaktivt stoff, småkolli.	20.0	kg	-	-	-
Farlig avfall til resirkulering	7261 - Gasser i trykkbeholder, småkolli	36.0	kg	-	-	-
Farlig avfall til resirkulering	7051 - Maling, lim, lakk, småkolli	66.0	kg	-	-	-
Farlig avfall til resirkulering	7051 - Maling, lim, lakk, fat	406.0	kg	-	-	-
Farlig avfall til resirkulering	7122 - Sterkt reaktivt stoff	4.0	kg	-	-	-
Farlig avfall til resirkulering	7134 - Surt organisk avfall, fat	18.0	kg	-	-	-
Farlig avfall til resirkulering	7051 - maling, lim, lakk, fat	149.0	kg	-	-	-

Organic non-halogenic waste (H), incinerated	7042 - Organiske løsemidler uten halogen, fat	2,118.0	kg	-	5.1	1.5 %
Organic non-halogenic waste (H), incinerated	7152 - Organisk avfall uten halogen, småkolli	284.0	kg	-	0.7	0.2 %
Organic non-halogenic waste (H), incinerated	7152 - Organisk avfall uten halogen, tank / IBC	149.0	kg	-	0.4	0.1 %
Industrial waste, recycled	9912 - blandet næringsavfall	190.0	kg	-	-	-
Mineral oil waste, incinerated	7022 -Oljeforurensset masse, småkolli	13.0	kg	-	-	-
Mineral oil waste, incinerated	7022 - Oljeforurensset masse / slam fra oljeutskiller (sugebil)	915.0	kg	-	2.6	0.8 %
Chemical waste (H), incinerated	7133 - Rengjøringsmidler, småkolli	1,325.0	kg	-	3.2	0.9 %
Chemical waste (H), incinerated	7132 - Baser uorganisk	19.0	kg	-	-	-
Chemical waste (H), incinerated	7133 - Rengjøringsmidler, småkolli	454.0	kg	-	1.1	0.3 %
Fire extinguishers (H), recycled	7261 - Brannslukningsapparat	60.0	kg	-	-	-
Spray cannister waste (H), recycled	7055 - Spraybokser småkolli	6.0	kg	-	-	-
Spray cannister waste (H), recycled	7055 - spraybokser fat/ibc	6.0	kg	-	-	-
Organic solvents (H), incinerated	7042 - Organiske løsemidler uten halogen, småkolli	32.0	kg	-	-	-
Organic waste, recycled	1111 - matavfall emballert	4,300.0	kg	-	0.1	-
Batteries waste (H), recycled	7093 - småbatterier	15.0	kg	-	-	-
Farlig avfall, forbrenning	7261 - Andre gasser i trykkbeholdere	14.0	kg	-	-	-
Matavfall til forbrenning/energigjenvinning	1111 - Matavfall uemballert	2,650.0	kg	-	0.1	-
Tjenestereiser total				-	25.1	7.4 %
Km-godtgj.bil(NO)	km-godtgjørelse	24,495.2	km	-	1.7	0.5 %
Km-godtgj.bil(NO)	km. godtgjørelse	132,180.1	km	-	9.0	2.6 %
Km-godtgj.bil(NO)	km.gjordtgjørelse	50,275.2	km	-	3.4	1.0 %
Km-godtgj.bil(NO)	km. godtgjørelse	15,601.0	km	-	1.1	0.3 %
Flyreiser, propellfly		57,202.0	pkm	-	9.2	2.7 %
Km godtgjørelse EL-bil	km-godtgjørelse	11,804.1	km	-	0.1	-
Km godtgjørelse EL-bil	km godtgjørelse	730.1	km	-	-	-
Km godtgjørelse EL-bil	km. godtgjørelse	13,016.1	km	-	0.1	-
Km godtgjørelse EL-bil	km. godtgjørelse	2,245.2	km	-	-	-
Flyreiser Norden-Europa		5,144.0	pkm	-	0.6	0.2 %
Tog (Norden)		5,677.1	pkm	-	-	-
Downstream transportation and distribution total				-	235.5	69.0 %
Transporttjenester (diesel)	vareleveranse	235.5	tCO ₂ e	-	235.5	69.0 %
Zero emission transportation	vareleveranse	199,765.0	km	-	-	-
Scope 3 total				-	298.2	87.4 %
Total*				3,634.2	341.2	100.0 %
KJ*				13,082,971,086.0		
*The total numbers for MWh and KJ include only Scope 1 + Scope 2						

Markedsbaserte utslipp i rapporteringsåret

Kategori	Enhet	2023
Elektrisitet Sum (Scope 2) med Markedsbaserte beregninger	tCO ₂ e	85.3
Scope 2 Sum med Markedsbaserte strømberegninger	tCO ₂ e	104.4
Scope 1+2+3 Totalt med Markedsbaserte strømberegninger	tCO ₂ e	410.5

The above provides a comprehensive summary of the GHG emissions accounting of {%company name%} for the reporting year. It illustrates the scopes and scope 3 categories included, along with the respective emission sources. The table presents consumption data and its corresponding reporting unit (e.g., kg, liters, kgCO₂e, km), consumption data converted into energy (MWh) and tCO₂e, and the % share each emission source represented in the overall GHG emissions accounting.

Årlige klimagassutslipp

Kategori	Forklaring	2021	2022	2023	% endring fra forrige år
Transport total		0.7	0.7	7.9	1,028.6 %
Diesel (NO)		0.7	0.7	7.9	1,028.6 %
Scope 1 total		0.7	0.7	7.9	1,028.6 %
Elektrisitet lokasjonsbasert total		65.5	52.0	16.0	-69.2 %
Elektrisitet Nordisk miks		65.1	52.0	-	-100.0 %
Elektrisitet Norge	strøm	-	-	16.0	100.0 %
Elbil Nordisk		0.4	-	-	-
Electricity general total		-	-	-	-
Elektrisitet Sol		-	-	-	-
Elektrisitet Sol	solceller	-	-	-	-
Fjernvarmestед total		12.8	24.3	19.1	-21.4 %
Fjernvarme Trondheim		12.8	24.3	-	-100.0 %
Fjernvarme Trondheim	fjernvarme	-	-	19.1	100.0 %
Scope 2 total		78.4	76.3	35.1	-54.0 %
Oppstrøms transport og distribusjon total		-	25.1	-	-
Van (up to 3.5 tonn), electric		-	25.1	-	-100.0 %
Avfall total		22.0	30.2	37.5	24.2 %
Glass, window	1331 - vindusglass	-	-	0.2	100.0 %
Restavfall, forbrenning		13.6	22.6	-	-100.0 %
Restavfall, forbrenning	9913 - utsortert brennbart avfall	-	-	1.1	100.0 %
Restavfall, forbrenning	9913 - Utsortert brennbart avfall	-	-	7.5	100.0 %
Restavfall, forbrenning	9912 - Blandet næringsavfall.	-	-	12.5	100.0 %
Papiravfall til resirkulering		1.0	0.7	-	-100.0 %
Papiravfall til resirkulering	1299 - Blandet papir, papp og kartong	-	-	-	-
Papiravfall til resirkulering	1299 - Blandet papir, papp og kartong.	-	-	-	-
Papiravfall til resirkulering	1251 - sikkerhetsmakulering - papir	-	-	-	-
Papiravfall til resirkulering	1251 - kontorpapir	-	-	-	-
Pappavfall til resirkulering	1221 - brunt papir og bølgepapp	-	-	-	-
Pappavfall til resirkulering	1221 - Brunt papir og bølgepapp	-	-	1.1	100.0 %
Pappavfall til resirkulering		-	0.3	-	-100.0 %
Plastavfall til resirkulering		0.3	0.3	-	-100.0 %
Plastavfall til resirkulering	1711 - Klar plastfolie LDPE	-	-	0.4	100.0 %
Plastavfall til resirkulering	1799 - Blandet plast	-	-	-	-
Restavfall til forbrenning		0.1	-	-	-
Restavfall til forbrenning	9912 - blandet næringsavfall	-	-	0.2	100.0 %
Elektronisk avfall til resirkulering		-	0.1	-	-100.0 %
Elektronisk avfall til resirkulering	1599 - Blandet EE-avfall	-	-	0.1	100.0 %
Elektronisk avfall til resirkulering	1599 - Blandet EE-avfall.	-	-	-	-
Treavfall til resirkulering		0.8	0.8	-	-100.0 %
Treavfall til resirkulering	1149 - Blandet trevirke	-	-	0.6	100.0 %
Treavfall til resirkulering	1142 - Overflatebehandlet trevirke	-	-	0.4	100.0 %
Metalavfall til resirkulering		0.1	-	-	-
Metalavfall til resirkulering	1452 - Blandede metaller	-	-	0.1	100.0 %

Metalavfall til resirkulering	1452 - Blandede metaller.	-	-	-	-
Farlig avfall til resirkulering		0.1	-	-	-
Farlig avfall til resirkulering	7086 - Lysstoffrør og sparepærer.	-	-	-	-
Farlig avfall til resirkulering	7134 - Surt organisk avfall, småkolli	-	-	-	-
Farlig avfall til resirkulering	7051 - Maling, lim, lakk, småkolli	-	-	-	-
Farlig avfall til resirkulering	7122 - Sterkt reaktivt stoff, småkolli.	-	-	-	-
Farlig avfall til resirkulering	7261 - Gasser i trykkbeholder, småkolli	-	-	-	-
Farlig avfall til resirkulering	7051 - Maling, lim, lakk, småkolli	-	-	-	-
Farlig avfall til resirkulering	7051 - Maling, lim, lakk, fat	-	-	-	-
Farlig avfall til resirkulering	7122 - Sterkt reaktivt stoff	-	-	-	-
Farlig avfall til resirkulering	7134 - Surt organisk avfall, fat	-	-	-	-
Farlig avfall til resirkulering	7051 - maling, lim, lakk, fat	-	-	-	-
Organisk avfall, behandlet		0.1	-	-	-
Organisk avfall, behandlet	1128 - fett fra fettutskiller	-	-	-	-
Organisk avfall, behandlet	1128 - Fett fra fettutskiller	-	-	0.1	100.0 %
Organic non-halogenic waste (H), incinerated	7042 - Organiske løsemidler uten halogen, fat	-	-	5.1	100.0 %
Organic non-halogenic waste (H), incinerated	7152 - Organisk avfall uten halogen, småkolli	-	-	0.7	100.0 %
Organic non-halogenic waste (H), incinerated	7152 - Organisk avfall uten halogen, tank / IBC	-	-	0.4	100.0 %
Restavfall, deponi		-	-	-	-
Farlig avfall til annen behandling		-	-	-	-
Industrial waste, recycled		0.1	-	-	-
Industrial waste, recycled	9912 - blandet næringsavfall	-	-	-	-
Mineral oil waste, incinerated		5.9	2.6	-	-100.0 %
Mineral oil waste, incinerated	7022 - Oljeforurensset masse, småkolli	-	-	-	-
Mineral oil waste, incinerated	7022 - Oljeforurensset masse / slam fra oljeutskiller (sugebil)	-	-	2.6	100.0 %
Chemical waste (H), incinerated		-	2.6	-	-100.0 %
Chemical waste (H), incinerated	7133 - Rengjøringsmidler, småkolli	-	-	3.2	100.0 %
Chemical waste (H), incinerated	7132 - Baser uorganisk	-	-	-	-
Chemical waste (H), incinerated	7133 - Rengjøringsmidler, småkolli	-	-	1.1	100.0 %
Matavfall til kompostering		-	-	-	-
Batteries waste (H), recycled		-	-	-	-
Batteries waste (H), recycled	7093 - småbatterier	-	-	-	-
Fire extinguishers (H), recycled	7261 - Brannslukningsapparat	-	-	-	-
Spray cannister waste (H), recycled	7055 - Spraybokser småkolli	-	-	-	-
Spray cannister waste (H), recycled	7055 - spraybokser fat/ibc	-	-	-	-
Organic solvents (H), incinerated	7042 - Organiske løsemidler uten halogen, småkolli	-	-	-	-
Organic waste, recycled	1111 - matavfall emballert	-	-	0.1	100.0 %
Farlig avfall, forbrenning	7261 - Andre gasser i trykkbeholdere	-	-	-	-
Matavfall til forbrenning/energigjenvinning	1111 - Matavfall uemballert	-	-	0.1	100.0 %
Tjenestereiser total		16.8	24.7	25.1	1.6 %
Km-godtgj.bil(NO)		14.9	16.6	-	-100.0 %
Km-godtgj.bil(NO)	km-godtgjørelse	-	-	1.7	100.0 %
Km-godtgj.bil(NO)	km. godtgjørelse	-	-	9.0	100.0 %
Km-godtgj.bil(NO)	km.gjortdgjørelse	-	-	3.4	100.0 %
Km-godtgj.bil(NO)	km. godtgjørelse	-	-	1.1	100.0 %
Km godtgjørelse EL-bil		0.1	0.1	-	-100.0 %
Km godtgjørelse EL-bil	km-godtgjørelse	-	-	0.1	100.0 %

Km godtgjørelse EL-bil	km godtgjørelse	-	-	-	-
Km godtgjørelse EL-bil	km. godtgjørelse	-	-	0.1	100.0 %
Km godtgjørelse EL-bil	km. godtgjørelse	-	-	-	-
Flyreiser, propellfly		1.8	7.7	9.2	19.5 %
Air travel, continental, incl. RF		-	0.3	-	-100.0 %
Flyreiser Norden-Europa		-	-	0.6	100.0 %
Tog (Norden)		-	-	-	-
Downstream transportation and distribution total		1,019.2	233.7	235.5	0.8 %
Transporttjenester (diesel)		1,019.2	233.7	-	-100.0 %
Transporttjenester (diesel)	vareleveranse	-	-	235.5	100.0 %
Zero emission transportation	vareleveranse	-	-	-	-
Scope 3 total		1,058.0	313.8	298.2	-5.0 %
Total		1,137.1	390.9	341.2	-12.7 %
Prosentvis endring			-65.6 %	-12.7 %	

Annual energy consumption (MWh) Scope 1 & 2

#energy_column_chart#

Årlige markedsbaserte utslipp

Kategori	Enhet	2021	2022	2023
Elektrisitet Sum (Scope 2) med Markedsbaserte beregninger	tCO ₂ e	-	11.3	85.3
Scope 2 Sum med Markedsbaserte strømberegninger	tCO ₂ e	13.2	35.6	104.4
Scope 1+2+3 Totalt med Markedsbaserte strømberegninger	tCO ₂ e	1,072.0	350.2	410.5

Prosentvis endring

-67.3 %

17.2 %

Metodikk og kilder

The Greenhouse Gas Protocol initiative (GHG Protocol) was developed by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). This analysis is done according to *A Corporate Accounting and Reporting Standard Revised edition*, currently one of four GHG Protocol accounting standards on calculating and reporting GHG emissions. The reporting considers the following greenhouse gases, all converted into CO₂-equivalents: CO₂, CH₄ (methane), N₂O (laughing gas), SF₆, HFCs, PFCs and NF₃.

For corporate reporting, two distinct approaches can be used to consolidate GHG emissions: the equity share approach and the control approach. The most common consolidation approach is the control approach, which can be defined in either financial or operational terms.

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

Scope 1 includes all direct emission sources. This includes all use of fuels for stationary combustion or transportation, in owned and, depending on the consolidation approach selected, leased, or rented assets. It also includes any process emissions, from e.g. chemical processes, industrial gases, direct methane emissions etc., as well as leakage of refrigerants.

Scope 2 includes indirect emissions related to purchased energy, including electricity and heating/cooling in assets owned/controlled by the organisation.

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 generated by electricity production to the end consumers on a given grid, namely the location-based and the market-based method. The location-based method reflects the average emission intensity of the grids on which energy consumption occurs, while the market-based method reflects emissions from electricity that companies have purposefully chosen (or not chosen).

Organisations who report on their GHG emissions will now have to disclose both the location-based emissions from the production of electricity, and the market-based emissions related to the potential purchase of Guarantees of Origin (GoOs) and Renewable Energy Certificates (RECs).

The purpose of this amendment in the reporting methodology is on the one hand to show the impact of energy efficiency measures, and on the other hand to display how the acquisition of GoOs or RECs affect the GHG emissions. Using both methods in the emissions accounting highlights the effect of both of these types of 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. Most location-based electricity emission factors used in CEMAsys are based on national gross electricity production mixes and are published by the International Energy Agency's statistics (IEA Stat). Emission factors per fuel type are in these calculations based on assumptions in the IEA methodological framework. Emission factors for district heating/cooling are either based on actual (local) production mixes, or average national statistics.

The market-based method: The choice of emission factors when using this method is determined by whether the organisation acquires GoOs/RECs or not. When selling GoOs for renewable electricity or RECs, the supplier guarantees that the same amount of electricity has been produced exclusively from renewable sources, which is assumed to have an emission factor of 0 grams CO₂e per kWh. However, for electricity without GoOs or RECs, the emission factor should instead be based on the remaining electricity supply after all GoOs for renewable electricity and/or RECs have been sold and cancelled. This is called the residual mix, which in most cases is connected to a substantially higher emission factor than the location-based emission

factor.

Scope 3 includes indirect emissions resulting from other value chain activities. The scope 3 emissions are a result of the company's upstream and downstream activities, which are not directly controlled by the organisation. Examples include production of purchased goods and services, business travel, goods transportation, waste handling, use of sold products, etc.

In general, the carbon accounting should include information that stakeholders, 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 which reflects the substance and economic reality of the company's business relationships.

Sources:

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

The reference list above is not necessarily complete, but contains the most essential references used in CEMAsys. In addition, several local/national sources may be used, depending on the selection of emission factors.