

Carbon Accounting Report 2023

Mester Grønn AS

The aim of this report is to get an overview of the organisation's greenhouse gas (GHG) emissions, which is an integrated part of the company's climate strategy. The carbon accounting is a fundamental tool in order to identify concrete measures to reduce the energy consumption and corresponding GHG emissions. The annual report enables the organisation to benchmark performance indicators and evaluate progress over time.

This report comprises the following units:

The input data is based on information from both internal and external data sources and then converted into tonnes CO₂-eq. The analysis is based on the international standard; A Corporate Accounting and Reporting Standard, developed by the Greenhouse Gas Protocol Initiative (GHG protocol). This is the most important standard for measuring greenhouse gas emissions and was the basis for the ISO standard 14064-1.



Reporting Year Energy and GHG Emissions

Emission source	Description	Consumption	Unit	Energy (MWh)	Emissions tCO ₂ e	% share
Transportation total				2,308.1	536.4	3.0 %
Diesel (NO)		227,533.0	liters	2,229.8	518.1	2.9 %
Petrol (avg. bio-blend)		8,731.0	liters	78.3	18.3	0.1 %
Refrigerants total				-	56.6	0.3 %
R-410 A	Terminalen	3.7	kg	-	7.1	-
R-448 A	Butikk	34.7	kg	-	44.2	0.2 %
R-134a	Butikk	5.3	tCO ₂ e	-	5.3	-
Scope 1 total				2,308.1	593.0	3.3 %
Electricity total				5,263.1	32.6	0.2 %
Electricity Norway		5,263,094.0	kWh	5,263.1	32.6	0.2 %
Scope 2 total				5,263.1	32.6	0.2 %
Upstream transportation and distribution total				-	16,871.2	94.7 %
Car, diesel (avg.)	Bring	1,374,245.0	km	-	233.3	1.3 %
Car, diesel (avg.)	Best	136,351.0	km	-	23.2	0.1 %
Electric car Nordic	Bring	1,010,811.0	km	-	5.4	-
Electric car Nordic	Best	20,663.0	km	-	0.1	-
Air Intercontinental freight, incl. RF		12,945,465.0	tkm	-	14,227.1	79.9 %
Truck avg. (WTW)		1,233,800.0	km	-	1,262.5	7.1 %
Truck avg. (WTW)	Egen beregninger fra transaksjoner i Track Online	905,967.0	km	-	927.1	5.2 %
Sea Container Avg load		11,960,980.0	tkm	-	192.6	1.1 %
Waste total				-	225.2	1.3 %
Cable, unspecified		34.0	kg	-	0.2	-
Wood waste, recycled		53,840.0	kg	-	1.1	-
Wood waste, recycled	Blandet bearbeidet trevirke	24,080.0	kg	-	0.5	-
Soils contaminated, landfill	Forurensede masser	2,720.0	kg	-	0.1	-
Plastic waste, recycled	Blandet plast	11,300.0	kg	-	0.2	-
Plastic waste, recycled	Folieplast, klar	15,520.0	kg	-	0.3	-
Plastic waste, recycled	Hardplast (emballasje)	90,950.0	kg	-	1.9	-
Plastic waste, recycled	Hardplast (ikke emballasje)	57,590.0	m ³	-	88.4	0.5 %
Mixed waste, recycled	Keramikk og porselen	11,120.0	kg	-	0.2	-
Mixed waste, recycled	Gips	6,380.0	kg	-	0.1	-
Mixed waste, recycled	Blandet næringsavfall	45,360.0	kg	-	1.0	-
EE waste, recycled	Blandet EE-avfall	1,580.0	kg	-	-	-
Metal waste, recycled	Rent magnetisk metall	44,910.0	m ³	-	123.9	0.7 %
Paper waste, recycled	Kontorpaper	1,570.0	kg	-	-	-
Cardboard waste, recycled	Ren papp	182,740.0	kg	-	3.9	-
Organic waste, treated	Park- og hageavfall	113,900.0	kg	-	2.4	-
Mineral oil waste, incinerated (H)		290.0	kg	-	0.8	-
Business travel total				-	86.6	0.5 %
Air travel, domestic	Gjelder for Norden	480.0	flight trip	-	35.8	0.2 %
Air travel, continental	Gjelder for Eurpa	204.0	flight trip	-	24.8	0.1 %
Air travel, intercontinental	Gjelder for verden	26.0	flight trip	-	26.0	0.1 %

Scope 3 total	-	17,183.0	96.5 %
Total*	7,571.2	17,808.7	100.0 %
KJ*	27,256,444,092.0		
*The total numbers for MWh and KJ include only Scope 1 + Scope 2			

Reporting Year Market-Based GHG Emissions

Category	Unit	2023
Electricity Total (Scope 2) with Market-based calculations	tCO ₂ e	2,643.7
Scope 2 Total with Market-based electricity calculations	tCO ₂ e	2,643.7
Scope 1+2+3 Total with Market-based electricity calculations	tCO ₂ e	20,419.7

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Annual GHG Emissions

Category	Description	2021	2022	2023	% change from previous year
Transportation total		540.9	482.1	536.4	11.3 %
Diesel (NO)		514.8	461.9	518.1	12.2 %
Petrol (avg. bio-blend)		26.1	20.2	18.3	-9.4 %
Refrigerants total		29.2	56.5	56.6	0.2 %
R-410 A	Terminalen	-	7.3	7.1	-2.7 %
R-448 A	Butikk	24.2	42.0	44.2	5.2 %
R-134a	Butikk	5.0	7.2	5.3	-26.4 %
Scope 1 total		570.1	538.6	593.0	10.1 %
Electricity location-based total		52.8	36.7	32.6	-11.2 %
Electricity Norway		52.8	36.7	32.6	-11.2 %
Scope 2 total		52.8	36.7	32.6	-11.2 %
Upstream transportation and distribution total		11,773.2	14,773.3	16,871.2	14.2 %
Car, diesel (avg.)	Bring	-	277.2	233.3	-15.8 %
Car, diesel (avg.)	Best	-	15.3	23.2	51.6 %
Electric car Nordic	Bring	-	3.4	5.4	58.8 %
Electric car Nordic	Best	-	0.1	0.1	-
Air Intercontinental freight, incl. RF	2021	11,371.7	-	-	-
Air Intercontinental freight, incl. RF	Airflo	-	13,017.1	-	-100.0 %
Air Intercontinental freight, incl. RF		-	-	14,227.1	100.0 %
Sea Cargo Avg load	2021	401.5	-	-	-
Truck avg. (WTW)		-	-	1,262.5	100.0 %
Truck avg. (WTW)	Egen beregninger fra transaksjoner i Track Online	-	-	927.1	100.0 %
Truck avg. (WTW)	Intertermo	-	1,271.0	-	-100.0 %
Sea Container Avg load		-	-	192.6	100.0 %
Sea Container Avg load	JAS	-	189.2	-	-100.0 %
Waste total		39.6	34.4	225.2	554.7 %
Cable, unspecified		-	2.1	0.2	-90.5 %
Concrete waste, recycled	Betong uten armeringsjern	-	-	-	-
Organic waste, treated	Park- og hageavfall	2.2	2.3	2.4	4.3 %
Wood waste, recycled	Blandet bearbeidet trevirke	2.2	1.9	0.5	-73.7 %
Wood waste, recycled		-	-	1.1	100.0 %
Cardboard waste, recycled	Ren papp	3.8	2.9	3.9	34.5 %
Hazardous waste, recycled	Kassert isolasjon med miljøskade	-	-	-	-
Hazardous waste, recycled		-	-	-	-
Paper waste, recycled	Kontorpapir	0.1	-	-	-
Metal waste, recycled	Blandede metaller	2.6	0.6	-	-100.0 %
Metal waste, recycled	Rent magnetisk metall	-	-	123.9	100.0 %
Soils contaminated, landfill	Forurensede masser	-	-	0.1	100.0 %
EE waste, recycled	Blandede EE-avfall	0.1	-	-	-
EE waste, recycled	Blandet EE-avfall	-	-	-	-
Plastic waste, recycled	Blandet plast	0.2	0.2	0.2	-
Plastic waste, recycled	Folieplast, klar	0.1	0.2	0.3	50.0 %
Plastic waste, recycled	Hardplast (emballasje)	-	-	1.9	100.0 %
Plastic waste, recycled	Hardplast, emballasje	1.5	1.5	-	-100.0 %

Plastic waste, recycled	Folieplast, annen	-	0.1	-	-100.0 %
Plastic waste, recycled	Hardplast (ikke emballasje)	-	-	88.4	100.0 %
Mixed waste, recycled	Gips	0.1	0.1	0.1	-
Mixed waste, recycled	Keramikk og porselen	0.2	0.2	0.2	-
Mixed waste, recycled	Blandet næringsavfall	-	-	1.0	100.0 %
Plastic packaging waste, recycled	PS	-	0.4	-	-100.0 %
Residual waste, incinerated	Blandet næringsavfall	26.5	18.9	-	-100.0 %
Hazardous waste, incinerated (Europe)	Usortert brennbart avfall	-	3.1	-	-100.0 %
Mineral oil waste, incinerated (H)		-	-	0.8	100.0 %
Business travel total		20.0	92.3	86.6	-6.2 %
Air travel, continental, incl. RF	Europeisk	-	14.1	-	-100.0 %
Air travel, continental	Europeisk	1.1	-	-	-
Air travel, continental	Gjelder for Eurpa	-	-	24.8	100.0 %
Air travel, domestic	Gjelder for Norden	-	-	35.8	100.0 %
Air travel, domestic	Innenlands	19.0	-	-	-
Air travel, domestic, incl. RF	Innenlands	-	60.7	-	-100.0 %
Air travel, intercontinental, incl. RF	Verden	-	17.5	-	-100.0 %
Air travel, intercontinental	Gjelder for verden	-	-	26.0	100.0 %
Scope 3 total		11,832.9	14,900.0	17,183.0	15.3 %
Total		12,455.8	15,475.2	17,808.7	15.1 %
Percentage change			24.2 %	15.1 %	

Annual energy consumption (MWh) Scope 1 & 2

□

Annual Market-Based GHG Emissions

Category	Unit	2021	2022	2023
Electricity Total (Scope 2) with Market-based calculations	tCO ₂ e	2,123.4	2,120.7	2,643.7
Scope 2 Total with Market-based electricity calculations	tCO ₂ e	2,123.4	2,120.7	2,643.7
Scope 1+2+3 Total with Market-based electricity calculations	tCO ₂ e	14,526.4	17,559.2	20,419.7
Percentage change			20.9 %	16.3 %

Annual Key Energy and Climate Performance Indicators

Name	Unit	2021	2022	2023	% change from previous year
Scope 1 + 2 emissions (tCO ₂ e)		622.9	575.2	625.6	8.8 %
Total emissions (s1+s2+s3) (tCO ₂ e)		12,455.8	15,475.2	17,808.7	15.1 %
Total energy scope 1 + 2 (MWh)		7,964.8	7,625.8	7,571.2	-0.7 %
Sum energy per location (MWh)		5,282.0	5,236.2	5,263.1	0.5 %
Sum square meters (m ²)		42,328.0	43,727.0	-	-100.0 %
Sum locations kWh/m ²		124.8	119.7	-	-100.0 %

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 1 Mandatory 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 certifies 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:

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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.

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.