



Carbon Accounting Report 2023

Mapei AS

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: operational control approach.

This report comprises the following organisational units: Mapei AS

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 14064-1.

Reporting Year Energy and GHG Emissions

Emission source	Description	Consumption	Unit	Energy (MWh)	Emissions tCO ₂ e	% share
Transportation total				972.4	248.6	37.4 %
Diesel		971.0	liters	9.6	2.6	0.4 %
Diesel (B5)	Firmabiler	69,478.0	liters	687.8	176.1	26.5 %
Petrol	Firmabiler	29,824.0	liters	275.0	69.9	10.5 %
Stationary combustion total				272.6	7.7	1.2 %
Biodiesel (100%), ME, stationary		28,239.0	liters	259.8	4.7	0.7 %
LPG		1,003.0	kg	12.8	2.9	0.4 %
Refrigerants total				-	14.0	2.1 %
R-407 C		8.0	kg	-	13.0	2.0 %
R-410 A		0.5	kg	-	1.0	0.1 %
Scope 1 total				1,245.1	270.3	40.7 %
Electricity total				7,761.3	48.1	7.2 %
Electricity Norway		7,761,280.4	kWh	7,761.3	48.1	7.2 %
Electricity general total				585.5	-	-
Electricity Geothermal		585,504.0	kWh	585.5	-	-
Electric vehicles total				-	-	-
Electric car Nordic	Mangler datagrunnlag 2023	-	kWh	-	-	-
Scope 2 total				8,346.8	48.1	7.2 %
Waste total				-	165.2	24.9 %
Water supply, groundwater		20,131.0	m ³	-	3.6	0.5 %
Hazardous waste, treated	TSS	1,551,600.0	kg	-	33.0	5.0 %
Hazardous waste, treated	HP	187,440.0	kg	-	4.0	0.6 %
Residual waste, incinerated		75,870.0	kg	-	41.8	6.3 %
Paper waste, recycled		6,868.0	kg	-	0.1	-
Metal waste, recycled		33,100.0	kg	-	0.7	0.1 %
Organic waste, treated		2,420.0	kg	-	0.1	-
Plastic waste, recycled		53,100.0	kg	-	1.1	0.2 %
Wood waste, recycled		117,150.0	kg	-	2.5	0.4 %
Hazardous waste, landfill	Pulver	481,900.0	kg	-	10.3	1.5 %
Industrial inert waste, landfill	Herdet	183,680.0	kg	-	0.2	-
Cardboard waste, recycled		35,100.0	kg	-	0.7	0.1 %
Waste, Transportation		0.2	tCO ₂ e	-	0.2	-
Hazardous waste, incinerated (Europe)	FA	27,440.0	kg	-	66.0	9.9 %
Hazardous waste, recycled	FA	2,860.0	kg	-	0.1	-
Waste water treatment		3,895.0	m ³	-	0.8	0.1 %
EE waste, recycled		1,144.0	kg	-	-	-
Glass waste, recycled		-	kg	-	-	-
Business travel total				-	180.4	27.2 %
Mileage all. car (NO)		79,055.4	km	-	5.4	0.8 %
Air travel, intercontinental, incl. RF		-	pkm	-	-	-
Air travel, domestic, incl. RF		457,296.0	pkm	-	124.7	18.8 %
Air travel, continental, incl. RF		270,651.0	pkm	-	50.3	7.6 %
Mileage all. el car Nordic		269.8	km	-	-	-

Scope 3 total	-	345.5	52.0 %
Total	9,591.9	663.9	100.0 %
KJ	34,530,708,240.0		

Reporting Year Market-Based GHG Emissions

Category	Unit	2023
Electricity Total (Scope 2) with Market-based calculations	tCO ₂ e	3,898.5
Scope 2 Total with Market-based electricity calculations	tCO ₂ e	3,898.5
Scope 1+2+3 Total with Market-based electricity calculations	tCO ₂ e	4,514.3

Results - Mapei AS GHG emissions accounting 2023

In the carbon accounting for 2023, Mapei's total greenhouse gas emissions were calculated to be 663.9 tonnes CO₂-equivalents (tCO₂e). This is a decrease of 17% compared to 2022, more specifically of 137.4 tCO₂e. The emissions have reduced in all scopes compared to 2022, primarily attributed to a decreased consumption across various emission categories. The emission sources included in the carbon accounting is the following: Transportation, stationary combustion, refrigerants (scope 1), electricity (scope 2), waste and business travel (scope 3).

The greenhouse gas emissions were allocated to the different scopes accordingly:

- 270.3 tCO₂e (41% share) in Scope 1.
- 48.1 tCO₂e (7% share) in Scope 2.
- 345.5 tCO₂e (52% share) in Scope 3.

Scope 1

Stationary combustion: The use of fossil fuels for stationary combustion, whether they are owned, leased, or rented. The emissions in scope 1 from stationary combustion have increased by 51%, with a total of 7.7 tCO₂e. This is due to an increase of consumption of Biodiesel and LPG, the two fuels used by Mapei.

Transportation: Diesel and petrol used for transportation by Mapei's company cars. Overall consumption of transportation was reduced from 124 060 liters in 2022 to 100 273 liters in 2023. The total emissions from transportation in 2023 was 248.6 tCO₂e. The reduced consumption led to a decrease of 20% in the emissions from transportation.

Refrigerants: Fugitive emissions from refrigerants used by Mapei.

Scope 2

Electricity: Scope 2 includes emissions from acquired electricity, heat, and cooling for Mapei's locations in Sagstua, Norway. The emissions in Scope 2 stand for 7% of Mapei's total emissions with a total of 48.1 tCO₂e with location-based calculations.

The emissions in Scope 2 have decreased by 23.8% compared to 2022. This is primarily from a decrease in amount of MWh consumed, with a consumption decrease of 12%. Furthermore, consumption of electricity for electric vehicles has not been reported this year. The emissions with market-based reporting are 3898.5 tCO₂e. The practice of presenting emissions from electricity consumption with two different emissions

factors is explained further under Scope 2 in Methods and Sources.

Scope 3

Overall scope 3 emissions reduced by 71.6 tCO₂e in absolute emissions, from 417 tCO₂e to 345.5 tCO₂e. This is a 17% reduction.

Business travel: The emissions in business travel have decreased by 3% compared to previous year. Measured in person-kilometer (pkm) or kilometers for air- and road transport. The data points in business transport includes mileage allowance, and air travel. The milage information is retrieved from the travel agency, as well as internal reporting through travel receipts. The emissions from mileage allowance in 2023 was 5.4 tCO₂e, which is an increase of 2.7 tCO₂e compared to previous year.

The emissions from air travel in 2023 was 175 tCO₂e. Compared to previous year, the emissions for domestic air travel have decreased, whereas the continental air travel have increased.

Waste: Reported waste, categorized by weight into various fractions and treatment methods (recycled, energy recovered, landfilled), resulted in emissions of 165.2 tCO₂e for the year 2023. This signifies a notable decrease of 65.5 tCO₂e, representing a 28% reduction compared to 2022.

Water consumption: Reported water consumption, measured in cubic meters (m³). The amount of wastewater going to treatment has reduced compared to 2022 by 52%, leading to an emission reduction of 64%.

Key information

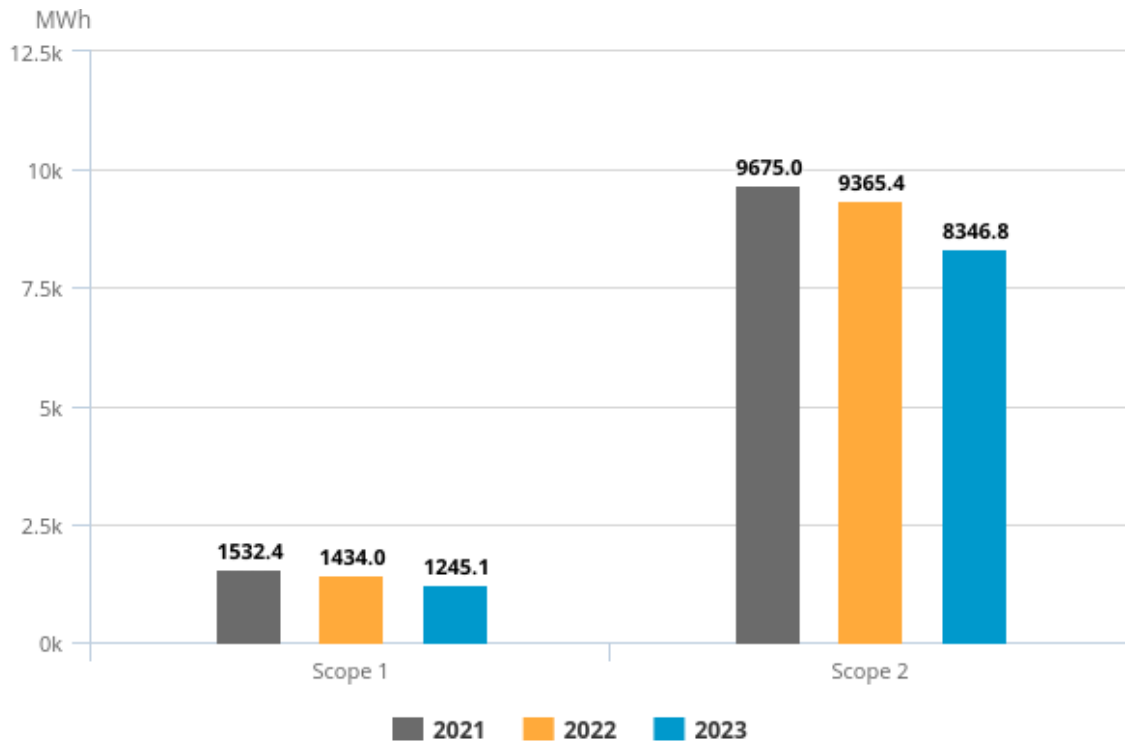
All key indicators in Scope 1, 2 and 3 were reduced from 2022 to 2023. The revenue and FTE increased in 2023 compared to 2022, but the produced volume decreased by 7.9%. Still, the CO₂e per produced volume decreased by 10%. Furthermore, the total CO₂ emission per revenue has decreased by -21.9%. This can be explained as a result of an overall decrease in company emissions in combination with increased FTE, revenue and produced volume from previous years.

Annual GHG Emissions

Category	Description	2021	2022	2023	% change from previous year
Transportation total		308.7	309.2	248.6	-19.6 %
Diesel (B5)	Firmabiler	183.5	195.9	176.1	-10.1 %
Petrol	Firmabiler	113.5	104.1	69.9	-32.9 %
Diesel		11.8	9.2	2.6	-71.7 %
Stationary combustion total		8.0	5.1	7.7	51.0 %
LPG		3.7	2.5	2.9	16.0 %
Biodiesel (100%), ME, stationary		4.3	2.6	4.7	80.8 %
Refrigerants total		27.5	6.7	14.0	109.0 %
R-404 A		27.5	-	-	-
R-407 C		-	6.7	13.0	94.0 %
R-410 A		-	-	1.0	100.0 %
Scope 1 total		344.2	321.1	270.3	-15.8 %
Electricity location-based total		90.4	63.1	48.1	-23.8 %
Electricity Norway		90.4	62.1	48.1	-22.5 %
Electric car Nordic	Mangler datagrunnlag 2023	-	1.1	-	-100.0 %
Electricity general total		-	-	-	-
Electricity Geothermal		-	-	-	-
Scope 2 total		90.4	63.1	48.1	-23.8 %
Waste total		347.5	230.8	165.2	-28.4 %
Water supply, groundwater		13.3	14.6	3.6	-75.3 %
Residual waste, incinerated		41.2	32.1	41.8	30.2 %
Paper waste, recycled		0.9	0.8	0.1	-87.5 %
Metal waste, recycled		0.7	0.7	0.7	-
Organic waste, treated		-	0.1	0.1	-
Plastic waste, recycled		1.0	0.9	1.1	22.2 %
Wood waste, recycled		3.1	2.6	2.5	-3.8 %
Hazardous waste, landfill	Pulver	11.5	9.1	10.3	13.2 %
Hazardous waste, incinerated (Europe)	FA	253.7	136.0	66.0	-51.5 %
Waste water treatment		2.1	2.2	0.8	-63.6 %
Waste, Transportation	erstattet fom 2022	19.8	-	-	-
Waste, Transportation		-	0.3	0.2	-33.3 %
EE waste, recycled		-	-	-	-
Glass waste, recycled		-	-	-	-
Hazardous waste, treated	TSS	-	27.5	-	-100.0 %
Hazardous waste, treated	HP	-	4.0	4.0	-
Hazardous waste, treated	TSS	-	-	33.0	100.0 %
Industrial inert waste, landfill	Herdet	-	-	0.2	100.0 %
Cardboard waste, recycled		-	-	0.7	100.0 %
Hazardous waste, recycled	FA	-	-	0.1	100.0 %
Business travel total		71.2	186.3	180.4	-3.2 %
Air travel, continental, incl. RF		4.4	20.8	50.3	141.8 %
Air travel, domestic, incl. RF		64.0	162.8	124.7	-23.4 %
Mileage all. car (NO)		2.8	2.7	5.4	100.0 %
Air travel, intercontinental, incl. RF		-	-	-	-

Mileage all. el car Nordic	-	-	-	-
Water consumption total	13.3	-	-	-
Water supply, groundwater	13.3	-	-	-
Scope 3 total	432.1	417.1	345.5	-17.2 %
Total	866.6	801.3	663.9	-17.1 %
Percentage change	100.0 %	-7.5 %	-17.1 %	

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	3,633.5	3,591.4	3,898.5
Scope 2 Total with Market-based electricity calculations	tCO ₂ e	3,633.5	3,592.5	3,898.5
Scope 1+2+3 Total with Market-based electricity calculations	tCO ₂ e	4,409.8	4,330.7	4,514.3
Percentage change		100.0 %	-1.8 %	4.2 %

Annual Key Energy and Climate Performance Indicators

Name	Unit	2021	2022	2023	% change from previous year
Scope 1 + 2 emissions (tCO ₂ e)		434.5	384.2	318.4	-17.1 %
Total emissions (s1+s2+s3) (tCO ₂ e)		866.6	801.3	663.9	-17.1 %
Total energy scope 1 + 2 (MWh)		11,207.5	10,799.3	9,591.9	-11.2 %
Sum energy per location (MWh)		9,675.0	9,365.4	8,346.8	-10.9 %
Sum square meters (m ²)		24,000.0	24,000.0	24,000.0	-
Sum locations kWh/m ²		403.1	390.2	347.8	-10.9 %
S1+S2 tCO ₂ e/Årsverk		2.0	1.8	1.5	-19.1 %
S1+S2 CO ₂ e/Omsetning		0.4	0.3	0.3	-21.8 %
S1+S2 tCO ₂ e/produisert volum		3.4	2.9	2.6	-10.1 %
S1+S2+S3 tCO ₂ e/Årsverk		4.0	3.9	3.1	-19.1 %
S1+S2+S3 tCO ₂ e/Omsetning		0.9	0.7	0.5	-21.9 %
S1+S2+S3 tCO ₂ e/produisert volum		6.7	6.1	5.5	-10.1 %
MWh/FTE		52.4	51.9	45.0	-13.3 %
FTE		214.0	208.0	213.1	2.5 %
Revenue	MNOK	1,011.0	1,191.6	1,263.4	6.0 %
Produced volume	1000 tonn	129.7	130.9	120.6	-7.9 %

Methodology and sources

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.