



Carbon Accounting Report 2021

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

This report comprises the following organisational units: Mapei AS

The input data is based on consumption data from internal and external sources, which are converted into tonnes CO₂-equivalents (tCO₂e). The carbon footprint 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 recognised international standard for measuring greenhouse gas emissions 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				1,272.0	308.7	37.4 %
Diesel (B5)	Firmabiler	71,145.0	liters	755.6	183.5	22.2 %
Petrol	Firmabiler	48,503.0	liters	470.0	113.5	13.7 %
Diesel		4,347.0	liters	46.4	11.8	1.4 %
Stationary combustion total				260.4	8.0	1.0 %
LPG		1,275.0	kg	17.5	3.7	0.5 %
Biodiesel (100%), ME, stationary		25,390.0	liters	243.0	4.3	0.5 %
Scope 1 total				1,532.4	316.7	38.4 %
Electricity Green total				557.4	-	-
Electricity Geothermal		557,411.0	kWh	557.4	-	-
Electricity total				9,038.6	90.4	11.0 %
Electricity Norway		9,038,643.0	kWh	9,038.6	90.4	11.0 %
Scope 2 total				9,596.1	90.4	11.0 %
Business travel total				-	68.2	8.3 %
Intercontinental, RF		28,524.0	pkm	-	5.5	0.7 %
Continental/Nordic, RF		44,730.0	pkm	-	6.9	0.8 %
Mileage all. car (NO)		28,726.0	km	-	2.8	0.3 %
Domestic, RF		215,711.0	pkm	-	53.0	6.4 %
Waste total				-	336.7	40.8 %
Residual waste, incinerated		82,063.0	kg	-	41.2	5.0 %
Paper waste, recycled		42,900.0	kg	-	0.9	0.1 %
Metal waste, recycled		34,120.0	kg	-	0.7	0.1 %
Organic waste, recycled		1,765.0	kg	-	-	-
Plastic waste, recycled		47,730.0	kg	-	1.0	0.1 %
Wood waste, recycled		146,820.0	kg	-	3.1	0.4 %
Industrial inert waste, landfill	MørteIstøv	537,731.0	kg	-	0.6	0.1 %
Hazardous waste, incinerated		105,000.0	kg	-	253.7	30.7 %
Waste water treatment		7,817.0	m ³	-	2.1	0.3 %
Waste, Transportation	Vaskevann, uorganisk	16.0	tCO ₂ e	-	16.0	1.9 %
Waste, Transportation	Vaskevann, organisk	3.8	tCO ₂ e	-	3.8	0.5 %
EE waste, recycled		1,708.0	kg	-	-	-
Glass waste, recycled		-	kg	-	-	-
Water supply, groundwater		23,101.0	m ³	-	13.3	1.6 %
Water consumption total				-	13.3	1.6 %
Water supply, groundwater		23,101.0	m ³	-	13.3	1.6 %
Scope 3 total				-	418.3	50.7 %
Total				11,128.5	825.3	100.0 %
KJ			40,062,541,428.0			

Reporting Year Market-Based GHG Emissions

Category	Unit	2021
Electricity market-based	tCO ₂ e	3,633.5
Scope 2 market-based	tCO ₂ e	3,633.5
Total market-based	tCO ₂ e	4,368.5

The greenhouse gas emissions in 2021 had the following mix:

Scope 1:	316.7 tCO ₂ e (38.4 %)
Scope 2:	90.4 tCO ₂ e (11 %)
Scope 3:	418.3 tCO ₂ e (50.7 %)
Total 2021:	825.3 tCO ₂ e

Reduction / increase from previous year

Scope 1 saw GHG emission reduction of -29.4% in 2021 compared to 2020, Scope 2 was reduced by -72% from the previous year, while scope 3 had an emission increase of 25,4% from 2020 to 2021. This leaves a total of -25,3% emission reduction overall, despite a revenue increase of 8.3%.

Scope 1

Stationary combustion: The use of fossil fuels for mobile and stationary combustion, whether they are owned, leased, or rented. Mapei swapped their main source of stationary combustion from burning oil to biodiesel, helping reduce annual GHG emissions from 71 tCO₂e to 4.3 tCO₂e – a reduction of -93,9%. The total GHG emission reduction in Scope 1 resulted therefore at -89,3%.

Transportation: Diesel and petrol used for transportation by Mapei's company cars. Overall consumption of transportation was reduced from 150,666 liters in 2020 to 123,995 liters in 2021, resulting in a -17.4 % decrease in emissions year-on-year.

Scope 2

Electricity: Measured use of electricity in company-owned or leased locations. The table shows GHG emissions from electricity calculated with location-based emission factor Electricity Norway, a change in emissions factor from Electricity Nordic (M) in 2020. The MWh consumed by Mapei rose from 8,596.4 MWh in 2020 to 9,596.1 MWh in 2021, yet emission fell by -72%. The reason is that the Norwegian electricity mix has a larger proportion of renewable sources than the Nordic Mix.

Scope 3

Overall scope 3 emissions saw an increase from 2020 with emissions growing from 333.6 tCO₂e to 418.3 tCO₂e, equivalent to 25.4%.

Business travel: Measured in person-kilometer (pkm). The mileage information is retrieved from the travel agency, as well as internal reporting through travel receipts. The emission factors for business travel have

been changed from previous years. Emission factors for 2021 takes radiative forcing into account, meaning that with the RF factor, the emissions include both direct (CO₂, CH₄ and N₂O) and indirect (non-CO₂ emissions e.g., water vapour, contrails, NO_x) climate change effects. This provides a more accurate representation of the GHG emissions. Business travel saw an increase of 342.8% from 2020 to 2021, from 15.4 tCO₂e to 68.2 tCO₂e, respectively. The corona pandemic hit in the beginning of 2020, which set restraints on travelling, hence the large increase. The change in emission factor results in higher emissions due to more accurate emissions, which also contributes to the increase seen on the 2021 numbers. With 2019 being pre-corona, this is a more appropriate year for comparison. Thus, giving a -57.6 % emission reduction when comparing 2021 to 2019.

Waste: Reported waste in kilo divided into different waste fractions, as well as treatment methods (recycled, energy recovered, landfilled). The reported emissions on waste in 2021 was 336.7 tCO₂e. The Covid pandemic needs to be considered when looking at the reported number for 2020, which was 307.1 tCO₂e. Many companies were obligated to have the offices closed and primarily have the employees work from home, leaving waste at the office to drop considerably. Therefore, a better year for comparison is 2019, at 570.8 tCO₂e.

Water consumption: reported in m³. Reported emissions on water has increased in 2021, both when comparing with 2020 and 2019. The emissions reported was 13.3 tCO₂e in 2021, while being 11.1 tCO₂e in 2020, and 12.1 tCO₂ in 2019, meaning an increase of 20.1% from the previous year.

Key information

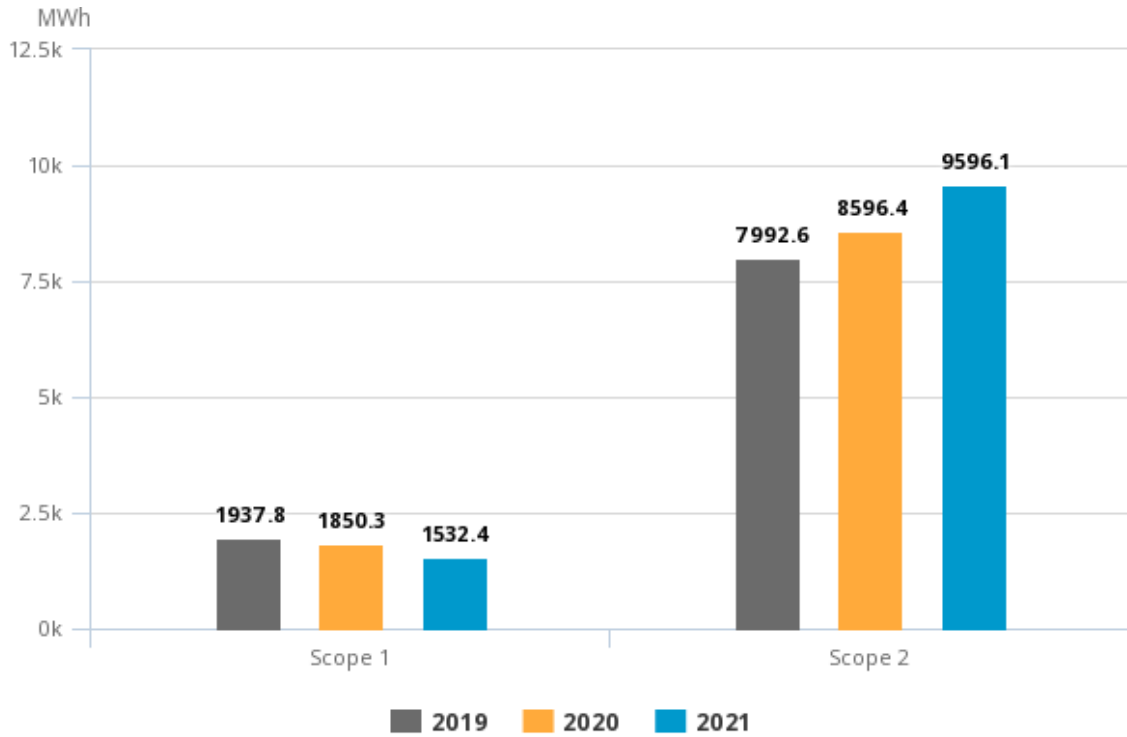
All key indicators in Scope 1, 2 and 3 was reduced from 2020 to 2021. Total CO₂ emission per man-hour has decreased with -12.4%, total emissions from MNOK turnover has decreased by -18.8%, and total emission per 1000 tons is down -15.8%. This can be explained as a result of an overall decrease in company emissions in combination with increased FTE, revenue and produced volume from previous years.

Annual GHG Emissions

Category	Description	2019	2020	2021	% change from previous year
Stationary combustion total		72.4	74.5	8.0	-89.3 %
Burning oil		68.8	71.0	-	-100.0 %
LPG		3.6	3.5	3.7	7.2 %
Biodiesel (100%), ME, stationary		-	-	4.3	100.0 %
Transportation total		396.1	373.9	308.7	-17.4 %
Diesel (B5)	Firmabilier	280.5	260.7	183.5	-29.6 %
Petrol	Firmabilier	115.6	113.2	113.5	0.2 %
Diesel		-	-	11.8	100.0 %
Scope 1 total		468.6	448.4	316.7	-29.4 %
Electricity total		311.7	322.9	90.4	-72.0 %
Electricity Nordic mix		311.7	-	-	-
Electricity Nordic (M)		-	322.9	-	-100.0 %
Electricity Norway		-	-	90.4	100.0 %
Electricity Green total		-	-	-	-
Electricity Geothermal		-	-	-	-
Electricity (Market based) total		-	-	-	-
Electricity Norway (residual)		-	-	-	-100.0 %
Scope 2 total		311.7	322.9	90.4	-72.0 %
Business travel total		160.9	15.4	68.2	342.8 %
Intercontinental		4.8	5.3	-	-100.0 %
Nordic		115.3	-	-	-100.0 %
Continental/Nordic		32.4	4.9	-	-100.0 %
Mileage all. car (NO)		8.3	5.2	2.8	-46.3 %
Intercontinental, RF		-	-	5.5	100.0 %
Continental/Nordic, RF		-	-	6.9	100.0 %
Domestic, RF		-	-	53.0	100.0 %
Waste total		570.8	307.1	336.7	9.6 %
Residual waste, incinerated		55.4	34.3	41.2	20.1 %
Paper waste, recycled		0.1	1.0	0.9	-5.0 %
Metal waste, recycled		0.8	0.5	0.7	38.6 %
Organic waste, recycled		-	-	-	138.5 %
Plastic waste, recycled		1.2	1.2	1.0	-18.3 %
Wood waste, recycled		3.5	3.1	3.1	1.7 %
Industrial inert waste, landfill	Mørtelstøv	0.8	0.7	0.6	-5.2 %
Hazardous waste, incinerated		474.2	240.5	253.7	5.5 %
Waste water treatment		4.8	3.5	2.1	-39.6 %
Waste, Transportation	Vaskevann, uorganisk	23.2	18.3	16.0	-12.6 %
Waste, Transportation	Vaskevann, organisk	6.8	4.0	3.8	-5.0 %
EE waste, recycled		-	-	-	-
Glass waste, recycled		-	-	-	-
Water supply, groundwater		-	-	13.3	100.0 %
Water consumption total		12.1	11.1	13.3	20.1 %
Water supply, groundwater		12.1	11.1	13.3	20.1 %
Scope 3 total		743.8	333.6	418.3	25.4 %
Total		1,524.1	1,104.9	825.3	-25.3 %

Percentage change	100.0 %	-27.5 %	-25.3 %
-------------------	---------	---------	---------

Annual energy consumption (MWh) Scope 1 & 2



Annual Market-Based GHG Emissions

Category	Unit	2019	2020	2021
Electricity market-based	tCO ₂ e	1,630.5	1,961.1	3,633.5
Scope 2 market-based	tCO ₂ e	1,630.5	1,961.1	3,633.5
Total market-based	tCO ₂ e	2,842.8	2,743.1	4,368.5
Percentage change		100.0 %	-3.5 %	59.3 %

Annual Key Energy and Climate Performance Indicators

Name	Unit	2019	2020	2021	% change from previous year
Total emissions (s1+s2+s3) (tCO ₂ e)		1,524.1	1,104.9	825.3	-25.3 %
Total energy scope 1 +2 (MWh)		9,930.3	10,446.7	11,128.5	6.5 %
S1+S2 tCO ₂ e/Årsverk		4.0	3.6	1.9	-47.4 %
S1+S2 tCO ₂ e/produsert volum		6.3	6.2	3.1	-49.5 %
S1+S2+S3 tCO ₂ e/Årsverk		7.9	5.2	3.9	-25.5 %
S1+S2+S3 tCO ₂ e/Omsetning		1.7	1.2	0.8	-31.0 %
S1+S2+S3 tCO ₂ e/produsert volum		12.4	8.9	6.4	-28.5 %
MWh/FTE		51.2	49.0	52.0	6.2 %
Revenue	MNOK	913.2	933.6	1,011.0	8.3 %
Produced volume	1000 tonn	123.3	124.2	129.7	4.4 %
FTE		194.1	213.3	214.0	0.3 %

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 fossil 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.

Scope 2 includes indirect emissions related to purchased energy; electricity and heating/cooling where the organisation has operational control. The electricity emission factors used in Cemsys are based on national gross electricity production mixes from the International Energy Agency's statistics (IEA Stat). Emission factors per fuel type are based on assumptions in the IEA methodological framework. Factors for district heating/cooling are either based on actual (local) production mixes, or average IEA statistics.

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 methods. 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 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 factors when using this method is determined by whether the business acquires GoOs/RECs or not. When selling GoOs or RECs, the supplier certifies that the electricity is produced exclusively by renewable sources, which has an emission factor of 0 grams CO₂e per kWh. However, for electricity without the GoO or REC, the emission factor is based on the remaining electricity production after all GoOs and RECs 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/RECs to foreign consumers. In a

market perspective, this implies that Norwegian hydropower is largely substituted with an electricity mix including fossil fuels.

Scope 3 includes indirect emissions resulting from value chain activities. The scope 3 emissions are a result of the company's upstream and downstream activities, which are not controlled by the company, i.e. they are indirect. Examples are business travel, goods transportation, waste handling, consumption of products etc.

In general, the carbon accounting 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 which reflects the substance and economic reality of the company's business relationships.