



Carbon accounting report 2019

NPRO

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. For further information regarding Norwegian Property's efforts on sustainability, see the annual report's section on corporate social responsibility.

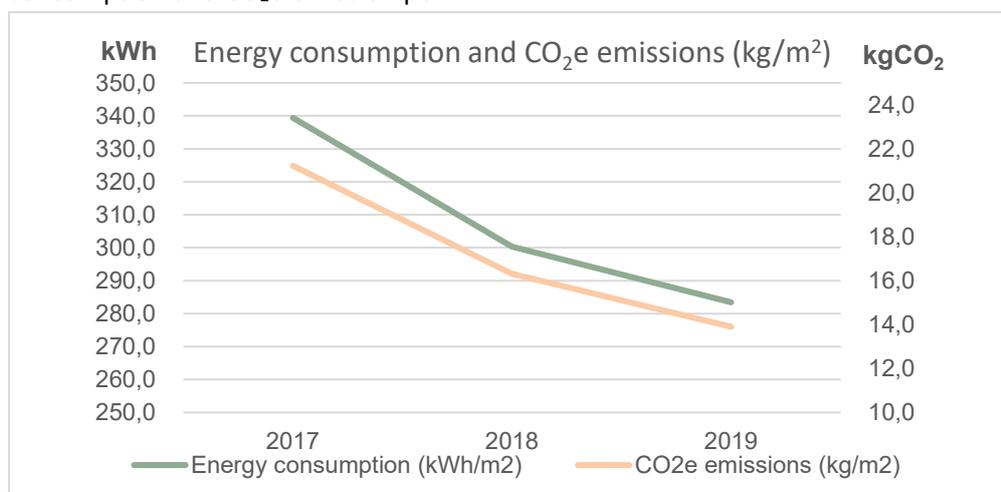
This report comprises the following units: 20 buildings, 1 marina, 2 data centres and the Energy Centre for 2019.

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.

Norwegian Property ASA

In 2019 Norwegian Property ASA had a continued reduction of the total CO₂e emissions, with a reduction of 17.3% compared to the previous year. From 2018 to 2019 the total energy consumption was also reduced. The reduction is due to sale of properties and warm weather during the summer of 2018, which led to high energy consumption for cooling.

As a corporate real estate company, the natural focus for NPRO's Carbon Accounting report is the energy consumption and CO₂e emissions relating to operating the leased buildings. To achieve comparable results from year to year, NPRO measures the energy consumption and emissions per m² in the leased buildings. For the last three years, there has been a reduction in both energy consumption and CO₂e emission per m² ¹.



In February 2020 the board adopted the following target for reduction of energy consumption and CO₂e-emissions, which are measured as annual kWh per m² and tons per m²:

- a 30-50 per cent reduction in energy consumption for renovated buildings
- a five to 10 per cent reduction in energy consumption for the existing portfolio
- a 10-20 per cent reduction in CO₂ equivalent (CO₂e) emissions
- a 60-65 per cent proportion for sorted waste.

¹In the calculation of energy consumption and CO₂e emission per m², lit and heated areas (offices, retail stores, and restaurants) in buildings that have been leased are included in the report, while areas such as parking, basements and storage are excluded. Furthermore, only consumption where NPRO is responsible for operating the building is included in this report.

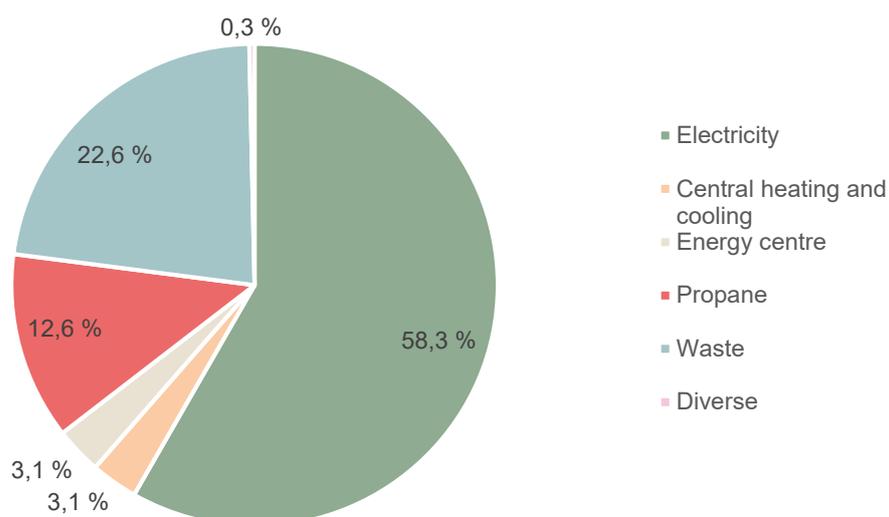
NPRO's property portfolio includes many restaurants and retail stores at Aker Brygge. These areas consume more energy than regular office areas. NPRO therefore introduced a split reporting on energy consumption and emission for offices, retail and restaurants from 2018.

	2019	2018	2017
Total energy consumption, MWh	62 113,1	67 824,3	64 369,9
Energy consumption (kWh/m²)	283,4	300,4	339,4
Change from previous year:	-6 %	-12 %	
Office	191,4	202,5	
Retail	438,5	457,7	
Restaurant	853,7	974,1	
Total CO₂e emissions, tonne	3 046,2	3 682,5	4 026,2
CO₂e emissions (kg/m²)	13,9	16,3	21,2
Change from previous year:	-15 %	-23 %	
Office	6,0	7,3	
Retail	12,5	15,0	
Restaurant	27,6	36,1	
Degree of waste sorting in properties	56 %	62 %	63 %
Tenant satisfaction index	78	delayed	77

Comments

Total CO₂e emissions: In 2019, NPRO's Carbon Accounting included total emissions of 3,046.2 metric tons of CO₂ equivalents (tCO₂e). Compared to 2018, this is a reduction of 17.3% or 636.3 tCO₂e.

Total CO₂e-emissions from Norwegian Property in 2019, split on category in percent



The figure above shows the distribution of CO₂e emissions per source. The measures NPRO have decided to focus on in their environmental strategy are increasing the share of clean energy sources,

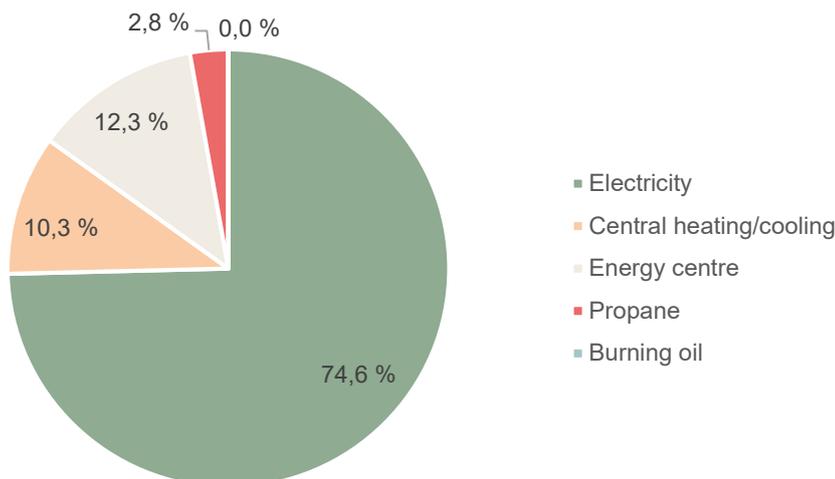
such as the energy centre at Aker Brygge, and increasing the degree of waste sorting for the properties. NPRO is also working on reducing the general consumption of energy. At Aker Brygge a sustainability project has been started to reduce the restaurants' consumption of propane.

Total energy consumption: NPRO had an energy consumption of 62,113.1 MWh in 2019, compared to 67,824.3 MWh in 2018. This is a reduction of 8.4 % and is equivalent to 5,711.2 MWh. An important reason for this reduction is that the properties in Stavanger, Maskinveien 32 and Svanholmen 2, have been sold and are therefore not included in the carbon accounting report for 2019. In addition, we have seen the effect of the rehabilitation of Drammensveien 60, which contributed to reducing the energy consumption (41% reduction from the annual consumption preceding the project) and lowering the CO₂e emissions. There are also reasons to believe that the stable temperatures during the year have contributed to lower energy consumption in all buildings. The electricity consumption was reduced by 8.1%, from 51,852.0 MWh in 2018 to 47,668.8 MWh in 2019.

The figure below shows the distribution of energy consumption in 2019. Electricity is the main source of energy. Central heating and cooling are also significant sources of energy, whilst contributing to relatively low CO₂e emissions. Propane, on the other hand, makes a considerable contribution to the group's CO₂e-emissions, 12.6% even though the consumption of propane is only 2.8 % of total consumption

Distribution of energy consumption:

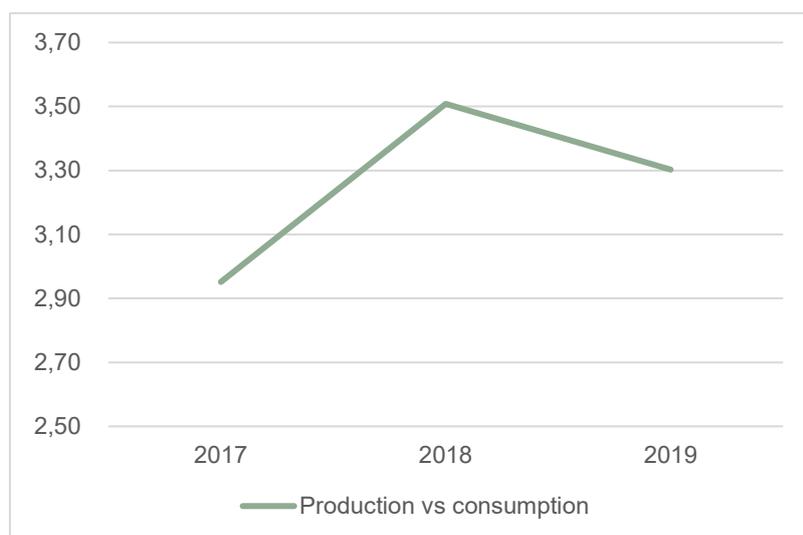
Total energy consumption in Norwegian Property's buildings in 2019, split on sources of energy in percent



Total space: NPRO rented out 219,143 m² in 2019 compared to 225,803 m² in 2018, a decrease of 6,660 m² or 3 % from 2018 to 2019. It is the sold properties in Stavanger that cause the reduction in m², and the purchase of new sections at Aker Brygge increase the number of m² slightly.

Energy Centre: The properties connected to the Energy Centre (Bryggegata 7-9, Terminalbygget and Verkstedhallene) have reduced their consumption of heating and cooling from the Energy Centre with 8.2 %. In 2018 and 2019, the Energy Centre accounted for 13% and 12 % respectively of the total energy consumption of NPRO.

NPRO is continuously working on improving the efficiency of the Energy Centre. The Centre consumes some electricity in order to produce heating and cooling from sea water. The share of produced energy compared to consumed energy was 330 % in 2019. In addition, the Energy Centre distributes some central heating and cooling to the properties from external suppliers. 2018 was the year with the highest efficiency so far, as the warm summer caused a high consumption of cooling, which the Energy Centre produces very efficiently. The figure below shows the development of the Energy Centre's efficiency.



Emission factors: Emission factors used in the Carbon Accounting report change annually. The total change from 2018 to 2019 was, resulting from emission factor changes, 242.6 tCO₂e.

Emissions from electricity are calculated with a location-based emission factor called Nordic mix. The Nordic mix emission factor has been reduced by 13.3 % from 2018 to 2019, which reduces total emission by 247.9 tCO₂e. This indicates that electricity produced in the Nordic region in 2019 has become more renewable compared to last year (example: hydro power increases, while coal/fossil fuel power decreases in the production of electricity).

The emission factors for district heating and cooling for 2019 are updated at the end of 2020. Therefore, these emission factors do not cause changes in the emissions in this carbon accounting report.

Scope 1

Scope 1 includes the company's emissions from transport and oil burners. This adds up to a very small share of NPRO's consumption and emissions.

The direct emissions in Scope 1 for 2019 were 14.6 tCO₂e, where of 2.8 tCO₂e originate from an oil burner in Gullhaugveien 9-13. The oil burner has been converted to biofuel in 2019.

Scope 2

64.5 % of the emissions from 2019 are allocated in Scope 2, which includes indirect emissions from the purchase of energy. For NPRO, these are emissions from the energy consumption in the buildings, such as electricity, district heating and cooling.

The consumption of energy in Scope 2 decreased from 67,824.3 MWh in 2018 to 62,113.1 MWh in 2019, a change equivalent to 5,711.2 MWh or 8.4 %.

Electricity: The Scope 2 electricity consumption was reduced by 8.1 %, from 51,852 MWh in 2018 to 47,668.8 MWh in 2019, which is equivalent to 474.2 tCO₂e.

Electricity with a market-based emission factor (Renewable Energy Certificates (RECs) and residual mix) is marked with an asterisk (*) at the bottom of the tables in pages 14 and 15. Since NPRO has not purchased electricity with Guarantees of Origin (GoO) or RECs, the calculations use a methodology based on Nordic electricity residual mix emission factor (Ref. RE-DISS, 2018). Based on this approach, Norwegian Property's emissions decreased by 5,260.8 tCO₂e or 35.1 % from 2018 to 2019. This new practice was introduced to the GHG Protocol in 2015 and is explained further in this report under the Methodology and Sources section below.

District heating and cooling: District heating and cooling consumption emissions in Scope 2 are reduced by 10 % or 11.3 tCO₂e from 2018 to 2019, and the consumption was reduced with 816 MWh. District heating and cooling production at the Energy Centre has decreased from 8,532.0 MWh in 2018 to 7,831.3 MWh in 2019, a reduction of 700.7 MWh and 8.2 %.

Scope 3

35.4% of the emission for 2019 are allocated in Scope 3, where indirect emissions related to the purchase or leasing of goods and services are reported. In this category, NPRO reports on traveling, waste and propane consumption.

Air travel: There was a reduction in emissions related to air travel from 9.9 tCO₂e in 2018 to 6.1 tCO₂e in 2019, equivalent with a reduction of 38%.

Business travel: The emissions related to business travel in 2019, which includes hotel accommodation and car mileage, account for 0.9 tCO₂e.

Waste: There was a reduction of 10.5 % or 80.7 tCO₂e in the amount of total waste produced. A reason for the reduced amount of waste is the sale of Svanholmen 2 in Stavanger. The property was partly leased to an Elkjøp store, which had over 200,000 kg of electric waste. Another important factor for the reduction is the completion of the building project at Drammensveien 60 in 2018. There was over 400,000 kg of waste from this site with a 93 % waste sorting degree. The major share of the waste originates from Aker Brygge, which had 2,212 tonne waste in 2019. The degree of waste sorting has increased significantly since NPRO started working actively with environmental issues in 2011, when the degree of waste sorting was 15 % at Aker Brygge. For 2019 the degree of sorting was 56 %, a reduction from 2018, when the degree of waste sorting was 62%. Most of the reduction relates to the completion of the refurbishment project in Drammensveien 60 , where the sorting of

waste from building materials was over 90%. The target set by the board is 60-65% proportion for sorted waste. Below are the results for the last three years.

	2019	2018	2017
Degree of waste sorting in properties	56 %	62 %	63 %

Propane: The tenants' consumption of propane is appropriate to report in Scope 3. The consumption of propane is mainly caused by restaurants who use propane for cooking. NPRO is currently working on a project where the energy consumption of restaurants and retail stores are evaluated. As part of this project, the consumption of propane will also be considered.

Data collection

NPRO has collected energy data directly from the energy supplier for the Marina, Dokkbygget, Fondbygget, Kaibygge I and II, Maskinveien 32, Bryggegata 7-9, Terminalbygget and Verkstedhallene, as well as district heating/cooling in Nydalen. For buildings not mentioned here, data has been collected from the buildings' own energy systems. 2015 was the first year with full production at the Energy Centre at Aker Brygge. The Centre produces district heating and cooling from sea water. The centre's consumption of electricity is reported as consumption by the Energy Centre, while the supply of energy to the buildings connected to the centre is measured in each building's energy monitoring system and reported for each building.

Locations included in the Carbon Accounting Report 2019

Buildings area (m²) 2017-2019
Bryggegata 7-9 incl. Støperiet
Dokkbygget
Fondbygget
Kaibygge 1
Kaibygge 2
Terminalbygget
Tingvalla
Verkstedhallene
Gjerdrumsvei 10 D
Gjerdrumsvei 14-16
Gjerdrumsvei 17
Gjerdrumsvei 8
Gullhaug Torg 3
Gullhaugveien 9-13
Nydalsveien 15
Nydalsveien 17
Sandakerveien 130
Badehusgaten 33-39
Maskinveien 32
Svanholmen 2
Drammensveien 60
Snarøyveien 36
Energisentral (divided between buildings)

Locations without area 2017-2019
Snow melting plant
Tingvalla båthavn
Tingvalla Marina
Gullhaugveien 9-13 Data Center
Sandakerveien 130 Data Center

Energy and GHG emissions

Category	Description	Consumption	Unit	Energy (MWh eqv)	Emissions (tCO ₂ e)	Emissions (distribution)
<i>Transportation</i>				11.8	2.8	0.1%
Petrol		173.8	liters	1.7	0.4	-
Car avg.		-	km	-	-	-
Diesel (NO)		993.0	liters	10.2	2.4	0.1%
<i>Stationary combustion</i>				2.8	0.7	-
Burning oil	Oil burner	2 810.0	kWh	2.8	0.7	-
Scope 1 total				14.6	3.5	0.1%
<i>Electricity</i>				47 668.8	1 859.1	61.0%
Electricity Nordic mix		41 626 369.2	kWh	41 626.4	1 623.4	53.3%
Electricity Nordic mix	Data Centre	3 873 070.0	kWh	3 873.1	151.0	5.0%
Electricity Nordic mix	Energy Centre - consumption	2 169 363.0	kWh	2 169.4	84.6	2.8%
<i>DH Nordic locations</i>				6 598.4	105.7	3.5%
District heating NO/Oslo		4 581 593.0	kWh	4 581.6	68.7	2.3%
District heating NO/Oslo	Energy Centre - consumption	704 950.0	kWh	704.9	10.6	0.3%
District heating NO/Stavanger		-	kWh	-	-	-
District cooling NO/Stavanger		-	kWh	-	-	-
District cooling water to air		992 560.0	kWh	992.6	14.9	0.5%
District heating NO/Nydalen		319 249.0	kWh	319.2	11.5	0.4%
<i>District heating general</i>				7 831.3	-	-
District heating Renewable	Energy Centre - production	4 507 389.0	kWh	4 507.4	-	-
District cooling Seawater	Energy Centre - production	3 323 876.0	kWh	3 323.9	-	-
Scope 2 total				62 098.4	1 964.8	64.5%
<i>Air travel</i>				-	6.1	0.2%
Continental/Nordic		54 545.0	pkm	-	4.6	0.1%
Intercontinental		-	pkm	-	-	-
Domestic		11 701.0	pkm	-	1.6	0.1%
<i>Business travel</i>				0.1	0.9	-
Hotel acc.(Nordic)		5.0	nights	-	-	-
Hotel acc.(Europe)		4.0	nights	-	0.1	-
Mileage all. car (NO)		5 751.0	km	-	0.8	-
Mileage all. electric car (NO)		449.0	km	0.1	-	-
<i>Propane tenants Aker Brygge</i>				1 783.4	382.6	12.6%
Propane		130 270.0	kg	1 783.4	382.6	12.6%
<i>Waste</i>				-	688.3	22.6%
Waste mix, incinerated	Unsorted	1 301 006.0	kg	-	653.1	21.4%
Waste mix, recycled	Sorted	1 642 983.0	kg	-	35.2	1.2%
Scope 3 total				1 783.5	1 077.9	35.4%
<i>Total</i>				63 896.5	3 046.2	100.0%
<i>Electricity market-based</i>					9724.4	
<i>Scope 2 market-based</i>					9830.1	
<i>Total market-based</i>					10911.5	

Yearly report – GHG emissions (tCO₂e)

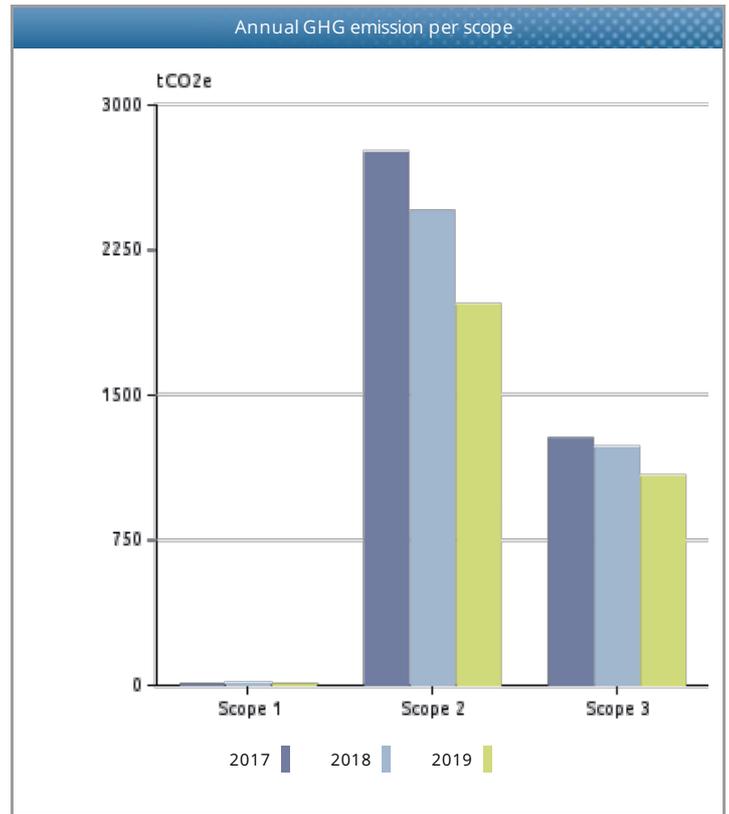
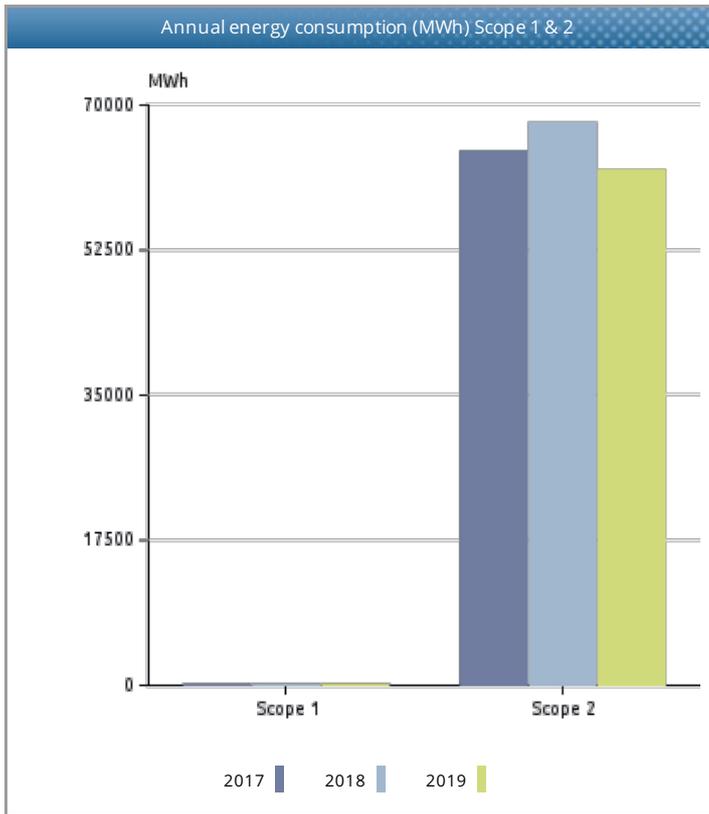
Category	Description	2017	2018	2019	% change from previous year
<i>Stationary combustion</i>					-
Burning oil		0.8			-
Burning oil	Oil burner		6.4	0.7	-89.1%
<i>Transportation</i>					-
Car avg.		0.9	0.9	-	-100.0%
Diesel (NO)				2.4	100.0%
Petrol				0.4	100.0%
Scope 1 Emissions		1.7	7.3	3.5	-52.6%
<i>DH Nordic locations</i>					-
District cooling NO/Stavanger		32.0	3.8	-	-100.0%
District cooling water to air		10.5	19.3	14.9	-23.0%
District heating NO/Nydalen		5.2	5.8	11.5	98.9%
District heating NO/Oslo		62.7	74.3	68.7	-7.5%
District heating NO/Oslo	Energy Centre - consumption	10.0	10.5	10.6	1.1%
District heating NO/Stavanger		4.0	3.4	-	-100.0%
<i>District heating general</i>					-
District cooling Seawater	Energy Centre - production	-	-	-	-
District cooling Seawater	Energy Centre - production	-	-	-	-
District heating Renewable	Energy Centre - production	-	-	-	-
District heating Renewable	Energy Centre - production	-	-	-	-
<i>Electricity</i>					-
Electricity Nordic mix	Energy Centre - consumption	117.0	100.1	84.6	-15.5%
Electricity Nordic mix	Office	179.7			-
Electricity Nordic mix		2 078.5	2 041.6	1 623.4	-20.5%
Electricity Nordic mix	Data Centre	250.9	191.6	151.1	-21.2%
Scope 2 Emissions		2 750.6	2 450.4	1 964.8	-19.8%
<i>Air travel</i>					-
Continental/Nordic		1.8	1.2	4.6	268.4%
Domestic		4.4	5.3	1.6	-70.3%
Intercontinental		10.0	3.3	-	-100.0%
Nordic		-	-	-	-
<i>Waste</i>					-
Hazardous waste, recycled	Sorted		0.1		-100.0%
Waste mix, recycled	Sorted	69.5	45.9	35.2	-23.3%
Waste mix, incinerated	Unsorted	733.0	719.2	653.1	-9.2%
WEEE, recycled		10.6	3.9		-100.0%
<i>Business travel</i>					-
Hotel acc. (Europe)		0.4	0.1	0.1	-28.0%
Hotel acc. (Nordic)		0.1	0.1	-	-64.3%
Mileage all. car (NO)		0.7	0.5	0.8	66.7%
Mileage all. electric car (NO)				-	-
<i>Propane tenants Aker Brygge</i>					-
Propane		443.5	445.2	382.6	-14.1%
Scope 3 Emissions		1 273.9	1 224.8	1 077.9	-12.0%
Total		4 026.2	3 682.5	3 046.2	-17.3%
Percentage change			-8.5%	-17.3%	

Yearly Report - Key Figures Energy

Category	Description	Unit	2017	2018	2019
Transport					
Diesel (NO)		MWh			10.2
Petrol		MWh			1.7
Transport Total		MWh			11.8
Stationary combustion					
Burning oil		MWh	3.3		
Burning oil	Oil burner	MWh		25.9	2.8
Stationary combustion Total		MWh	3.3	25.9	2.8
Scope 1 Total		MWh	3.3	25.9	14.9
DH Nordic locations					
District cooling NO/Oslo		MWh	697.5	1 288.6	992.6
District cooling NO/Stavanger		MWh	610.4	72.4	0
District heating NO/Nydalen		MWh	211.2	233.7	319.2
District heating NO/Oslo		MWh	4 180	4 952.1	4 581.6
District heating NO/Oslo	Energy Centre - consumption	MWh	664.8	697.5	704.9
District heating NO/Stavanger		MWh	204.1	170.1	0
DH Nordic locations Total		MWh	6 568	7 414.4	6 598.4
District heating general					
District cooling Seawater	Energy Centre - production	MWh	3 253.7	3 969.6	3 323.8
District heating Renewable	Energy Centre - production	MWh	4 042.7	4 562.4	4 507.3
District heating general Total		MWh	7 296.4	8 532	7 831.1
Electricity					
Electricity Nordic mix		MWh	43 427.3	45 368.7	41 626.4
Electricity Nordic mix	Energy Centre - consumption	MWh	2 249.6	2 224.7	2 169.4
Electricity Nordic mix	Data Centre	MWh	4 825.4	4 258.6	3 873.1
Electricity Total		MWh	50 502.3	51 852	47 668.8
Scope 2 Total		MWh	64 366.6	67 798.5	62 098.4
Total		MWh	64 369.9	67 824.3	62 113.1
Total in Giga Joule		GJ	231 731.5	244 168	223 607
Percentage change			-6.7%	5.4%	-8.4%

Key energy and climate performance indicators

Name	Unit	2017	2018	2019	% change from previous year
tCO ₂ e/FTE (S1+2)	FTE	54.0	50.2	38.6	-23.1%
tCO ₂ e/FTE (S1+2+3)	FTE	78.9	75.2	59.7	-20.5%
tCO ₂ e/Revenue (S1+2)	MNOK	3.5	3.1	1.8	-42.8%
tCO ₂ e/Revenue (S1+2+3)	MNOK	5.1	4.6	2.7	-40.9%



Market-based GHG emissions summary

<i>Category</i>	<i>Unit</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>
<i>Electricity market-based</i>	<i>tCO2e</i>	<i>13888.1</i>	<i>14985.2</i>	<i>9724.4</i>
<i>Scope 2 market-based</i>	<i>tCO2e</i>	<i>14012.6</i>	<i>15102.3</i>	<i>9830.1</i>
<i>Total market-based</i>	<i>tCO2e</i>	<i>15288.2</i>	<i>16334.4</i>	<i>10911.5</i>
<i>Percentage change</i>			<i>6.8 %</i>	<i>-33.2 %</i>

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 market-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:

[Department for Business, Energy & Industrial Strategy](#) (2019). Government emission conversion factors for greenhouse gas company reporting (DEFRA)

IEA (2019). CO2 emission from fuel combustion, International Energy Agency (IEA), Paris.

IEA (2019). 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/>

AIB,RE-DISS (2019). 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 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.