



Carbon accounting report 2018

Storebrand Eiendomsfond Norge KS (SEN KS)

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.

The report covers 18 properties in Storebrand Eiendomsfond Norge KS (SEN KS), as listed below. The fund invests only in properties in Norway. The report does not include the location Destilleriveien 11 (53188 m²), due to lack of data from the reporting year. This property counts for 12% of the total m² for all properties. The climate accounts have therefore a coverage ratio of 88% out of the total of 440692 m².

- Grev Wedels Plass 9
- Brynsalleen 6
- Nydalsveien 36
- Nydalsveien 38
- Gullhaug Torg 2B
- Lysaker Polaris
- Solheimsgaten 7A-E
- Østfoldhallen Kjøpesenter
- Retail Østfoldhallen (Dikev.)
- Metro Kjøpesenter
- Våler Distribusjonslager AS
- Bergerterminalen
- Deli Skog Syd Øst
- Berger Omlastningssentral
- Båntjernveien 12 - 15 AS
- Fornebu Hotell AS
- Lagårdsveien 44
- Destilleriveien 11 (not included for 2018)

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.

Energy and GHG emissions

Category	Description	Consumption	Unit	Energy (MWh eqv)	Emissions (tCO2e)	Emissions (distribution)
<i>Stationary combustion</i>				587.2	134.7	4.3%
Burning oil		270 792.0	kWh	270.8	66.8	2.1%
LPG (Propane)		316 448.0	kWh	316.4	67.9	2.2%
Scope 1 total				587.2	134.7	4.3%
<i>Electricity*</i>				50 173.1	2 257.8	72.5%
Electricity Nordic mix		14 008 256.0	kWh	14 008.3	630.4	20.2%
Electricity Nordic mix	Fellesanlegg	10 521 679.1	kWh	10 521.7	473.5	15.2%
Electricity Nordic mix	Leietakere	25 643 188.3	kWh	25 643.2	1 153.9	37.0%
<i>DH Nordic locations</i>				12 406.1	208.5	6.7%
District heating NO/Oslo		5 290 314.1	kWh	5 290.3	79.4	2.5%
District heating NO/Fredrikstad		282 661.0	kWh	282.7	2.8	0.1%
District heating NO/Lysaker		4 082 390.0	kWh	4 082.4	69.4	2.2%
District heating NO/Stavanger		607 692.3	kWh	607.7	12.0	0.4%
District cooling NO/Oslo		841 650.0	kWh	841.6	12.6	0.4%
District heating NO/Nydalen		1 301 400.0	kWh	1 301.4	32.3	1.0%
<i>Electricity Green</i>				1 014.5	-	-
Electricity Renewable onsite		1 014 482.0	kWh	1 014.5	-	-
Scope 2 total				63 593.7	2 466.3	79.2%
<i>Waste</i>				-	461.3	14.8%
Waste, energy recovered	Usortert	787 681.7	kg	-	395.4	12.7%
Waste mix, recycled	Sortert	3 095 206.4	kg	-	65.9	2.1%
<i>Vann</i>				-	52.6	1.7%
Water,ground		91 094.8	m3	-	52.6	1.7%
Scope 3 total				-	513.9	16.5%
Total				64 181.0	3 114.8	100.0%
<i>*Alternative Electricity emissions-Market based method (RECs, GoO)</i>					14500	

Yearly report – GHG emissions (tCO₂e)

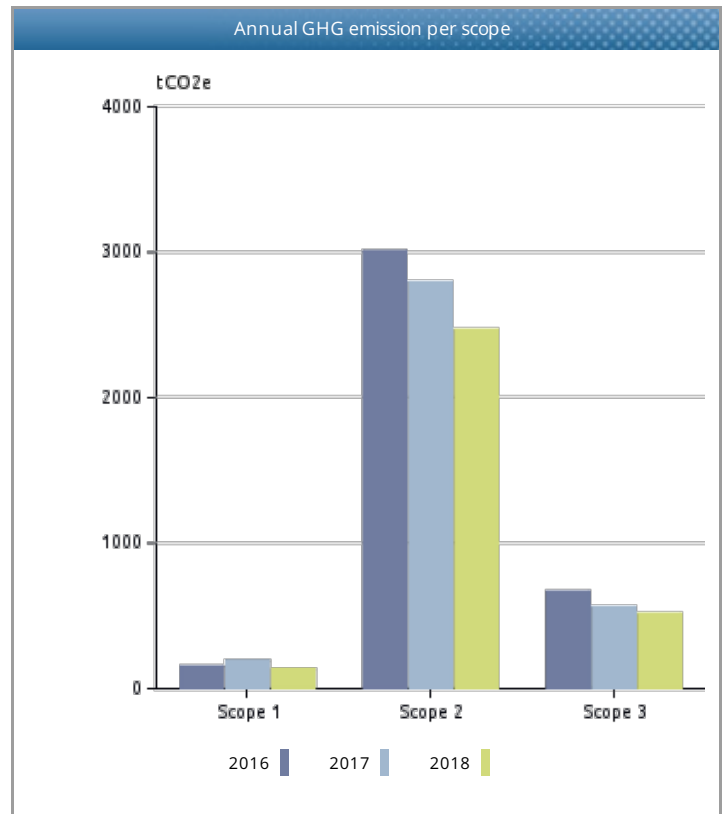
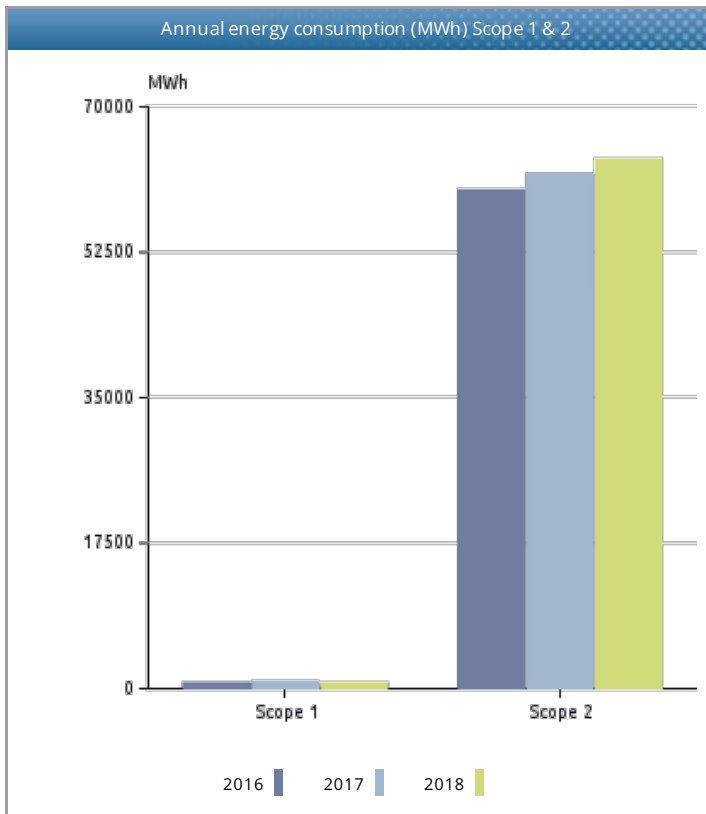
Category	Description	2016	2017	2018	% change from previous year
Stationary combustion					
Burning oil		150.8	150.3	66.8	-55.6%
LPG (Propane)			41.7	67.9	62.6%
Scope 1 Emissions		150.8	192.1	134.7	-29.9%
DH Nordic locations					
District cooling NO/Oslo		18.1	7.0	12.6	81.2%
District heating NO/Fredrikstad				2.8	100.0%
District heating NO/Lysaker		58.6	66.1	69.4	5.0%
District heating NO/Nydalen		44.9	27.2	32.3	18.5%
District heating NO/Oslo		61.6	69.5	79.4	14.1%
District heating NO/Stavanger			12.4	12.0	-3.0%
Electricity*					
Electricity Nordic mix	Fellesanlegg	570.7	528.6	473.5	-10.4%
Electricity Nordic mix	Leietakere	1 343.3	1 486.8	1 153.9	-22.4%
Electricity Nordic mix		910.4	596.1	630.4	5.8%
Electricity Green					
Electricity Renewable onsite		-	-	-	-
Scope 2 Emissions		3 007.5	2 793.8	2 466.3	-11.7%
Waste					
Waste mix, recycled	Sortert	81.1	72.4	65.9	-9.0%
Waste, energy recovered	Usortert	540.2	432.9	395.4	-8.7%
Vann					
Water, ground		44.7	49.5	52.6	6.2%
Open category 1					
Water, ground			4.6		-100.0%
Scope 3 Emissions		665.9	559.5	513.9	-8.1%
Total		3 824.3	3 545.3	3 114.8	-12.1%
Percentage change			-7.3%	-12.1%	
*Alternative Electricity emissions-Market based method (RECs, GoO)		14575.8	13810.9	14500	
Percentage change			-5.2%	5%	

Key Figures Consumption

Scope	Category	Description	Unit	2016	2017	2018
Scope 1	Stationary combustion					
	Burning oil		kWh	611 403	609 669	270 792
	LPG (Propane)		kWh		194 588	316 448
Scope 2	DH Nordic locations					
	District cooling NO/Oslo		kWh	411 010	464 580	841 650
	District heating NO/Fredrikstad		kWh			282 661
	District heating NO/Lysaker		kWh	3 807 874	3 887 887	4 082 390
	District heating NO/Nydalen		kWh	1 104 770	1 098 630	1 301 400
	District heating NO/Oslo		kWh	4 103 565	4 635 903	5 290 314,1
	District heating NO/Stavanger		kWh		626 476	607 692,3
	Electricity*					
	Electricity Nordic mix		kWh	16 256 658	11 463 022	14 008 256
	Electricity Nordic mix	Leietakere	kWh	23 987 392	28 592 989	25 643 188,3
Electricity Nordic mix	Fellesanlegg	kWh	10 191 150	10 165 419	10 521 679,1	
Electricity Green						
Electricity Renewable onsite		kWh	67 000	926 824	1 014 482	
Scope 3	Waste					
	Waste mix, recycled	Sortert	kg	2 533 437	2 263 499	3 095 206,4
	Waste, energy recovered	Usortert	kg	1 076 070	862 434	787 681,7
	Water					
	Water, ground		m ³	77 427,7	93 764,4	91 094,8

Key energy and climate performance indicators

Name	Unit	2016	2017	2018	% change from previous year
Sum locations kWh/m2		158.9	158.6	144.3	-9.0%
Sum square meters (m2)		377 046.0	390 160.0	440 692.0	13.0%
Total energy scope 1 +2 (MWh)		60 540.8	62 666.0	64 181.0	2.4%
Total emissions (s1+s2+s3) (tCO2e)		3 824.3	3 545.3	3 114.8	-12.1%
Scope 1 + 2 emissions (tCO2e)		3 158.3	2 985.8	2 600.9	-12.9%
kgCO2/m2 (Scope1+2)	m2	8.4	7.7	6.7	-12.3%
Total eiendom kgCO2e/m2 (Scope1+2+3)	m2	10.1	9.1	8.0	-11.5%



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:

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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.