



Carbon accounting report 2019

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 100 % of the Storebrand Eiendomsfond Norge KS (SEN KS) portfolio, consisting of 16 properties totalling 417.341 m² in 2019, as listed below. The fund invests in properties in Norway only.

1. Grev Wedels Plass 9
2. Brynsalleen 6
3. Nydalsveien 36-38
4. Gullhaug Torg 2B
5. Philip Pedersens vei 7-9 (Lysaker Polaris)
6. Solheimsgaten 7A-E
7. Østfoldhallen Kjøpesenter Retail (Dikeveien)
8. Østfoldhallene Big Box (Dikeveien)
9. Metro Kjøpesenter
10. Gneisveien 16-18 (Bergerterminalen)
11. Gneisveien 12 (Berger Omlastningssentral)
12. Torvuttaket 19 (Deli Skog Syd Øst)
13. Båntjernveien 12 - 15
14. Fornebu Hotell
15. Lagårdsveien 44
16. Destilleriveien 11 (included from 2019, the first full operational year)
17. Våler Distribusjonslager (sold and excluded in 2019 accounts)

The 2019 accounts include the buildings' tenant emissions from both energy and water consumption as well as waste production and handling. Tenant energy emissions are allocated in scope 1 and 2. The practice of allocating energy related emissions from tenant spaces in scope 3 is becoming common, and is allowed according to the GHG protocol. This will be considered for next year.

The input data is based on information from both internal and external data sources and then converted into tonnes CO₂-equivalents. 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-I.

Energy and GHG emissions

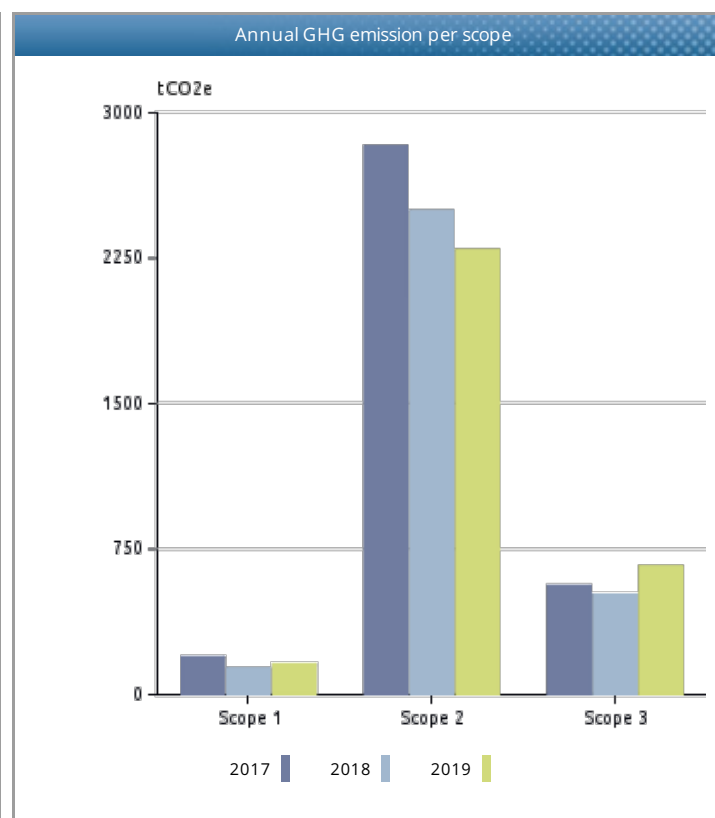
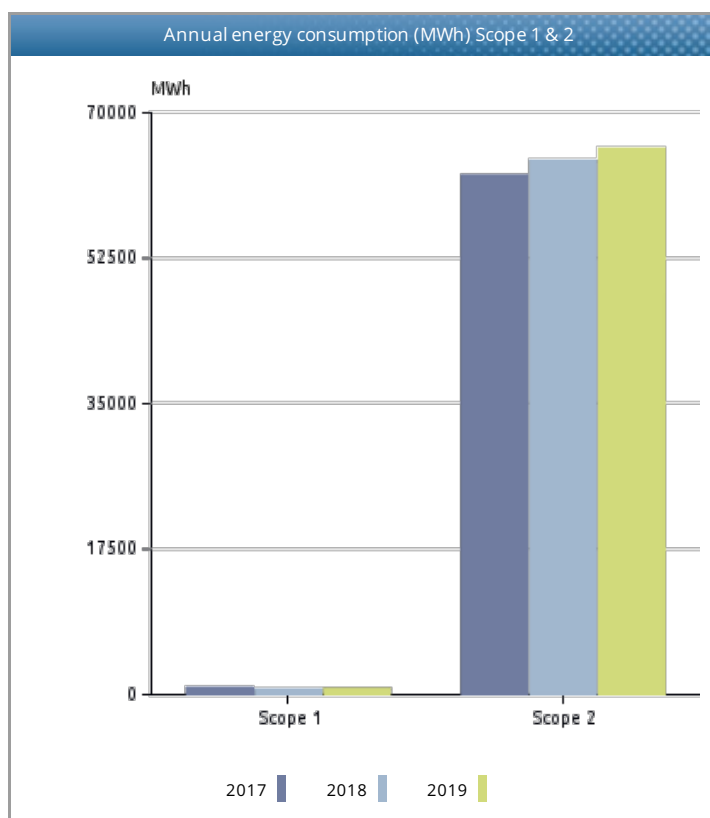
Category	Description	Consumption	Unit	Energy (MWh eqv)	Emissions (tCO ₂ e)	Emissions (distribution)
<i>Stationary combustion</i>				704.6	155.4	5%
Burning oil		132 249	kWh	132.2	32.6	1%
Burning oil	Oppv/kjøp	10	kWh	-	-	-
LPG (Propane)		532 711	kWh	532.7	114.3	3.7%
LPG (Propane)	Oppv/kjøp	39 590	kWh	39.6	8.5	0.3%
Scope 1 total				704.6	155.4	5%
<i>Electricity</i>				53 440.5	2 084.2	67%
Electricity Nordic mix		-	kWh	-	-	-
Electricity Nordic mix	Fellesanlegg	11 200 828	kWh	11 200.8	436.8	14%
Electricity Nordic mix	Leietakere	42 239 672	kWh	42 239.7	1 647.3	53%
<i>DH Nordic locations</i>				12 151.2	209.6	6.7%
District heating NO/Oslo		5 337 903	kWh	5 337.9	80.1	2.6%
District heating NO/Fredrikstad		759 814	kWh	759.8	11.5	0.4%
District heating NO/Lysaker		1 410 910	kWh	1 410.9	12.3	0.4%
District heating NO/Stavanger		626 010	kWh	626	4.9	0.2%
District heating NO/Bergen		2 298 630	kWh	2 298.6	46	1.5%
District cooling water to air		-	kWh	-	-	-
District heating NO/Nydalen		1 309 070	kWh	1 309.1	47.3	1.5%
District cooling NO/Nydalen		408 820	kWh	408.8	7.6	0.2%
<i>Electricity Green</i>				-	-	-
Electricity Renewable onsite		-	kWh	-	-	-
<i>District heating general</i>				54.8	-	-
District heating Renewable	Biolje	54 832	kWh	54.8	-	-
Scope 2 total				65 646.5	2 293.8	73.7%
<i>Waste</i>				-	596.8	19.2%
Waste mix, incinerated	Usortert	1 052 093	kg	-	528.2	17%
Waste mix, recycled	Sortert	3 206 001	kg	-	68.6	2.2%
<i>Water</i>				-	65.1	2.1%
Water, ground		112 859	m ³	-	65.1	2.1%
Scope 3 total				-	661.9	21.3%
<i>Total</i>				66 351	3 111	100%
<i>Electricity market-based</i>					10901.9	
<i>Scope 2 market-based</i>					11111.5	
<i>Total market-based</i>					11928.7	

Yearly report – GHG emissions (tCO₂e)

Category	Description	2017	2018	2019	% change from previous year
<i>Stationary combustion</i>					-
Burning oil		150.3	66.8	32.6	-51.1%
Burning oil	Oppv/kjøl			-	-
LPG (Propane)		41.7	67.9	114.3	68.3%
LPG (Propane)	Oppv/kjøl			8.5	100.0%
Scope 1 Emissions		192.1	134.7	155.4	15.4%
<i>DH Nordic locations</i>					-
District cooling NO/Nydalen		0.7	9.5	7.6	-20%
District cooling water to air		6.4	11.6	-	-100.0%
District heating NO/Bergen				46	100.0%
District heating NO/Fredrikstad			2.8	11.5	310%
District heating NO/Lysaker		66.1	69.4	12.3	-82.3%
District heating NO/Nydalen		37.2	30	47.3	57.3%
District heating NO/Oslo		63.5	74.1	80.1	8.1%
District heating NO/Stavanger		12.4	12	4.9	-58.9%
<i>District heating general</i>					-
District heating Renewable	Bioolje			-	-
<i>Electricity</i>					-
Electricity Nordic mix	Fellesanlegg	559.1	500.7	436.8	-12.8%
Electricity Nordic mix	Leietakere	1 486.8	1 153.9	1 647.3	42.8%
Electricity Nordic mix		596.1	630.4	-	-100.0%
<i>Electricity Green</i>					-
Electricity Renewable onsite		-	-	-	-
Scope 2 Emissions		2 828.4	2 494.4	2 293.8	-8%
<i>Waste</i>					
Waste mix, recycled	Sortert	72.4	65.9	68.6	4.1%
Waste mix, incinerated	Usortert	432.9	395.4	528.2	33.6%
<i>Water</i>					-
Water, ground		54.1	52.6	65.1	23.9%
Scope 3 Emissions		559.5	513.9	661.9	28.8%
Total		3 579.9	3 143	3 111	-1%
<i>Percentage change</i>			-12.2%	-1%	

Key energy and climate performance indicators

Name	Unit	2017	2018	2019	% change from previous year
Sum locations kWh/m2		161.5	166	157.3	-5.3%
Sum square meters (m2)		386 669	386 669	417 341	7.9%
Sum energy per location (MWh)		62 449.3	64 198.3	65 646.5	2.3%
Total energy scope 1 + 2 (MWh)		63 253.5	64 785.6	66 351	2.4%
Total emissions (s1+s2+s3) (tCO2e)		3 579.9	3 143	3 111	-1%
Scope 1 + 2 emissions (tCO2e)		3 020.5	2 629.1	2 449.2	-6.8%
kgCO2/m2 (Scope1+2)	m2	7.8	6.8	5.9	-13.7%
Total eiendom kgCO2e/m2 (s1+2+3)	m2	9.3	8.1	7.5	-8.3%
Total eiendom tCO2e/AuM (s1+2+3)		0.34	0.29	0.25	-14%
kWh/m2 (s1+2+3)	m2	163.6	167.5	159	-5.1%
AuM MNOK		10 464	10 658	12 237	14.8%



Market-based GHG emissions summary

Category	Unit	2017	2018	2019
Electricity market-based	tCO ₂ e	13972.3	14674.8	10901.9
Scope 2 market-based	tCO ₂ e	14158.6	14884.2	11111.5
Total market-based	tCO ₂ e	14910.2	15532.8	11928.7
Percentage change			4.2 %	-23.2 %

Key Figures Consumption						
Category	Description	Unit	2016	2017	2018	2019
Scope 1						
Stationary combustion						
	Burning oil	kWh	611 403	609 669	270 792	132 259
	LPG (Propane)	kWh	-	194 588	316 448	572 301
Scope 2						
Electricity						
	Electricity Nordic mix	Tenants kWh	23 987 392	28 592 989	25 643 188	42 239 672
	Electricity Nordic mix	kWh	16 256 658	11 463 022	14 008 256	-
	Electricity Nordic mix	Landlord kWh	10 191 150	10 752 251	11 126 295	11 200 828
DH Norwegian locations						
	District heating/cooling NO		9 427 219	10 714 174	12 406 108	12 151 157
Electricity Green						
	Electricity Renewable onsite	kWh	67 000	926 824	1 014 482	-
District heating general						
	District heating Renewable	Bio-oil kWh	-	-	-	54 832
Scope 3						
Waste						
	Waste mix, incinerated	Rest fraction kg	1 076 070	862 434	787 682	1 052 093
	Waste mix, recycled	Sorted fractions kg	2 533 437	2 263 499	3 095 206	3 206 001
Water						
	Water, ground	m ³	77 428	93 764	91 095	112 859

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](#) (2018). Government emission conversion factors for greenhouse gas company reporting (DEFRA)

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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.