

# Carbon accounting report 2016

## Storebrand & SPP

---

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.

This report comprises the following units: Storebrand ASA in Norway and SPP in Sweden.

The input data is based on information from both internal and external data sources and then converted into tonnes CO<sub>2</sub>-equivalent. 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 (tCO <sub>2</sub> e)	Emissions (distribution)
<b>Scope 1 total</b>						
<i>Electricity*</i>				4 517.9	253.0	20.8%
Electricity Nordic mix		4 517 894.0	kWh	4 517.9	253.0	20.8%
<i>DH Nordic locations</i>				3 587.2	87.8	7.2%
District heating SE/Göteborg		15 325.0	kWh	15.3	0.4	-
District heating SE/Stockholm		768 000.0	kWh	768.0	39.7	3.3%
District cooling SE/Stockholm		229 000.0	kWh	229.0	5.5	0.5%
District heating NO/Lysaker		2 434 403.0	kWh	2 434.4	37.5	3.1%
District heating SE/Vasteras		78 135.0	kWh	78.1	2.7	0.2%
District heating SE/Malmö		26 603.0	kWh	26.6	1.9	0.2%
District cooling SE/Goteborg		26 603.0	kWh	26.6	0.1	-
District heating SE/Sundsvall		9 150.0	kWh	9.2	0.1	-
<b>Scope 2 total</b>				<b>8 105.1</b>	<b>340.8</b>	<b>28.1%</b>
<i>Air travel</i>				-	755.0	62.1%
Flights		755.0	tCO <sub>2</sub>	-	755.0	62.1%
<i>Business travel</i>				19.1	41.9	3.4%
Train (SE)		273 144.0	pkm	19.1	1.1	0.1%
Mileage all. car (NO)		274 420.0	km	-	40.6	3.3%
Mileage all. electric car (NO)		19 155.0	km	-	0.2	-
<i>Waste</i>				-	30.2	2.5%
Waste, incinerated		50 036.0	kg	-	25.1	2.1%
Paper, recycled		44 302.0	kg	-	1.4	0.1%
Glas, recycled		3 800.0	kg	-	0.1	-
Metal, recycled		937.0	kg	-	-	-
Organic, recycled		93 969.0	kg	-	3.0	0.2%
Plastic, recycled		1 909.0	kg	-	0.1	-
Special waste		14 640.0	kg	-	0.5	-
<i>Kmgodtgjørelse(SE)</i>				196.3	46.9	3.9%
Diesel (B5)		4 997.9	liters	52.7	12.4	1.0%
Petrol		14 993.8	liters	143.5	34.5	2.8%
Mileage all. electric car (NO)		188.0	km	-	-	-
<b>Scope 3 total</b>				<b>215.4</b>	<b>874.0</b>	<b>71.9%</b>
<i>Total</i>				<b>8 320.5</b>	<b>1 214.8</b>	<b>100.0%</b>
<i>*Alternative Electricity emissions-Market based method (RECs, GoO)</i>					<b>7.0</b>	

**Scope 1**

No company cars or combustion of fossil fuels from transportation.

**Scope 2**

**Electricity:** The table shows emissions from electricity with the location-based emission factor Nordic Mix. Notably, the emission factor is reduced by 13% since 2015, because of more renewable production of electricity in the Nordic region.

Electricity with a market-based emission factor, called Market-based electricity (GoO & residual), is presented in the star \*. Guaranties of Origin (GoO) has been purchased for 99% of the electricity consumption in the 2015-2016 period, for consumption with GoO, the emission factor is zero. Consumption of electricity without GoO's have the emissions factor Nordic Residual Mix is used (Ref:RE-DISS, 2016).

This new practice of presenting electricity with two different emissions factors was introduced in 2015, and 2014 is not included, this is further explained under Scope 2 in Methodology and sources.

District heating and cooling: Consumption of energy from district heating and cooling per location reported.

### **Scope 3**

Air travel: Annual emissions from air travel reported from travel agency.

Mileage allowance: Emissions from traveling with employees own vehicles from mileage allowance, reported in km.

Waste: Reported annual waste generation in kg per type and recycling or incineration processes.

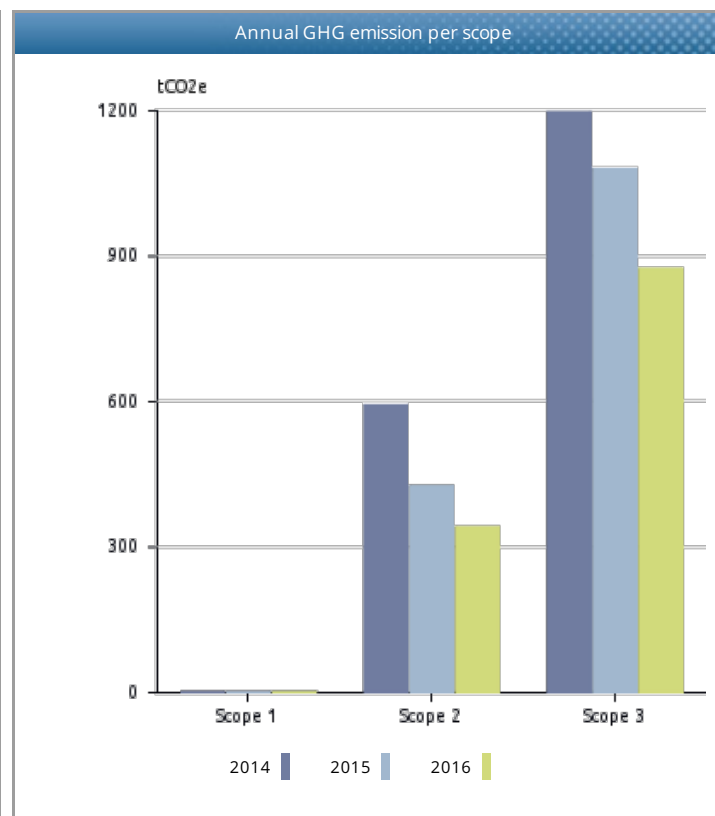
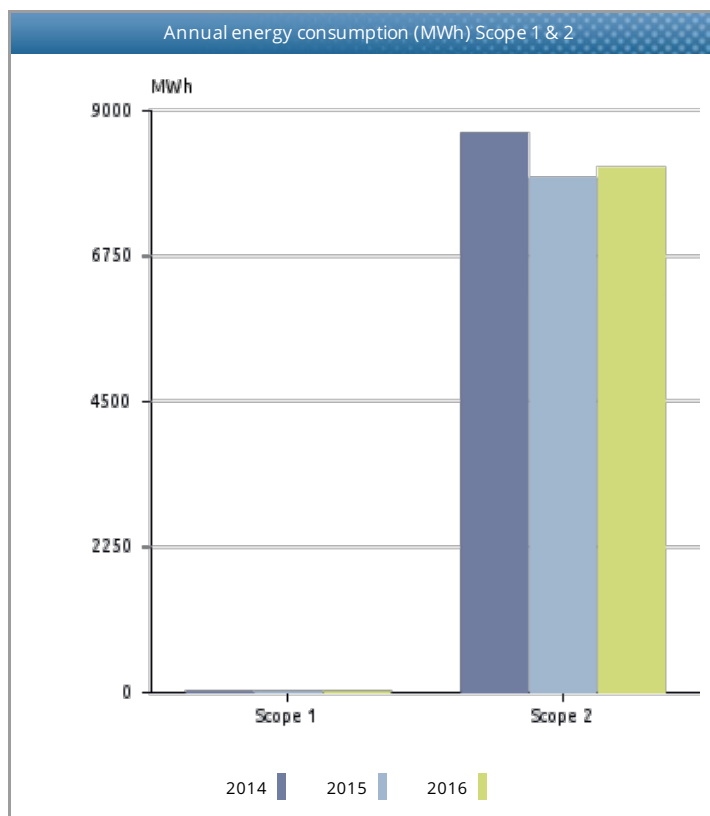
Other travel: reported train travel in Sweden.

Yearly report – GHG emissions (tCO<sub>2</sub>e)

Category	Description	2014	2015	2016	% change from previous year
<b>Scope 1 Emissions</b>					
<i>DH Nordic locations</i>					
					-
	District cooling SE/Goteborg	0.3	0.2	0.1	-45.9%
	District cooling SE/Stockholm	3.9	4.3	5.5	26.8%
	District heating NO/Lysaker	83.2	69.7	37.5	-46.2%
	District heating SE/Göteborg	0.8	0.8	0.4	-51.1%
	District heating SE/Malmö	3.4	3.2	1.9	-42.4%
	District heating SE/Stockholm	31.5	35.1	39.7	13.2%
	District heating SE/Sundsvall	0.4	0.4	0.1	-85.6%
	District heating SE/Vasteras	13.3	11.7	2.7	-77.2%
<i>Electricity*</i>					
					-
	Electricity Nordic mix	455.2	300.2	253.0	-15.7%
<b>Scope 2 Emissions</b>		<b>592.0</b>	<b>425.8</b>	<b>340.8</b>	<b>-20.0%</b>
<i>Kmgodtgjörelse(SE)</i>					
					-
	Diesel (B5)	29.8	23.0	12.4	-46.1%
	Mileage all. electric car (NO)	-	-	-	-
	Petrol	81.5	62.9	34.5	-45.1%
<i>Air travel</i>					
					-
	Flights	997.3	915.2	755.0	-17.5%
<i>Waste</i>					
					-
	Glas,recycled	0.1	0.1	0.1	9.9%
	Metal,recycled	0.1	-	-	-
	Organic,recycled	5.9	5.1	3.0	-41.5%
	Paper,recycled	2.0	1.9	1.4	-24.0%
	Plastic,recycled	0.1	0.1	0.1	-12.9%
	Special waste	0.9	0.2	0.5	105.3%
	Waste,incinerated	30.4	28.2	25.1	-10.8%
<i>Business travel</i>					
					-
	Mileage all. car (NO)	47.3	40.0	40.6	1.5%
	Mileage all. electric car (NO)		0.3	0.2	-43.4%
	Mileage all. motorcycle		-		-
	Train (SE)	1.1	2.1	1.1	-48.3%
<b>Scope 3 Emissions</b>		<b>1 196.5</b>	<b>1 079.2</b>	<b>874.0</b>	<b>-19.0%</b>
<b>Total</b>		<b>1 788.4</b>	<b>1 505.0</b>	<b>1 214.8</b>	<b>-19.3%</b>
<b>Percentage change</b>			<b>-15.8%</b>	<b>-19.3%</b>	
<i>*Alternative Electricity emissions-Market based method (RECs, GoO)</i>			<b>15.9</b>	<b>7.0</b>	
<b>Percentage change</b>			<b>-</b>	<b>-56.3%</b>	

## Key energy and climate performance indicators

Name	Unit	2014	2015	2016	% change from previous year
Sum locations kWh/m2		139.8	158.9	162.4	2.2%
Sum square meters (m2)		61 845.0	50 056.0	49 907.0	-0.3%
Total tCO2e/FTE (Scope 1+2+3)		1.0	0.8	0.7	-18.7%
tCO2e/managed capital (Scope 1+2+3)		3.3	2.6	2.1	-19.9%
MWh/FTE (Scope 1+2)		4.7	4.3	4.5	2.6%
FTE		1 820.9	1 830.0	1 818.0	-0.7%
Managed capital		534.5	571.4	576.0	0.8%



## 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 CO<sub>2</sub> equivalents: CO<sub>2</sub>, CH<sub>4</sub> (methane), N<sub>2</sub>O (laughing gas), SF<sub>6</sub>, 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 CO<sub>2</sub>e 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:**

- DEFRA (2013). Environmental reporting guidelines: Including mandatory greenhouse gas emissions reporting guidance. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/206392/pb13944-env-reporting-guidance.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206392/pb13944-env-reporting-guidance.pdf)
- DEFRA (2014). 2014 guidelines to DEFRA/DECC's GHG conversion factor for company reporting (updated 19.11.2014). Produced by AEA for the Department of Energy and Climate Change (DECC) and the Department for Environment, Food, and Rural Affairs (DEFRA).
- IEA (2016). CO2 emission from fuel combustion: Highlights (2016 edition). International Energy Agency (IEA), Paris.
- IEA (2016). Electricity information (2016 edition). 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>
- International Standard Organisation (2009). ISO 14064: International standard for GHG emissions inventories and verification (2009 review). Raleigh, NC: 16th Annual International Emissions Inventory Conference.
- IPCC (2014). IPCC fifth assessment report: Climate change 2013 (AR5 updated version November 2014). <http://www.ipcc.ch/report/ar5>
- OFV (2016). Bilstatistikk 2001-2016. Opplysningsrådet for Veitrafikken, <http://www.ofv.no>
- SCB (2014). Fordon 2006-2013. Statistiska centralbyrån, [www.scb.se](http://www.scb.se)
- SimaPro (2016). Ecoinvent (3.version). SimaPro life cycle analysis version 8 (software).
- 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.