

# S Group GHG Inventory Report 2018 25.3.2019

## Part 1: Descriptive information

Descriptive information	Company response
Company name	SOK Corporation (reporting S Group data)
Description of the company	<p>S Group is a Finnish cooperative group of companies operating in the retail and service sector. S Group comprises the cooperatives and SOK Corporation along with its subsidiaries employing around 40.000 people with retail sales total of €11.5 billion.</p> <p>The co-op members own the cooperatives, which in turn own SOK Corporation. SOK produces procurement, expert and support services to cooperatives. SOK is also responsible for the strategic guidance of S Group and the development of the business chains. SOK Corporation comprises SOK and its subsidiaries.</p> <p>The purpose of S Group's business is to provide co-op members with competitive services and benefits. The group wants to offer diverse services and an extensive network of around 1600 outlets for co-op members in Finland, Estonia and Russia.</p> <p>S Group's key business areas are</p> <ul style="list-style-type: none"> <li>• supermarket trade,</li> <li>• department stores and speciality stores,</li> <li>• hardware trade,</li> <li>• service station store and fuel sales, as well as</li> <li>• travel industry and hospitality business.</li> </ul> <p>In addition, S-Bank offers banking services to co-op members.</p>
Chosen consolidation approach (equity share, operational control or financial control)	Operational control
Description of the businesses and operations included in the company's organizational boundary	<p>The GHG emissions reported by S Group under Scope 1 and Scope 2 include all business units in Finland, Estonia and Russia. Scope 1 and 2 emissions include the fuel consumed at properties managed by S Group companies and co-ops and the purchased energy used by properties managed by S Group companies and co-ops. Outlets in which the heat consumption is included in the rental agreement and separate consumption meters are not in place, are excluded (25 per cent of outlets). Also GHG emissions from refrigerant leaks are included.</p>

S Group's Scope 3 emissions occur from sources owned or controlled by other entities in the value chain. Most significant indirect emissions (not included in Scopes 1 and 2) that occur along S Group's value chain, including both upstream and downstream emissions, are presented in the Scope 3 emissions inventory.

The Scope 3 GHG emissions inventory of S Group includes emissions from all business units except for car and agriculture trade which represent around 4 percent of total sales. These deviations as well as other limitations in the boundary are reported in connection with the categories and indicators in question.

The reporting period covered

01/01/2018-31/12/2018

A list of scope 3 activities included in the report

The following categories, adapting the GHG Protocol, are included in S Group's Scope 3 GHG emissions inventory:

Category 1: Purchased goods and services

- Purchased goods for resale including daily food, non-food, consumer goods for grocery stores, restaurants and hotels, and fuel sold at petrol stations and indirect purchases (machines and equipment)
- Purchased indirect services

Category 2: Capital goods

- New constructed buildings

Category 3: Fuel- and energy-related activities (not included in Scope 1 and 2)

- Upstream emissions from purchased fuels, electricity and heat. In Finland upstream emissions from renewable electricity and nuclear are excluded.
- Transmission and distribution losses from purchased electricity and heat

Category 4: Upstream transportation and distribution

- Outsourced contract operators for retail, food service and fuel logistics

Category 5: Waste generated in operations

Category 6: Business travel

- Business flights and emissions from leased cars

Category 7: Employee commuting

Category 9: Downstream transportation and distribution

- Customer transportation

Category 11: Use of sold products

- GHG emissions from the use/combustion of fuel sold

Category 15: Investments

- GHG emissions from direct investments by S Group associated company S Bank's (S Group ownership 75%) subsidiary FIM. Calculated based on the share of ownership: <https://www.fim.com/fi/fim/vastuullinen-fim/rahastojen-hiilijalanjalki/>

The following activities were excluded from the report:

Category 8: Upstream leased assets – Category excluded

- This category is relevant for S Group regarding leased IT and other equipment and cars leased for employees, however the GHG emissions from the use of the IT equipment is included in scope 2 and the GHG emissions from other stages of the lifecycle are included in category 1

Category 10: Processing of sold products – Category excluded

- This category is relevant for S Group, but GHG emissions from purchased raw materials for the restaurants are included in category 1 and GHG emissions from the food preparation stage are included in scopes 1-2.

Category 12: End-of-life treatment of sold products – Category excluded

- This category is relevant for S Group, but is excluded to avoid double accounting as the end-of-life treatment emissions are included in the emissions from Category 1: Purchased goods and services. Also difficult to calculate due to lack of reliable data for different product and service categories.

Category 13: Downstream leased assets – Category excluded

- This category is not relevant for S Group as it does not lease assets to other companies which would not be included in Scope 1 or Scope 2 inventories.

Category 14: Franchising – Category excluded

- This category is relevant for S Group regarding the 102 Hesburger fast-food restaurants located in the ABC service stations in Finland. However the emissions from these franchises are included in S Group's scope 1 and 2 inventories.

A list of scope 1, scope 2, and scope 3 activities excluded from the report with justification for their exclusion

## Part 2: Greenhouse gas emissions data

Scopes and categories <sup>1</sup>	Metric tons CO <sub>2</sub> e
Scope 1: Direct emissions from owned/controlled operations	82.500
Scope 2: Indirect emissions from the use of purchased electricity, steam, heating, and cooling	Location based electricity: 104.100  Market based electricity: 160.300  Heating & cooling: 60.300
Upstream scope 3 emissions	
Category 1: Purchased goods and services	5.739.000
Category 2: Capital goods	13.000
Category 3: Fuel- and energy-related activities (not included in scope 1 or scope 2)	38.100
Category 4: Upstream transportation and distribution	95.400
Category 5: Waste generated in operations	19.600
Category 6: Business travel	2.300
Category 7: Employee commuting	20.300
Category 8: Upstream leased assets	N/A
Other	N/A
Downstream scope 3 emissions	
Category 9: Downstream transportation and distribution	283.000
Category 10: Processing of sold products	N/A
Category 11: Use of sold products	2.619.000
Category 12: End-of-life treatment of sold products	N/A
Category 13: Downstream leased assets	N/A
Category 14: Franchises	N/A
Category 15: Investments <sup>2</sup>	46.400
Other	N/A

### Part 3: Description of methodologies and data used

Scope	Methodologies used to calculate or measure emissions, providing a reference or link to any calculation tools used
Scope 1	<p>Activity data:</p> <ul style="list-style-type: none"> <li>Oil: kWh of heat produced with oil as measured and registered in the S Group real estate system.</li> <li>Gas: kWh of heat produced with gas as measured and registered in the S Group real estate system.</li> <li>Refrigerant leaks: kg of substance as reported fill-ups of the equipment by the service provider for each co-op and company</li> <li>Self-produced wind power (S-Voima/TuuliWatti): cancelled Certificates of Origin for S-voima based on the share of ownership of S Group co-ops and companies.</li> </ul> <p>Emission factors:</p> <ul style="list-style-type: none"> <li>Oil: Statistics Finland Fuel Classification 2018: <a href="https://www.stat.fi/static/media/uploads/tup/khkinv/khkaasut_polttoaineluokitus_2018.xlsx">https://www.stat.fi/static/media/uploads/tup/khkinv/khkaasut_polttoaineluokitus_2018.xlsx</a></li> <li>Gas: <a href="https://www.stat.fi/static/media/uploads/tup/khkinv/khkaasut_polttoaineluokitus_2018.xlsx">https://www.stat.fi/static/media/uploads/tup/khkinv/khkaasut_polttoaineluokitus_2018.xlsx</a></li> <li>Refrigerant leaks: <a href="https://helda.helsinki.fi/handle/10138/155617">https://helda.helsinki.fi/handle/10138/155617</a></li> </ul>
Scope 2	<p>Activity data:</p> <ul style="list-style-type: none"> <li>Electricity: consumption data in kWh based on the S Group real estate system and S-Voima electricity purchases</li> <li>Heat and steam: consumption data in kWh based on the S Group real estate system, electricity consumption used for geothermal heat pumps included in electricity metering</li> <li>Cooling: consumption data in kWh based on the S Group real estate system</li> </ul> <p>Emission factors:</p> <p>Finland</p> <ul style="list-style-type: none"> <li>Electricity (S-Voima/TuuliWatti wind power is categorized in scope 1): 0</li> <li>Electricity (other, market-based): Finland 2017 Residual mix: <a href="https://www.energiavirasto.fi/documents/10179/0/J%C3%A4%C3%A4nn%C3%B6sjakauma+2017+allekirjoitettu+29+6+2018.pdf/c32d4768-8ac8-4dfe-84d6-5dec09ec584e">https://www.energiavirasto.fi/documents/10179/0/J%C3%A4%C3%A4nn%C3%B6sjakauma+2017+allekirjoitettu+29+6+2018.pdf/c32d4768-8ac8-4dfe-84d6-5dec09ec584e</a></li> <li>Electricity (location-based), in CDP reporting: Finland average electricity energy mix, 5 year average: 164 kg CO2/MWh; <a href="https://www.motiva.fi/ratkaisut/energiankaytto_suomessa/co2-laskentaohje_energianskulutuksen_hiilidioksidipaastojen_laskentaan/co2-paastokertoimet">https://www.motiva.fi/ratkaisut/energiankaytto_suomessa/co2-laskentaohje_energianskulutuksen_hiilidioksidipaastojen_laskentaan/co2-paastokertoimet</a></li> <li>Heat: same emissions factor for both market and location based: Motiva district heat segregated production average emissions factor: 131 kg CO2/MWh; <a href="https://www.motiva.fi/ratkaisut/energiankaytto_suomessa/co2-laskentaohje_energianskulutuksen_hiilidioksidipaastojen_laskentaan/co2-paastokertoimet">https://www.motiva.fi/ratkaisut/energiankaytto_suomessa/co2-laskentaohje_energianskulutuksen_hiilidioksidipaastojen_laskentaan/co2-paastokertoimet</a></li> <li>Cooling: outlets located in Helsinki region, thus emissions factor in 2017 from local service provider used, 61 kg CO2/MWh; <a href="https://www.helen.fi/helen-oy/tietoa-yrityksesta/energiantuotanto/sahkon-ja-lammon-ominaispaastot/">https://www.helen.fi/helen-oy/tietoa-yrityksesta/energiantuotanto/sahkon-ja-lammon-ominaispaastot/</a></li> </ul> <p>Estonia:</p> <ul style="list-style-type: none"> <li>Electricity: Estonia electricity residual mix 2017; 1042 g CO2/kWh, same factor used for heat; <a href="https://elering.ee/en/residual-mix">https://elering.ee/en/residual-mix</a></li> </ul> <p>Russia:</p> <ul style="list-style-type: none"> <li>Electricity and heat combined intensity emissions factor in Russia in 2016, 46,9 tn CO2/TJ; <a href="https://webstore.iea.org/co2-emissions-from-fuel-combustion-2018-highlights">https://webstore.iea.org/co2-emissions-from-fuel-combustion-2018-highlights</a></li> </ul>

Scope and category	Description of the types and sources of data used to calculate emissions	Description of the methodologies, allocation methods, and assumptions used to calculate emissions	% of emissions calculated using data obtained from suppliers or value chain partners
<b>Upstream scope 3 emissions</b>			
Category 1: Purchased goods and services	<p>Activity data (primary data): Calculations based on volumes (kg/l) sold by category (majority of daily food and non-food items) and spend (euros) by category (consumer goods and services).</p> <p>Emission factors (secondary data): Lifecycle emissions factors were taken from different sources including: Hartikainen et al 2016; <a href="http://jukuri.luke.fi/bitstream/handle/10024/537959/luke-luobio_58_2016.pdf?sequence=1&amp;isAllowed=y">http://jukuri.luke.fi/bitstream/handle/10024/537959/luke-luobio_58_2016.pdf?sequence=1&amp;isAllowed=y</a>, Ilmastodieetti 2017; <a href="https://beta.ilmastodieetti.fi/pdf/Ilmastodieetti_dokumentaatio_2017-10-13.pdf">https://beta.ilmastodieetti.fi/pdf/Ilmastodieetti_dokumentaatio_2017-10-13.pdf</a>, Footprint Beef 2016; <a href="https://portal.mtt.fi/portal/page/portal/mtt/hankkeet/footprintbeef/Naudanlihantuotannon%20ymp%C3%A4rist%C3%B6vaikutukset%20ja%20niiden%20v%C3%A4hent%C3%A4miskeinojen%20mahdollisuudet.pdf">https://portal.mtt.fi/portal/page/portal/mtt/hankkeet/footprintbeef/Naudanlihantuotannon%20ymp%C3%A4rist%C3%B6vaikutukset%20ja%20niiden%20v%C3%A4hent%C3%A4miskeinojen%20mahdollisuudet.pdf</a>, ENVIMAT 2005; <a href="http://motiva.fi/files/4771/Suomen_kansantalouden_materiaalivirtojen_ymparistovaikutusten_arviointi_ENVIMAT-mallilla.pdf">http://motiva.fi/files/4771/Suomen_kansantalouden_materiaalivirtojen_ymparistovaikutusten_arviointi_ENVIMAT-mallilla.pdf</a>, Karjalainen 2014; <a href="http://www.panimoliitto.fi/app/uploads/2014/01/The-carbon-footprint-of-the-Finnish-beverage-industry-for-years-2000-2012-as-calculated-with-CCaLC.pdf">http://www.panimoliitto.fi/app/uploads/2014/01/The-carbon-footprint-of-the-Finnish-beverage-industry-for-years-2000-2012-as-calculated-with-CCaLC.pdf</a> For fuel: well-to-tank emissions factor was calculated based on the lifecycle emissions factors provided by S Group fuel trade partner NEOT and by deducting the combustion emissions factors based on LIPASTO fuel mix emissions factors 2016: <a href="http://lipasto.vtt.fi/yksikkopaastot/tunnusluvut/tunnusluvut.htm">http://lipasto.vtt.fi/yksikkopaastot/tunnusluvut/tunnusluvut.htm</a></p>	<p>Coverage: all countries and divisions except for car and agriculture sales (5 per cent of retail sales).</p> <p>Method: Average lifetime GHG emissions factors were acquired for product categories from different sources. Activity data used in the calculation was 1) the physical mass (kg) or volume (liters) of the products sold during the fiscal year, or where physical volume was not available, the emission factors were used for each 2) euro of the “basic price”/purchase price of the product as indicated in an input-output model including the environmental impacts. The basic prices were corrected to reflect change in prices from 2005 (Envimat-factors base year) prices with the respective inflation factor from Statistics Finland (2018).</p> <p>The lifetime emissions of products were not split between cradle to gate and gate-to-end-of-life due to limited split LCA data availability for the sources used. Scope 1-2 emissions were not deducted from the category due to limited data availability on the retail/storage share of the category specific LCA factors so the category contains approx. 5 % double counting risk for this reason.</p> <p>Exception was made for the most significant individual product - fuel, for which the use-phase/tank-to-wheel emissions we're excluded from category 1 and are presented in category 11. Share of well-to-tank was estimated to be 15% of the LCA emissions as has been estimated in a study by RC 2014. Edwards, R. &amp; Larivé, J-F &amp; Rickeard, D. &amp; Weindorf, W. 2014. Well-to-tank Report Version 4.a, JEC Well-to-wheels. Well-to-wheels analysis of future automotive fuels and powertrains in the european context. JRC Technical Report EUR 26237-EN.</p> <p>The calculation methodology and sources used contain significant amount of uncertainties and can thus only be used as a very high level estimate of the climate impact of products and services purchased by S Group in 2018.</p>	8% (well-to-tank emissions factor for fuel)
Category 2: Capital goods	Activity data: constructed square meters of new buildings.	<p>Coverage: Finland</p> <p>Method: Calculations are based on area of constructed buildings in Finland in 2018 and emission factors for construction per square meter regarding building emissions from materials and</p>	0%

	<p>Emissions factors: Kurnitski 2012: emission factor for construction and materials (excluding energy use during life-cycle)</p> <p><a href="https://www.puuinfo.fi/sites/default/files/content/info/puurakentamisen-roadshow-2012-luentoaineistot/4_2012-03-21_Kurnitski-Hiilijalanj%C3%A4lki_0.pdf">https://www.puuinfo.fi/sites/default/files/content/info/puurakentamisen-roadshow-2012-luentoaineistot/4_2012-03-21_Kurnitski-Hiilijalanj%C3%A4lki_0.pdf</a></p>	<p>construction with the assumption that all new buildings are made with concrete.</p>	
<p>Category 3: Fuel- and energy-related activities (not included in scope 1 or scope 2)</p>	<p>Activity data: energy and fuel consumption in kWh as collected from the group and co-op energy meters.</p> <p>Emissions factors: Defra 2016-2018 WTT and T&amp;D emissions factors for fuels, electricity and heat:</p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/526958/ghg-conversion-factors-2016update_MASTER_links_removed_v2.xls">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/526958/ghg-conversion-factors-2016update_MASTER_links_removed_v2.xls</a>  <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/677300/Copy_of_Conversion_factors_2017_-_Full_set_for_advanced_users_v02-00.xls">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/677300/Copy_of_Conversion_factors_2017_-_Full_set_for_advanced_users_v02-00.xls</a>  <a href="https://www.greenelement.co.uk/new-2018-uk-defra-beis-carbon-factors-download/">https://www.greenelement.co.uk/new-2018-uk-defra-beis-carbon-factors-download/</a></p>	<p>Coverage: all countries.</p> <p>Method: country and energy specific consumption figures were multiplied by the relevant Defra emissions factor.</p> <p>For electricity in Finland, the share of renewable energy (own and market-based) and nuclear (in residual market mix) were excluded from the calculation and thus only the upstream emissions for the residual fossil fuel based energy were included. Residual mix was based on 2017 as 2018 mix was not yet available at the time of reporting.</p>	0%
<p>Category 4: Upstream transportation and distribution</p>	<p>Activity data: logistics partner's reported mileage</p> <p>Emissions factors: LIPASTO fossil fuel emissions factors 2016:  <a href="http://lipasto.vtt.fi/yksikkopaastot/tunnusluvut/tunnusluvuttie.htm">http://lipasto.vtt.fi/yksikkopaastot/tunnusluvut/tunnusluvuttie.htm</a></p>	<p>Coverage: Finland, business units: grocery, consumer goods, restaurants and hospitality and fuel trade</p> <p>Calculations are based on contracted logistics partners' reported mileage and related GHG emissions. Includes domestic and inbound transportation for Inex Partners, Meira Nova and North European Oil Trade by the contracted partners. Excludes transportation directly from food suppliers to outlets.</p>	100%
<p>Category 5: Waste generated in operations</p>	<p>Activity data: waste amounts in tonnes by type of waste.</p> <p>Emissions factors: HSY / Natural Interest 2014: WWF Finland's Climate Calculator.  <a href="http://www.ilmastolaskuri.fi/fi/calculation-basis?country=2&amp;year=10746">http://www.ilmastolaskuri.fi/fi/calculation-basis?country=2&amp;year=10746</a></p>	<p>Coverage: all countries</p> <p>Method: waste per type (tonnes) multiplied with the respective emissions factor.</p>	100%
<p>Category 6: Business travel</p>	<p>Activity data: mileage and fuel used</p> <p>Emissions factors: Provided by service providers (SMT and LeasePlan)</p>	<p>Coverage: Flights: S Group in Finland, leased vehicles: SOK Corporation (regional co-ops excluded)</p> <p>Calculation made for SOK Corporation's leased cars and employees business travel by plane. Data and emission calculations provided by service partners</p>	100%
<p>Category 7: Employee commuting</p>	<p>Activity data: S Group employees in Finland estimated average distance to their workplace (km)</p>	<p>Coverage: Finland</p>	0%

	<p>multiplied by annual average estimated working days.</p> <p>Emissions factors: Emissions factors: for cars and local transportation buses: WWF Climate Calculator (based on LIPASTO database): <a href="http://www.ilmastolaskuri.fi/fi/calculation-basis?country=2&amp;year=10746">http://www.ilmastolaskuri.fi/fi/calculation-basis?country=2&amp;year=10746</a></p> <p>Transportation methods: National travel survey 2016: <a href="https://www.liikennevirasto.fi/documents/20473/434710/Esite_HLT2016_ENGLANTI.pdf/3d811186-db02-4680-bba4-63732c6d9f33">https://www.liikennevirasto.fi/documents/20473/434710/Esite_HLT2016_ENGLANTI.pdf/3d811186-db02-4680-bba4-63732c6d9f33</a></p>	<p>Method: Calculation made based on 2016 data for S Group employees in Finland, who have the "employee" information linked to their S Group loyalty card. Average work commute distance estimated based on the average distance between the employee's postal code and their respective workplace. The mode of transport was estimated based on a national Transportation study stating the share of different modes of transport in different size towns/communities. Average mileage and modes of transport was then multiplied with the average annual working days. Part-time employees annual working days were estimated based on their average weekly working hours.</p> <p>2017 average GHG emissions per employee per annual commute was used as basis for 2018 calculation multiplied by 2018 employee headcount. It is acknowledged, that there is a possible overlap with scope 3 category 11 emissions where employees purchase fuel for their commute from S Group service stations however, the share of such overlap is difficult to estimate accurately.</p> <p>The calculation methodology and sources used contain significant amount of uncertainties and can thus only be used as a very high level estimate of the climate impact of S Group employees work commute.</p>	
Downstream scope 3 emissions			
Category 8: Upstream leased assets	Not relevant		
Category 9: Downstream transportation and distribution	<p>Activity data: S Group loyalty card holder's visits to S Group outlets and estimated average distance (in km) from their home to nearest outlet.</p> <p>Emissions factors: for cars and local transportation buses: WWF Climate Calculator: <a href="http://www.ilmastolaskuri.fi/fi/calculation-basis?country=2&amp;year=10746">http://www.ilmastolaskuri.fi/fi/calculation-basis?country=2&amp;year=10746</a></p> <p>Transportation methods: National travel survey 2016: <a href="https://www.liikennevirasto.fi/documents/20473/434710/Esite_HLT2016_ENGLANTI.pdf/3d811186-db02-4680-bba4-63732c6d9f33">https://www.liikennevirasto.fi/documents/20473/434710/Esite_HLT2016_ENGLANTI.pdf/3d811186-db02-4680-bba4-63732c6d9f33</a></p>	<p>Coverage: loyal customer transportation to and from outlets in Finland, approx. 80 % of customer visits by loyal customers.</p> <p>Method: Calculation made based on the S Group customer loyalty card holders annual visits to S Group outlets multiplied by the average distance between the card holders hometown/commune (based on postal codes) and the closest S Group outlet weighted by the nr of visits and taking into account the town/area specific transportation methods. Employee visits deducted based on the assumption that they visit the outlets on their way from work. Ways of transportation obtained from national and regional transportation surveys. It is acknowledged, that there is a possible overlap with scope 3 category 11 emissions if customers purchase fuel for their vehicles from S Group service stations however, the share of such overlap is difficult to estimate accurately.</p> <p>The calculation methodology and sources used contain significant amount of uncertainties and can thus only be used as a very high level estimate of the climate impact of S Group customers visits to S Group outlets.</p>	0%



Category 11: Use of sold products	<p>Activity data: volume of fuel (liters) sold to end customers in 2018.</p> <p>Emission factors: Emissions factors provided by S Group fuel sourcing company NEOT based on actual fossil to bio mixes in 2018.</p>	<p>Coverage: Finland.</p> <p>Method: volume of fuel sold to end customers multiplied with the relevant combustion emissions factor by fuel type.</p>	100%
Category 13: Downstream leased assets	Not relevant		
Category 15: Investments <sup>3</sup>	Data used: Publicly reported scope 1+2 emissions data from the companies invested	Emissions allocation per investment/fund to Group/FIM based on the share of ownership.	100%