

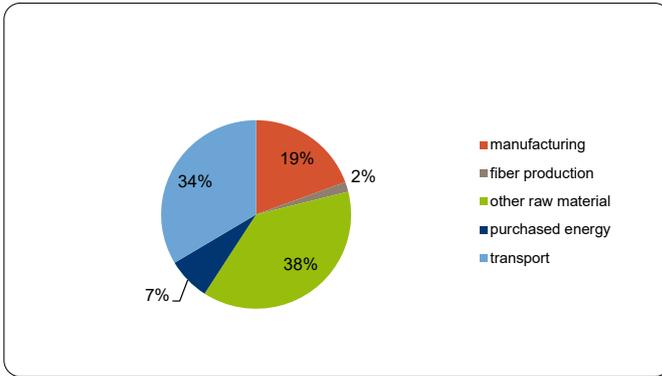


## Carbon Profile GraphoVolume

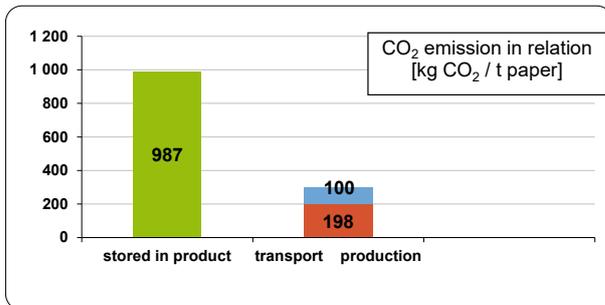
SCA Ortviken

Figures below is from similair coated products made by SCA Ortviken 2018

Declaration of the emission of fossile CO<sub>2</sub> associated with paper production and transports of raw materials and finished products. The calculation follows the CEPI\* - guidelines for carbon footprint of graphic paper.



CO2-emissions	[kg CO <sub>2</sub> / t paper]
manufacturing	58
fiber production	5
other raw material	113
purchased energy	22
sum	198
transport	100
<b>TOTAL</b>	<b>298</b>



Carbon is also stored in the product in wood fibers and fillers; calculation follows the recommendation of the Intergovernmental Panel on Climate Change (IPCC) for wood products. This CO<sub>2</sub> is considered as biogenic.

Avoided emissions report measures already taken to reduce CO<sub>2</sub> emissions.

Besides the complete picture given by the CEPI\* guidelines for carbon footprint of graphic paper other rules report parts of the full calculation. These figures are given as excerpt from the CEPI\* calculation :

		[kg CO <sub>2</sub> / t paper]
"Paper Profile"	Element 3 (direct emissions from paper production)	58
"WWF Check your Paper"	Element 3 (direct emissions) + 6 (purchased energy)	80

The given figures represent meanvalues for the reported year and cover the range of brands produced at : SCA Ortviken

GraphoCote, GraphoCote Light, GraphoLux, GraphoMatt, GraphoSilk, GraphoStyle

\*CEPI - Confederation of European Paper Industries

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 Date: 2020-02-10



## Carbon Profile in Detail for SCA Ortviken 2018

### GraphoVolume

Based on Capi framework for Carbon Footprints for Paper and board products April 2017

Element	Value in [kg CO <sub>2</sub> / t]	Comments
1 Carbon sequestration in the forest		On SCA-owned forest land an assessment have showed some 2,6 millionne tonnes carbon dioxide sequestration, which, if allocated, give several hundreds kilogrammes of sequestrated CO <sub>2</sub> per tonne of SCA products. The basis for calculation are only SCA-owned forests and our long history of statistics on net growth, as well as prognosis. FSC certification of forests and chain-of-custody certification of fibre supply ensures sustainable forest management. The main message are that, with SCA forest management, our forests, with todays knowledge, acts as a major carbon sink to be globally considered.
2 Carbon stored in the product	987	Amount of CO <sub>2</sub> stored in the paper is calculated according to the IPCC formula in the user guide. The life-cycletime of the product and destiny are important parameters if further assessed.
3 CO <sub>2</sub> emissions from paper manufacturing	58	We have an open declaration of fuels and emissions used in our processes, third party verified and covered by CO <sub>2</sub> emissions trading system.
4 CO <sub>2</sub> emissions from fiber production	5	This includes diesel oil consumption in forestry operations as harvesting and energy related emissions for seedling nurseries. Allocated after wood use.
5 CO <sub>2</sub> emissions from other raw materials	113	This includes emissions generated during the manufacturing of non-wood based raw materials (Such as pigments, main process chemicals, fuels etc.) The user guide recommends cut-off criteria of 90% i.e. to include 90% of all emissions.
6 CO <sub>2</sub> emissions from purchased energy	22	The emission figure reported is calculated using country specific emission factors for grid electricity in the country where the mill is located. For Sweden it is 10,8 g CO <sub>2</sub> /kWh Source: CO <sub>2</sub> -factor for electricity use, IEA 2015
7a) CO <sub>2</sub> emissions from transports	36	This figure includes emissions from transport of raw material to the mill i.e. wood, filler, main process chemicals etc. Internal transports are today not included.
7b) From mill to customer Euro average	64	Emissions related to transport of final product to customer is included as an European average.
7c) From mill to specific customer. Case study		Case studys for customers can easily be performed. SCA can assist in this process.
8 CO <sub>2</sub> emissions from product use "WWF Check your Paper"		Our knowledge about this are not complete today and calculations are left to be produced by our customers. SCA can assist in this process.
9 CO <sub>2</sub> emissions from end of life		Our knowledge about this are not complete today and calculations are left to be produced by our customers. SCA can assist in this process.
10 Avoided emissions		To fulfill the picture of the results of our enterprise our performed energy-related investments this toe can be included but separated from others. As SCA deliver some 3 TWh of biofuel, biopellets this can be considered as replacing fuel oil in other energy systems. Also delivered waste heat to municipal district heating can be considered replacing oil. By investing in own "green" electricity production as CHP cogeneration, water- or windpower other marginal energy sources are reduced in actual energy system. (In calculations of environmental effects a factor of 800 g CO <sub>2</sub> /kWh electricity can be used for Swedish conditions. A national electricity factor can also be more appropriate. It is then easy to downgrade the figures by multiplying data with 48/800.) Offsets are not included.

All values are related to the total paper production net air dry.

Figures from SCA only refers to CO<sub>2</sub> as of now. Other GHGs, Green House Gasses, from our processes exists but are considered as of low significance with todays knowledge.

Figures are based on common LCA/LCI principles. Figures are mainly third-party verified, by the means of ISO 14001, SCA RMS-verification, Paper Profile or other systems. A detailed verification of Carbon Footprints for the company are considered as important and are also initiated by SCA.

Calculating all ten elements together in this Carbon Footprint does not add up to scientific standards with todays knowledge. The parts has to be communicated and used differently. However, the ten elements give the big picture of the positive effects, when using forest products (pulp, paper, included recycled paper, biofuel and sawn products)

Date: 2020-02-10