

# Pellets by Stora Enso

Sustainability Profile

**Mills:** Ala, Sweden / Gruvön, Sweden / Imavere, Estonia / Näpi, Estonia / Launkalne, Latvia / Impilahti, Russia / Nebolchi, Russia / Zdirec, Czech

**Functional unit:** Provide 1 000 MJ of thermal energy, produced by burning 57,14 kg high-quality wood pellets, which are delivered as bulk

**Scope:** Cradle to factory gate

**Publication date:** 2022-01-14

**Reference year:** 2019

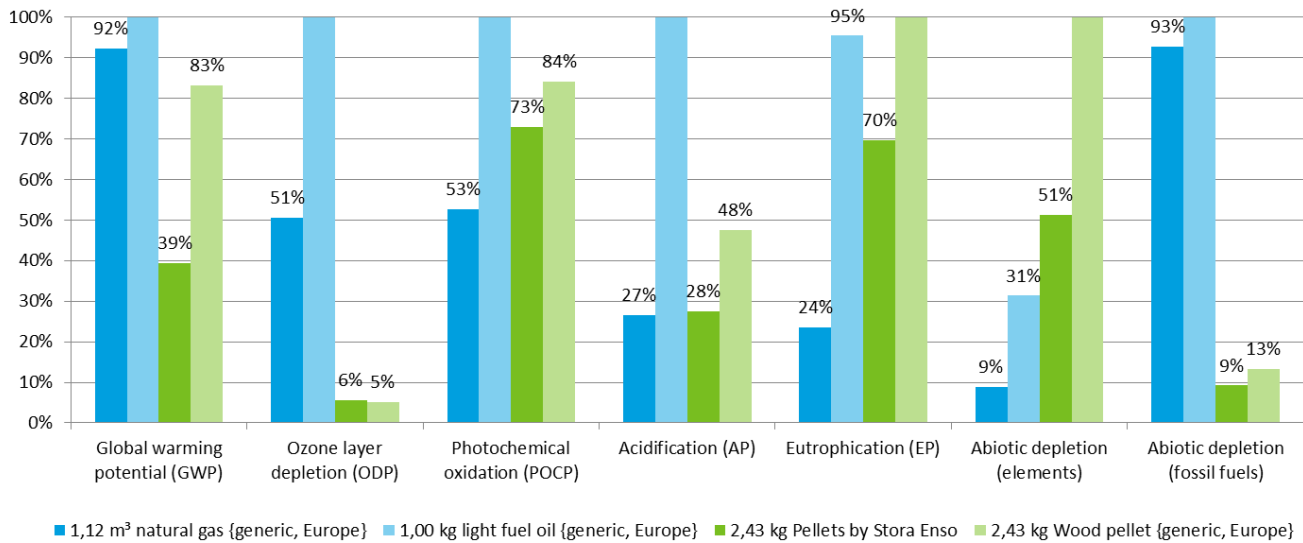


Stora Enso is a leading provider of renewable solutions in packaging, biomaterials, wood and paper on global markets. Our aim is to replace fossil-based materials by innovating and developing new products and services based on wood and other renewable materials.

Wood, our most important raw material, has many advantages over the materials made from non-renewable resources. Wood is renewable, recyclable and can be used as bioenergy at the end of its life cycle. Pellets as a product constitute a great example of utilizing our raw material more efficiently.



Comparison of different heating sources to produce 1000 MJ of heat (in 100%)



**Please note:** the comparison should give an insight about the impacts of Stora Enso pellets compared to other possible heating sources based on generic data from ecoinvent database. It does not meet the requirement of a full LCA. For example, no boiler heating efficiencies or transmission losses are considered.

## Biogenic carbon content of the factory gate

Biogenic carbon content	Unit (expressed per declared unit)
Biogenic carbon content in product	1 698 kg CO <sub>2</sub> eq. / 1 000 kg pellets
	463 kg C / 1 000 kg pellets
1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

The sequestration of carbon dioxide (CO<sub>2</sub>) happens in a unique manner with renewable materials. Biogenic carbon content of a renewable material is an outcome of the CO<sub>2</sub> that has effectively been removed from the atmosphere by photosynthesis of growing trees and other plants, and turned into sugars (carbon) and oxygen. The quantity of atmospheric CO<sub>2</sub> has thus been reduced.

## Process description

1. Upstream: Extraction and processing of the raw materials, e.g. forestry operations and processing of the by-products in sawmills are considered in this stage. The data covers all raw material supply and different packaging materials for the final product. Transport details for each raw material are separately recorded. Information that is included are the type of vehicle, average utilization rate of the load and average two-way transport distance.
2. Core: The pellet production is integrated directly after the sawing line. Only wood shavings, dry chips and sawdust are used for the base material of pellets. All sawdust falls into the container right before the drying unit. The drying unit uses hot air - partially waste heat from the timber driers - to dry the sawdust. Already dried materials such as wood shavings and wood chips are then mixed with the sawdust and grinded to the right fraction size for making pellets. Pellet presses enables reaching a high quality level with consistent dry content, volume and weight. After the pellet presses, the pellets are cooled and packaged before being delivered.
3. Downstream: The transport of pellets as bulk is assumed to be 100 km as a reference value. Stora Enso is aware of the different scenarios related to customers further usage of pellets. There is a clear commitment and interest to develop the downstream scenarios, which are included in the system boundary of the EPD as optional, together with customers and take into consideration the actual use conditions.

## Environmental information

INDICATOR	UNIT	upstream <sup>1)</sup>	core	downstream <sup>2)</sup>	Total
Parameters describing environmental impacts <sup>3)</sup>					
<b>Global warming (GWP)</b>	<b>kg CO<sub>2</sub> eq.</b>	<b>-93,84</b>	<b>1,17</b>	<b>0,00</b>	<b>-92,67</b>
Abiotic depletion elements (ADPE)	kg Sb eq	4,20E-05 <sup>4)</sup>	3,92E-05	8,86E-09	8,12E-05
Abiotic depletion fossil fuels (ADPF)	MJ	4,64E+01	1,79E+01	7,93E-03	6,43E+01
Ozone layer depletion (ODP)	kg CFC-11 eq.	7,07E-07	3,46E-07	1,22E-10	1,05E-06
Photochemical ozone creation (POCP)	kg C <sub>2</sub> H <sub>4</sub> eq.	2,49E-03	1,09E-03	6,80E-08	3,58E-03
Acidification (AP)	kg SO <sub>2</sub> eq.	2,49E-03	1,09E-03	6,80E-08	3,58E-03
Eutrophication (EP)	kg PO <sub>4</sub> <sup>3-</sup> eq.	6,05E-03	6,41E-03	3,84E-07	1,25E-02

- 1) biogenic carbon content in 27,14 kg pellets is 97 kg CO<sub>2</sub>-eq.
- 2) Material inherent properties of the pellets, like stored biogenic carbon and energy resources used as raw materials will leave the system at the end-of-waste status (heating residues) and are not considered in the downstream stage.
- 3) impact indicators and characterisation factors according CML-IA baseline V4.7 (in line with EN15804:2012+A1)
- 4) reading guide:  $1,46E-01 = 1,46 \times 10^{-1} = 0,146$

## Data sources and quality

Information on this sustainability profile is based on the third party verified environmental product declaration (EPD) study conducted for Stora Enso pellets. The EPD is available on [storaenso.com](http://storaenso.com)

Specific data have been collected from Stora Enso Pellets production units covering production data (12 months) of year 2019. All inputs and outputs of units are recorded and included in the calculations. Wood residues as raw materials are calculated as by-product from the LCA studies which results in Stora Enso's Classic Sawn, Classic Planed, Cladding and Decking, KVH® and Industrial Components EPDs. Allocation method for these data were based on physical and economic basis, following the EN15804:2012 + A2:2019 standard. Data collection for the wood-residues LCA was done for year 2018.

### EPD owner and LCA author

Stora Enso  
Division Wood Products  
E-mail [woodproducts@storaenso.com](mailto:woodproducts@storaenso.com)  
Tel +358 (0)20 46114  
[www.storaenso.com](http://www.storaenso.com)

### Third party verifier

Martin Erlandsson  
IVL Swedish Environmental Research Institute  
E-mail [martin.erlandsson@ivl.se](mailto:martin.erlandsson@ivl.se)  
Tel +46 (0) 10 788 65 00  
[www.ivl.se](http://www.ivl.se)

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