

# Fossil carbon emissions

## summary for 2018

### Governance, strategy, policy, and targets for combatting global warming

Sustainability, including combatting global warming, is promoted by the Board of Directors, the CEO, and the Group Leadership Team (GLT). The CEO has the ultimate responsibility for the successful implementation of our [sustainability strategy](#). The work is led by the EVP, Sustainability, who reports to the CEO and is part of the GLT. The Board of Directors' Sustainability and Ethics Committee oversees the implementation of our sustainability strategy and the ethics and compliance strategy. For more details on our governance see our [Corporate Governance Policy](#).

Stora Enso's sustainability agenda is an integral part of the Group-wide annual strategy process involving all business divisions and key functions. CO<sub>2</sub> impacts are specified and assessed in investment projects, feasibility studies and eventual investment decisions. Our long-term strategy for combatting global warming is guided by our [Energy and Carbon Policy](#).

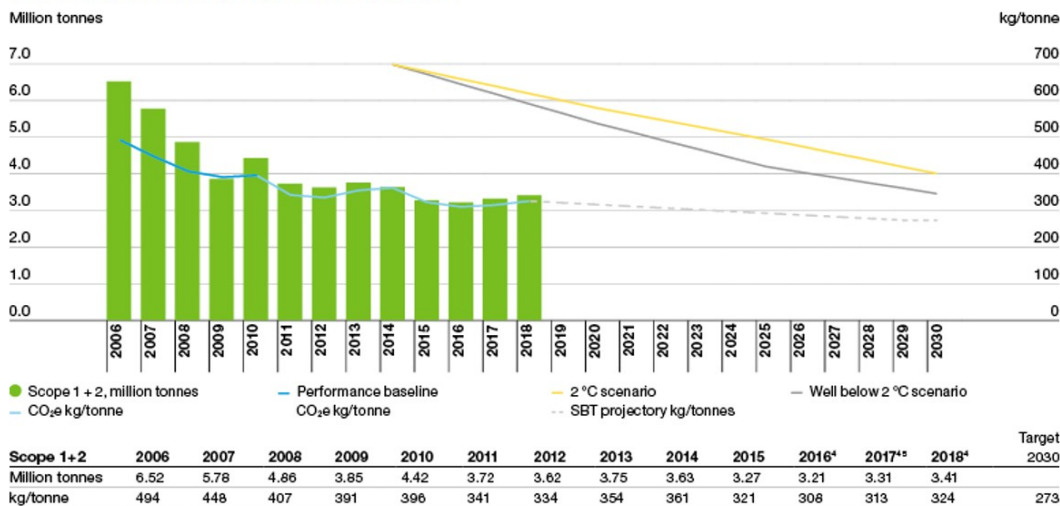
Our science-based targets have been informed by IPCC's "well below 2 degree" scenario and the Sectoral Decarbonization Approach (SDA). A key tool in the scenario assessment and the establishment of reduction targets was Stora Enso's internal Carbon Neutrality Roadmap, which contains reduction opportunities in our mill units for the upcoming years.

### Greenhouse gas emission (GHG) reductions: targets and performance

Our science-based target (SBT) is to reduce fossil CO<sub>2</sub> and other greenhouse gas emissions from operations by 31% per tonne of pulp, paper, and board produced by 2030, compared to a 2010 baseline.

#### Stora Enso's GHG performance<sup>1</sup> and scenarios for forest industry<sup>2</sup>

Greenhouse gas emissions (GHG) in relation to production



#### GHG emissions from our value chain

**Science-based target (SBT):** 70% of our non-fibre suppliers and downstream transportation suppliers in terms of spend to set GHG reduction targets by 2025 with the aim to adopt SBTs by 2030.

**Our Scope 3<sup>6</sup> emissions:** In 2018, Our Scope 3 emissions were estimated to 7.89 Mt of GHG emissions. Material impacts have been identified in the following categories: Purchased raw materials, Fuel and energy-related activities, Up and downstream transportation, and Processing of sold product.

Updates of our Scope 3 estimates have been carried out twice a year since 2007 and we apply WRI/WBCSD's value chain accounting and reporting standard.

<sup>1</sup> Covering direct and indirect emissions as fossil CO<sub>2</sub> equivalents (scope 1 and 2) from board, pulp, paper, and corrugated production units. Excluding joint operations. Normalised figures are reported per unit of sales production.

<sup>2</sup> GHG reduction pathways for 2°C scenario and well below 2°C scenarios based on information from the Transition Pathway Initiative (TPI)\* including scenarios data from the Energy Technology Perspectives report by the International Energy Agency.

<sup>3</sup> CO<sub>2</sub>e emissions data from our operations (scope 1+2) have been verified at reasonable assurance level since 2015 and calculated according to the GHG protocol and GHG Scope 2 guidance.

<sup>4</sup> Adversely affected by the coal-based energy consumption at our Beihai Mill in China.  
<sup>5</sup> Historical figures recalculated due to accuracy improvements.

\* Asset owner-led initiative supported by Grantham Research Institute and London School of Economics.

SBT= Science-based target

<sup>6</sup> Our Scope 3 emissions are verified with limited assurance.

## Risk and opportunity disclosure for global warming

Stora Enso is committed to ensuring that systematic, holistic, and proactive management of risks and opportunities is an integral part of all Group activities. Changes in precipitation patterns, typhoons, and severe frost periods in the subtropics could cause damage to tree plantations. Increases in average temperatures could lead to changes in the tree species composition of forests. Milder winters could impact harvesting and transport of wood in northern regions, and the related costs, but warmer weather could also increase biomass yield. Additional demand for biomass fuels and agricultural land may limit the availability of land for fibre production, affecting the price of biomass. The increasing global demand for water may in the long-term impact the Group's operations through our supply chains. The main climate-related opportunity for Stora Enso is replacing fossil-based materials by innovating and developing new products and services based on wood and other renewable materials. Sensitivity analyses have been used to estimate the order of magnitude of the financial impacts of risks and opportunities.<sup>1</sup> Our 2018 ERM results in relation to global warming are summarised in [Financials 2018](#).

Risks related to global warming are managed via activities related to finding clean, affordable, and safe energy sources for production and transportation, and reducing energy consumption. Additional measures include energy efficiency initiatives, the use of carbon-neutral biomass fuels, maximising the utilisation of combined heat and power, and sequestration of carbon dioxide in forests and products. Diligent plantation planning is ensured to avoid frost-sensitive areas, and non-controversial tree breeding and R&D programmes are applied to increase tolerance of extreme temperatures. Stora Enso maintains a diversity of forest types and structures and enforces diversification in wood sourcing. Wood harvesting on soft soil involves the implementation of best practices. Agroforestry concepts have been introduced to integrate the different land use forms and to mitigate the competition for land and the effects of increasing food prices.

## 2018 highlights

- In 2018, Stora Enso launched a [Green Bond Framework](#) as part of its Sustainable Finance approach. The ambition is to offer a loan that supports sustainability-focused fixed-income investors and to report the direct environmental impacts of some investments and business activities.
- Our total energy self-sufficiency rate was 63% in 2018 (63% in 2017). The share of biomass in internal energy production was 81% (82%). The decrease in the share of biomass is mainly due to the increased use of fossil fuel at some of our mills.
- Our 10 MEUR energy efficiency fund was used to support 55 projects during the year. The projects are estimated to generate annual energy savings of at least 259 GWh and will eliminate over 16 000 tonnes of annual fossil CO<sub>2</sub> emissions.
- We began using sustainability criteria in the tendering phase of our sourcing process in 2018. As part of the criteria, suppliers now need to respond to a set of questions about their CO<sub>2</sub> emissions, contributing to our science-based targets. These criteria are part of every tender, regardless of previous contracts with the same supplier.
- Drivers for sustainable profitable growth include next-generation packaging solutions, micro-fibrillated cellulose (MFC), bio-barriers, bio-composites, dissolving pulp, building components and systems, lignin, and future bio-based chemicals, products which provide alternatives to fossil-based materials. Nine percent (9%) of our sales in 2018 came from new products and services.

## External recognition

- In November 2018, the [Transition Pathway Initiative \(TPI\)](#)<sup>2</sup> assessed how 18 of the largest paper producers globally are preparing for the transition to a low-carbon economy. For the second time in a row, Stora Enso was top-ranked in both management quality and carbon performance. Stora Enso was the only company that both ranked on the highest possible level in management quality and had an emissions reduction target set until 2030, aligned with keeping the global temperature rise below 2°C.
- Stora Enso was top-rated in combatting global warming by the international non-profit organisation [CDP](#). CDP has included Stora Enso on its new 2018 Climate A List, which identifies the global companies that are taking leadership in climate action.

<sup>1</sup> Sensitivity analyses for wood, energy, products, and significant assumptions have been published in [Financials 2018](#).

<sup>2</sup> Asset owner-led initiative supported by Grantham Research Institute and London School of Economics.